Job Family Position Classification Standard for Administrative Work in the Information Technology Group, GS-2200

Series Covered by This Standard:

Information Technology Management	**GS-2210**

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INTRODUCTION

This job family standard provides series and specialty definitions, titling instructions, and grading criteria for nonsupervisory two-grade interval administrative positions in the Information Technology Group, GS-2200.

COVERAGE

This job family standard covers the following occupational series:

Series	
Information Technology Management	**GS-2210**

MODIFICATIONS TO AND CANCELLATIONS OF OTHER EXISTING OCCUPATIONAL SERIES AND STANDARDS

Issuance of this job family standard establishes, renames, modifies, or cancels occupational series and classification standards and guidance as described in the following table. The table also indicates how to classify work previously covered by classification standards affected by this issuance.

New / Previous Series or Guidance	Action Taken / How to Classify Work Previously Covered
Information Technology Management GS-2210	• Establishes this series.
Computer Specialist GS-0334	• Cancels this classification standard, last revised in July 1991. • Cancels this series. • Classify work previously covered by this series to the **Information Technology Management Series, GS-2210**.
Telecommunications GS-0391	• Classify work previously included in this series to the **Information Technology Management Series, GS-2210**, when knowledge of information technology, as defined in this standard, is the paramount requirement necessary to perform the primary duties of the position. See Exclusions for information on work covered by the Telecommunication Series, GS-0391.
Other Series	• Classify work previously included in other series to the **Information Technology Management Series, GS-2210,** when knowledge of IT principles, concepts, and methods is paramount.
Background Information Regarding Computer Operations, GS-0332/0334/0335	• Cancels this document, last revised in October 1981.

GENERAL SERIES, TITLING, AND OCCUPATIONAL GUIDANCE

This section provides information on series and specialty definitions, titling instructions, and occupational guidance for nonsupervisory two-grade interval administrative positions in the Information Technology Group, GS-2200. It also provides information on titling instructions for supervisors, team leaders, and parenthetical specialties in this job family.

INFORMATION TECHNOLOGY MANAGEMENT, GS-2210

Qualification Standards

Definition

This series covers two-grade interval administrative positions that manage, supervise, lead, administer, develop, deliver, and support information technology (IT) systems and services. This series covers only those positions for which the paramount requirement is knowledge of IT principles, concepts, and methods; e.g., data storage, software applications, networking.

Information technology refers to systems and services used in the automated acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, assurance, or reception of information. Information technology includes computers, network components, peripheral equipment, software, firmware, services, and related resources.

Titling

The basic title for this occupation is ***Information Technology Specialist*** or ***IT Specialist***. Use the parenthetical specialty titles defined below with the basic title to further identify the duties and responsibilities performed and the special knowledge and skills needed.

You may use any combination of two parenthetical specialty titles in official position titles, e.g., Information Technology Specialist (Applications Software/Systems Analysis), where the two specialties are of significant importance to the position. Use the basic title without a parenthetical specialty title for positions for which there is no established specialty or for positions that involve work in more than two of the established specialties.

To accommodate automated systems limitations, you may use authorized specialty abbreviations (see below) with the full title or with an abbreviated basic title of ITSPEC; e.g., IT Specialist (OS) or ITSPEC (APPSW/SYSANALYSIS).

You may continue to use other agency-established parenthetical titles where appropriate as unofficial position titles; i.e., organizational or functional titles.

Supervisors and Leaders

- Add the prefix "Supervisory" to the title of positions classified using the General Schedule Supervisory Guide.
- Add the prefix "Lead" to the title of positions classified using the General Schedule Leader Grade Evaluation Guide.

(continued)

INFORMATION TECHNOLOGY MANAGEMENT, GS-2210 (continued)

Titling (continued)

Parenthetical Titles

- Use the following parenthetical titles for specialties as defined (authorized abbreviations follow the specialty):

Policy and Planning – (PLCYPLN)

Work that 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, capital planning and investment control, workforce planning, policy and standards development, resource management, knowledge management, architecture and infrastructure planning and management, auditing, and information security management.

Functions commonly performed by employees in this specialty may include:

- developing and maintaining strategic plans;
- assessing policy needs and developing policies to govern IT activities;
- providing policy guidance to IT management, staff, and customers;
- defining current and future business environments;
- preparing IT budgets;
- managing IT investment portfolios;
- establishing metrics to measure and evaluate systems performance and total cost of ownership;
- identifying and addressing IT workforce planning and management issues, such as recruitment, retention, and training;
- conducting audits of IT programs and projects; and/or
- ensuring the rigorous application of information security/information assurance policies, principles, and practices in the delivery of planning and management services.

Common organizational or functional titles for positions in this specialty:

- enterprise resource planner
- IT policy and planning analyst
- IT program management specialist
- IT auditor

(continued)

INFORMATION TECHNOLOGY MANAGEMENT, GS-2210 (continued)

Titling (continued)

Security – (INFOSEC) Work that involves ensuring the confidentiality, integrity, and availability of systems, networks, and data through the planning, analysis, development, implementation, maintenance, and enhancement of information systems security programs, policies, procedures, and tools.

Functions commonly performed by employees in this specialty may include:

- developing policies and procedures to ensure information systems reliability and accessibility and to prevent and defend against unauthorized access to systems, networks, and data;
- conducting risk and vulnerability assessments of planned and installed information systems to identify vulnerabilities, risks, and protection needs;
- promoting awareness of security issues among management and ensuring sound security principles are reflected in organizations' visions and goals;
- conducting systems security evaluations, audits, and reviews;
- developing systems security contingency plans and disaster recovery procedures;
- developing and implementing programs to ensure that systems, network, and data users are aware of, understand, and adhere to systems security policies and procedures;
- participating in network and systems design to ensure implementation of appropriate systems security policies;
- facilitating the gathering, analysis, and preservation of evidence used in the prosecution of computer crimes;
- assessing security events to determine impact and implementing corrective actions; and/or
- ensuring the rigorous application of information security/information assurance policies, principles, and practices in the delivery of all IT services.

Common organizational or functional titles for positions in this specialty:

- information systems security analyst/specialist
- information systems security officer
- network security officer
- information assurance analyst/specialist

(continued)

INFORMATION TECHNOLOGY MANAGEMENT, GS-2210 (continued)

Titling (continued)

Systems Analysis – (SYSANALYSIS)

Work that involves applying analytical processes to the planning, design and implementation of new and improved information systems to meet the business requirements of customer organizations.

Functions commonly performed by employees in this specialty may include:

- 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 and trade-off analyses;
- preparing business cases for the application of IT solutions;
- defining systems scope and objectives;
- developing cost estimates for new or modified systems;
- ensuring the integration of all systems components; e.g., procedures, databases, policies, software, and hardware;
- planning systems implementation; and/or
- ensuring the rigorous application of information security/information assurance policies, principles, and practices to the systems analysis process.

Common organizational or functional titles for positions in this specialty:

- systems analyst
- business analyst

(continued)

INFORMATION TECHNOLOGY MANAGEMENT, GS-2210 (continued)

Titling (continued)

Applications Software – (APPSW)

Work that involves the design, documentation, development, modification, testing, installation, implementation, and support of new or existing applications software.

Functions commonly performed by employees assigned to this specialty may include:

- analyzing and refining systems requirements;
- translating systems requirements into applications prototypes;
- planning and designing systems architecture;
- writing, debugging, and maintaining code;
- determining and designing applications architecture;
- 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;
- evaluating new applications software technologies; and/or
- ensuring the rigorous application of information security/information assurance policies, principles, and practices to the delivery of application software services.

Common organizational or functional titles for positions in this specialty:

- programmer
- programmer analyst
- applications developer
- software engineer
- software developer
- software quality assurance specialist

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INFORMATION TECHNOLOGY MANAGEMENT, GS-2210 (continued)

Titling (continued)

Operating Systems – (OS)

Work that involves the planning, installation, configuration, testing, implementation, and management of the systems environment in support of the organization's IT architecture and business needs.

Functions commonly performed by employees in this specialty may include:

- analyzing systems requirements in response to business requirements, risks, and costs;
- evaluating, selecting, verifying, and validating the systems software environment;
- evaluating, selecting, and installing compilers, assemblers, and utilities;
- integrating hardware and software components within the systems environment;
- monitoring and fine-tuning performance of the systems environment;
- evaluating new systems engineering technologies and their effect on the operating environment; and/or
- ensuring that information security/information assurance policies, principles, and practices are an integral element of the operating environment.

Common organizational or functional titles for positions in this specialty:

- systems programmer
- systems software programmer
- systems engineer
- systems software engineer

(continued)

INFORMATION TECHNOLOGY MANAGEMENT, GS-2210 (continued)

Titling (continued)

Network Services – (NETWORK)

Work that involves the planning, analysis, design, development, testing, quality assurance, configuration, installation, implementation, integration, maintenance, and/or management of networked systems used for the transmission of information in voice, data, and/or video formats.

Functions commonly performed by employees in this specialty may include:

- analyzing and defining network requirements;
- defining 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;
- installing, testing, maintaining, and upgrading network operating systems software; and/or
- ensuring the rigorous application of information security/information assurance policies, principles, and practices in the delivery of network services.

Common organizational or functional titles for positions in this specialty:

- network administrator
- LAN/WAN administrator
- network analyst
- network designer
- network engineer

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INFORMATION TECHNOLOGY MANAGEMENT, GS-2210 (continued)

Titling (continued)

Data Management – (DATAMGT)

Work that involves the planning, development, implementation, and administration of systems for the acquisition, storage, and retrieval of data.

Functions commonly performed by employees in this specialty may include:

- 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;
- analyzing and planning for anticipated changes in data capacity requirements;
- developing and administering data standards, policies, and procedures;
- developing and implementing data mining and data warehousing programs;
- evaluating and providing recommendations on new database technologies and architectures; and/or
- ensuring the rigorous application of information security/information assurance policies, principles, and practices in the delivery of data management services.

Common organizational or functional titles for positions in this specialty:

- database developer
- database administrator
- data analyst
- data administrator
- data architect
- data storage specialist
- data warehouse specialist

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INFORMATION TECHNOLOGY MANAGEMENT, GS-2210 (continued)

Titling (continued)

Internet – (INET)

Work that involves the technical planning, design, development, testing, implementation, and management of Internet, intranet, and extranet activities, including systems/applications development and technical management of Web sites. This specialty only includes positions that require the application of technical knowledge of Internet systems, services, and technologies.

In most cases, the term Internet is used in this standard to refer generically to Internet, intranet, and extranet systems and services.

Functions commonly performed by employees in this specialty 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 Internet services usage and performance statistics;
- evaluating new Internet services and technologies;
- providing technical advice to Internet content providers; and/or
- ensuring the rigorous application of information security/information assurance policies, principles, and practices in the delivery of Internet services.

Common organizational or functional titles for positions in this specialty:

- Web developer
- Webmaster
- Web manager
- Web site administrator
- Web operations specialist
- Internet specialist
- Internet developer
- Internet architect

NOTE: This specialty does not include positions referred to as Webmaster, Web manager, and Web page manager that do not require a paramount knowledge of IT principles, concepts, and methods. Classify such positions in other occupational series requiring paramount knowledge of the subject matter involved.

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INFORMATION TECHNOLOGY MANAGEMENT, GS-2210 (continued)

Titling (continued)

Systems Administration – (SYSADMIN)

Work that involves planning and coordinating the installation, testing, operation, troubleshooting, and maintenance of hardware and software systems.

Functions commonly performed by employees in this specialty may include:

- planning and scheduling the installation of new or modified hardware and operating systems and applications software;
- managing accounts, network rights, and access to systems and equipment;
- managing systems resources including performance, capacity, availability, serviceability, and recoverability;
- 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;
- managing the installation and integration of systems fixes, updates, and enhancements; and/or
- ensuring the rigorous application of information security/information assurance policies, principles, and practices in the delivery of systems administration services.

Common organizational or functional titles for positions in this specialty:

- systems administrator
- site administrator
- UNIX/Windows systems administrator

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INFORMATION TECHNOLOGY MANAGEMENT, GS-2210 (continued)

Titling (continued)

Customer Support – (CUSTSPT)

Work that involves the planning and delivery of customer support services, including installation, configuration, troubleshooting, customer assistance, and/or training, in response to customer requirements.

Functions commonly performed by employees in this specialty may include:

- diagnosing and resolving problems in response to customer reported incidents;
- researching, evaluating, and providing feedback on problematic trends and patterns in customer support requirements;
- developing and maintaining problem tracking and resolution databases;
- installing, configuring, troubleshooting, and maintaining customer hardware and software;
- developing and managing customer service performance requirements;
- developing customer support policies, procedures, and standards;
- providing customer training; and/or
- ensuring the rigorous application of information security/information assurance policies, principles, and practices in the delivery of customer support services.

Common organizational or functional titles for positions in this specialty:

- technical support specialist
- customer support specialist
- help desk representative
- maintenance specialist

NOTE: Positions responsible for assisting customers in installing and configuring desktop systems and commercial off-the-shelf software and resolving problems in accordance with established procedures, that do not meet the criteria for coverage in this job family standard, should be classified in the GS-0335 Computer Clerk and Assistant Series or other related one-grade interval series. (See **EXCLUSIONS**.)

INFORMATION TECHNOLOGY MANAGEMENT, GS-2210 (continued)

Titling (continued)

Organizational Titles

Use the official position titles as outlined above for human resources management, budget, and fiscal purposes. This does not preclude continued use of organizational or functional titles for internal administration, public convenience, program management, or similar purposes. For example, a position officially titled as Information Technology Specialist (Data Management) may have an organizational title of Database Administrator that can be used on organization charts or other internal documents.

Occupational Information

General Occupational Information

Information technology refers to systems and services used in the automated acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, assurance, or reception of information. Information technology includes computers, network components, peripheral equipment, software, firmware, services, and related resources.

Perhaps no other occupation has experienced the dramatic changes that have affected the information technology (IT) occupation in recent years. The growing use of information technology throughout our economy has resulted in an unprecedented explosion in the demand for skilled IT workers. This phenomenon affects virtually every aspect of the IT human resources management process from recruitment to retirement. The position classification function is no exception. Continuous, significant developments in the technology and its application dramatically influence the occupation, with a particular emphasis on information security. As more and more information, products, and services become widely available to customers by way of shared resources, the need to assure the confidentiality, integrity, and availability of systems, networks, and data has become increasingly important.

Any effort to predict the future course and direction of the occupation would be no more than an educated guess. One indisputable fact is that the occupation will continue to evolve in a very rapid fashion. New functions and specializations will emerge and replace or be added to those currently in use.

Ten Specialties Within Information Technology Management. This standard establishes ten specialties for IT (IT) work and defines each in detail in the section on **Titling** above. The decision to establish official specialty titles for positions in the Information Technology Management series was made after considerable dialogue with stakeholders. This dialogue identified several compelling reasons for adopting specialty titles. A very significant advantage of specialty titles is the ability they provide to more effectively communicate job-related information to potential applicants for vacant positions. Other advantages include the ability to more easily identify the composition of the current IT population for IT workforce planning purposes and the ability to more readily link job titles with required competencies.

The distinctions being made between IT positions are most evident when reviewing lists of job openings for IT positions in the private sector and in other public sector organizations. The number of different titles being used throughout the IT industry is staggering. While recognizing the merits of distinguishing between specialty areas, the need to reduce the number of specialty titles to a manageable number was imperative given the need for consistency across agency lines and the limitations of existing automated human resources management information systems. The titling structure in this standard has been thoroughly tested through several iterations. It will likely change again in the future, but the titles established in this standard seem to represent the major categories of work within the occupation.

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INFORMATION TECHNOLOGY MANAGEMENT, GS-2210 (continued)

Occupational Information (continued)

The specialties are ordered throughout this standard according to the system development life cycle management process. A general description of the relationships among the specialties is presented below:

- **Policy and Planning –** develop, implement, and ensure compliance with plans, policies, standards, infrastructures, and architectures that establish the framework for the management of all IT programs.
- **Security** – plan, develop, implement, and maintain programs, polices, and procedures to protect the integrity and confidentiality of systems, networks, and data.
- **Systems Analysis –** consult with customers to refine functional requirements and translate functional requirements into technical specifications.
- **Applications Software –** translate technical specifications into programming specifications; develop, customize, or acquire applications software programs; and test, debug, and maintain software programs.
- **Operating Systems –** install, configure, and maintain the operating systems environment including systems servers and operating systems software on which applications programs run.
- **Network Services –** test, install, configure, and maintain networks including hardware (servers, hubs, bridges, switches, and routers) and software that permit the sharing and transmission of information.
- **Data Management –** develop and administer databases used to store and retrieve data and develop standards for the handling of data.
- **Internet –** provide services that permit the publication and transmission of information about agency programs to internal and external audiences using the Internet.
- **Systems Administration –** install, configure, troubleshoot, and maintain hardware and software to ensure the availability and functionality of systems.
- **Customer Support –** provide technical support to customers who need advice, assistance, and training in applying hardware and software systems.

THE ROLE OF COMPETENCIES

Information technology as a field of work is finely attuned to the competencies it requires. By competency, we mean an observable, measurable pattern of skills, knowledge, abilities, behaviors, and other characteristics that an individual needs to perform work roles or occupational functions successfully. The rapid pace of change in information technology results in constantly evolving competencies. This is true both in terms of the specific knowledge and skills that are changing and in terms of the way technological advances change the pattern of abilities and behaviors, as well as work and work roles.

Many organizations, both within and outside the Federal Government, have embraced the use of competencies as a central driver of their strategic human resources management systems and programs. Competency models have a long and proven record in human resource development applications where core competencies, curricula, and training programs are designed and delivered to keep the leading edge of workforce capacity well-honed to the strategic needs of the organization. For information technology (IT), this has been essential for ensuring that the IT workforce has up-to-date, well-focused competencies that allow it to provide effective mission support and that provide a common language.

Beyond their well-established training and development applications, competencies also hold promise for use in the recruitment, assessment, selection, career and succession planning, rewarding, and retention of IT employees. OPM has developed and tested an Information Technology Competency-Based Job Profile for evaluating job applicants' qualifications. The results to date suggest that identifying and assessing critical competencies and using them in the selection process will significantly enhance staffing outcomes and produce a high-quality IT workforce. And staying focused on sustaining, rewarding, and refreshing those competencies as they continue to evolve is also key to retaining that workforce.

Generally, we associate competencies more directly with determining the qualifications of individuals than with classifying the duties and responsibilities of the positions they occupy. Nonetheless, competencies do have a place in job family position classification standards, which use the Factor Evaluation System format. In particular, the factor level descriptions (FLDs) for Factor 1 – Knowledge Required by the Position in each of the specialties within the GS-2210, Information Technology Management occupational series identify definitive technical competencies (i.e., specific knowledge and skills) and the task settings in which they are applied. Other classification factors and factor levels, with their implications about the behaviors and characteristics that performing successfully at a given level requires, also strongly reflect a systematic foundation of competencies.

The job family standard lays out the knowledge required to perform the work associated with the covered occupation and specialties, as well as the skills necessary to apply that knowledge, as a means of distinguishing between different levels of work. Similarly, the competency-based job profile approach specifies the competencies that an employee needs to perform work roles or occupational functions successfully at different levels of proficiency. The competency-based job profile approach also encourages a broader, more integrated means of identifying what an employee must know to perform the tasks that comprise a job. And in a similar manner, the job family standard permits the evaluation of positions in terms of an integrated set of occupationally relevant factors that represent the critical dimensions of a job in that occupation and specialty.

In developing this job family position classification standard, we have taken care to establish a congruence between the competency-based job profile and the factor-level descriptions. This kind of integration helps ensure that related human resources management systems and programs can link effectively for our users.

DISTINGUISHING BETWEEN IT WORKERS AND IT USERS

In many work situations, it is common for employees to use computers in performing assigned duties and responsibilities. This use may vary from daily use of word processing programs and searching the Internet for job-related information to extensive development of spreadsheets, databases, and graphic-intensive publications. In most of these situations, information technology (IT) systems are used as a tool that enhances the accomplishment of the assignment where the assignment itself is the work product or service. These positions may require knowledge of the applications of information technology to the assignment area and skill in the use of IT software and hardware systems but are not directly involved in developing, delivering, or supporting IT systems and services as is characteristic of positions covered by this standard. In many cases, an employee with advanced knowledge and skill in the use of IT systems may be regarded as the IT "expert" in the immediate organization and relied upon by other employees for limited technical advice and assistance in the application of IT systems to the assignment area. However, in most cases, employees of this nature are sophisticated or advanced **IT users** and, as such, their positions should be classified to the appropriate subject-matter series associated with the assignment area rather than to an occupational series and specialty covered by this standard. The work covered by this standard requires knowledge of IT systems, concepts, and methods as the paramount requirement in comparison to IT user positions that require paramount knowledge of other subject-matter principles, concepts, and methods and ancillary knowledge of IT systems, concepts, and methods. In some cases, the ancillary knowledge of information technology may be identified as a required qualification or selective factor for rating applicants for a position, but this requirement does not justify assignment of the position to the IT occupational group. Refer to the **EXCLUSIONS** section for further information.

DISTINGUISHING BETWEEN SPECIALIST WORK AND ASSISTANT WORK

It is not always easy to distinguish between specialist work classified in two-grade interval occupational series, such as the series covered by this standard, and assistance work classified in one-grade interval occupational series, such as the Computer Operation Series, GS-0332, and the Computer Clerk and Assistant Series, GS-0335. Some tasks are common to both types of occupations, particularly at the entry and developmental grade levels of specialist work and the higher-grade levels of administrative support or assistance work. To determine the proper occupational series, consider the characteristics and requirements of the work as well as management's intent in establishing the position. In making this determination, the following questions should be answered:

Is it a developmental position with clear progression to higher grade levels as a specialist based on progressively more difficult assignments requiring the application of:

- a broad knowledge of IT principles, concepts, and methods;
- a high degree of analytical ability;
- skill in problem solving;
- skill in communicating effectively, both orally and in writing; and
- an understanding of the interrelationships between the different IT specialties?

OR

Is it a position that is established to support and augment the work of specialists requiring the application of:

- established methods and procedures; and
- a practical knowledge, as opposed to a conceptual knowledge, of the techniques and guidelines pertinent to the assignment area

that does **not** require an understanding of the interrelationships with other IT specialties?

For example, positions responsible for functions such as those listed below should be excluded from the GS-2210 series because these functions do not require the regular and recurring application of knowledge of IT principles, concepts, and methods:

- monitoring the operation of small networked systems;
- adding network users;
- updating passwords;
- installing or assisting users in installing COTS software programs (e.g., database or spreadsheet programs);
- configuring hardware and software according to instructions;
- running scheduled backups;
- troubleshooting minor problems; and
- responding to less complex user questions.

CROSSWALK TO THE STANDARD OCCUPATIONAL CLASSIFICATION

The Office of Management and Budget requires all Federal agencies that collect occupational data to use the Standard Occupational Classification (SOC) system for statistical data reporting purposes. The Bureau of Labor Statistics will use SOC codes for National Compensation Survey and other statistical reporting. The Office of Personnel Management (OPM) and agencies will develop and maintain the "crosswalk" between the Federal occupational series and the SOC codes to serve this need. These SOC codes and this requirement have no effect on the administration of any Federal human resources management systems. The information contained in this table is for information only and has no direct impact on the classification of positions covered by this job family standard. The SOC codes shown here generally apply only to nonsupervisory positions in these occupations. As changes occur to the SOC codes, OPM will update this table. More information about the SOC is available at **http://stats.bls.gov/soc/**.

Federal Occupational Series and Position Titles and Their Related Standard Occupational Classification System Codes

Occupational Series	Standard Occupational Classification Code Based on Occupational Series		Position Title	Standard Occupational Classification Code Based on Position Title	
Information Technology Management, GS-2210	15-1099	Computer Specialists, All Other	Information Technology Specialist	15-1099	Computer Specialists, All Other
			Information Technology Specialist (Policy and Planning)	15-1099	Computer Specialists, All Other
			Information Technology Specialist (Security)	15-1099	Computer Specialists, All Other
			Information Technology Specialist (Systems Analysis)	15-1051	Computer Systems Analysts
			Information Technology Specialist (Applications Software)	15-1031	Computer Software Engineers, Applications
			Information Technology Specialist (Operating Systems)	15-1032	Computer Software Engineers, Systems Software
			Information Technology Specialist (Network Services)	15-1081	Network Systems and Data Communications Analysts
			Information Technology Specialist (Data Management)	15-1061	Database Administrators
			Information Technology Specialist (Internet)	15-1099	Computer Specialists, All Other
			Information Technology Specialist (Systems Administration)	15-1071	Network and Computer Systems Administrators
			Information Technology Specialist (Customer Support)	15-1041	Computer Support Specialists

EXCLUSIONS

Although some positions may include administrative work requiring IT knowledge and skills, classification to the Information Technology Group, GS-2200 may not be appropriate. To select the appropriate series, you must determine the paramount knowledge; i.e., the most important subject-matter knowledge required to perform the primary duties of the position. To determine the paramount knowledge, you must also consider the primary purpose for the position's existence, the most important qualification(s) required, recruitment sources, career progression, and the background knowledge required. The following table provides examples of situations where the work may involve the application of related knowledge and skills, but not to the extent that it may warrant classification to this job family.

NOTE: In the table below, the abbreviation for job family standard is JFS.

If….	See This Group, Standard, or Series Definition:
1. Work involves IT support or services functions. Work requires a practical knowledge of IT systems, workflow, and controls rather than the broad and in-depth knowledge of IT principles, concepts, and methods characteristic of positions covered by this standard. (See discussion in **DISTINGUISHING BETWEEN SPECIALIST WORK AND ASSISTANT WORK**.)	GS-0335, Computer Clerk and Assistant
2. Work involves operating or supervising the operation of computer systems, including the operation of peripheral equipment. Work requires knowledge of functions and features of computer systems and skill in reading, interpreting, and correctly responding to information transmitted through computer systems. (See discussion in **DISTINGUISHING BETWEEN SPECIALIST WORK AND ASSISTANT WORK**.)	GS-0332, Computer Operation
3. Work involves acquisition, technical acceptance, installation, testing, modification, or replacement of telecommunications equipment, services, and systems. Work requires paramount knowledge of: • the operational and performance characteristics of telecommunications equipment; • the relationships among component parts of telecommunications systems; and • telecommunications equipment interoperability and compatibility characteristics; as well as an understanding of basic electronics theories and operating principles. Work in this series also typically requires knowledge of IT concepts that is secondary to the paramount knowledge requirements described above.	GS-0391, Telecommunications
4. Work involves professional knowledge of fundamentals and principles of computer engineering; computer hardware, systems, software, and computer systems architecture and integration; and mathematics as the paramount requirement.	GS-0854, Computer Engineering

(continued)

EXCLUSIONS (continued)

If….	See This Group, Standard, or Series Definition:
5. Work involves professional knowledge of theoretical foundations of computer science; specialized knowledge of design characteristics, limitations, and potential applications of information systems; and knowledge of relevant mathematical and statistical sciences.	GS-1550, Computer Science
6. Work involves skill in the use of personal computers and knowledge of specialized and/or general office software applications, e.g., desktop publishing, to provide administrative support.	Appropriate series within the General Administration, Clerical, and Office Services Group, GS-0300, such as: GS-0303, Miscellaneous Clerk and Assistant GS-0318, Secretary
7. Work involves knowledge of a specific subject-matter field(s) (e.g., human resources management, inventory management) as the paramount requirement even when performing IT assignments. (See discussion in **DISTINGUISHING BETWEEN IT WORKERS AND IT USERS**.)	Appropriate JFS or subject-matter series, such as: JFS for Administrative Work in the Human Resources Management Group, GS-0200 GS-2010, Inventory Management
8. Work involves professional knowledge of mathematics, engineering, physics, or related fields as the paramount requirement even when performing IT assignments.	Appropriate series within the Biological Sciences Group, GS-0400; Engineering and Architecture Group, GS-0800; or Mathematics and Statistics Group, GS-1500 JFS for Professional Work in the Physical Sciences Group, GS-1300P
9. Work involves designing new automated financial accounting systems or developing modifications to existing systems. Work requires knowledge of application of accounting theories, concepts, principles, and standards as the paramount requirement.	JFS for Professional and Administrative Work in the Accounting and Budget Group, GS-0500
10. Work involves substantive knowledge of agency programs and activities; agency mission, policies, and objectives; management principles and processes; and analytical and evaluative methods as they relate to the evaluation of government programs and operations.	GS-0343, Management and Program Analysis

(continued)

EXCLUSIONS (continued)

If….	See This Group, Standard, or Series Definition:
11. Work involves knowledge of security concepts, methods, practices, and procedures as the paramount requirement in developing, evaluating, maintaining, and/or operating systems, policies, devices, procedures, and methods used for safeguarding information, property, personnel, operations, and materials.	GS-0080, Security Administration
12. Work involves knowledge of investigative techniques, rules of evidence, Federal laws and statutes, and criminal laws as the paramount requirement in planning and conducting investigations of computer and Internet related crimes.	GS-1811, Criminal Investigating
13. Work involves professional knowledge of the theories, principles, and techniques of library science as the paramount requirement in the collection, organization, preservation, and retrieval of recorded knowledge.	GS-1410, Librarian
14. Work involves knowledge of one or more scientific, engineering, technical, or other fields and practical knowledge of techniques for organizing, accessing, or disseminating information as the paramount requirements in developing, coordinating, processing, and transmitting specialized information.	GS-1412, Technical Information Services
15. Work involves communicating information through visual means that requires knowledge of the principles of visual design and the ability to present subject-matter information in a visual form that will convey the intended message to, or have the desired effect on, the intended audience.	GS-1084, Visual Information
16. Work involves preparing and updating subject-matter information on an organization's Web site that requires knowledge of subject-matter programs and processes and knowledge of basic Web site development techniques rather than knowledge of IT principles, concepts, and methods as the paramount requirement.	Appropriate subject-matter series
17. Work involves knowledge of quality assurance methods, principles and practices as the paramount requirement in assuring the quality of products acquired and used by the Federal Government, including software used in manufacturing, maintenance, and operational applications.	GS-1910, Quality Assurance
18. Work involves operating computerized analytical test and diagnostic equipment to install, test, troubleshoot, maintain, and repair electronic equipment that requires knowledge of the operational capabilities and limitations of electronic equipment and systems and skill in the use of computerized testing and diagnostic equipment.	Appropriate series within the Electronic Equipment Installation and Maintenance Family, 2600

HOW TO USE THIS STANDARD

Evaluate positions on a factor-by-factor basis using the factor level descriptions (FLDs) provided in this standard. Compare each factor in the position description to the appropriate FLDs and illustrations in the standard. If the factor information in the position description fully matches an FLD for the series and specialties in the standard, you may assign the level without reviewing the illustrations. FLDs are progressive or cumulative in nature. For example, each FLD for Factor 1 – Knowledge Required by the Position encompasses the knowledge and skills identified at the previous level. Use only designated point values. Record the results of your analysis on the Position Evaluation Summary form on the next page. Convert total points for all factors to grade levels using the grade conversion table that follows the FLDs.

This standard provides occupation- and specialty-specific illustrations as a frame of reference for applying factor level concepts. Do not rely solely on the illustrations in evaluating positions, because they reflect a limited range of actual work examples. Use the illustrations to gain insights into the meaning of the grading criteria in the FLDs. Consider each illustration in its entirety and in conjunction with the FLDs in your analysis, and do not merely use a selected portion of an illustration taken out of context as evidence of a match. The level of work described in some illustrations may be higher than the threshold for a particular factor level. If the factor information in the position description you are evaluating fails to fully match a relevant illustration, but does fully match the FLD, you may still assign the level.

The FLDs in this standard cover nonsupervisory positions at grades GS-5 through GS-15. Evaluate supervisory and leader positions by applying the appropriate guide.

You will find more complete instructions for evaluating positions in the following OPM publications: Introduction to the Position Classification Standards and The Classifier's Handbook.

POSITION EVALUATION SUMMARY

Organization _____

Position # _____

Evaluation Factors	Factor Level Used (FL#, etc.)	Points Assigned	Comments
1. Knowledge Required by the Position			
2. Supervisory Controls			
3. Guidelines			
4. Complexity			
5. Scope and Effect			
6/7. Personal Contacts and Purpose of Contacts			
8. Physical Demands			
9. Work Environment			
SUMMARY **Total Points**			**Standards Used**
Grade Conversion			

Additional Remarks:

Title, Series, and Grade Assigned:

_____

Date: _____

Agencies may copy for local use.

FACTOR LEVEL DESCRIPTIONS

FACTOR 1 – KNOWLEDGE REQUIRED BY THE POSITION

Factor 1 measures the nature and extent of information or facts that an employee must understand to do acceptable work (e.g., steps, procedures, practices, rules, policies, theories, principles, and concepts) and the nature and extent of the skills necessary to apply that knowledge. You should only select a factor level under this factor when the knowledge described is required and applied.

NOTE: In the tables below, factor level description is abbreviated as FLD.
Factor 1 illustrations are located in Appendix F1.

Level 1-5	750 Points
Series	**Information Technology Management, GS-2210**
Title/Specialties	**Information Technology Specialist** **(Network Services)** **(Security)** **(Data Management)** **(Systems Analysis)** **(Internet)** **(Applications Software)** **(Systems Administration)** **(Operating Systems)** **(Customer Support)**
FLD	Knowledge of, and skill in applying, basic IT principles and practices sufficient to: • perform highly structured, entry-level work designed to develop broader and more in-depth knowledge and skill needed to perform higher-level assignments; • communicate factual and procedural information clearly, orally and in writing; and • gather and analyze basic facts and draw conclusions.

Level 1-6 950 Points

Series

Information Technology Management, GS-2210

Title

Information Technology Specialist Illustration(s)

FLD

Knowledge Required for All Positions in This Series at This Level: Knowledge of, and skill in applying, most of the following:

- IT principles, methods, and practices in the assigned specialty area;
- IT systems development life cycle management concepts;
- performance monitoring principles and methods;
- quality assurance principles;
- technical documentation methods and procedures;
- systems security methods and procedures;
- analytical methods; and
- oral and written communication techniques

sufficient to accomplish assignments such as:

- perform routine and recurring assignments in the specialty area;
- identify and resolve issues and problems;
- prepare and update manuals, instructions, and operating procedures;
- provide information and assistance to customers;
- evaluate established methods and procedures and prepare recommendations for changes in methods and practices where appropriate; and
- ensure the application of appropriate security measures to the assignment.

NOTE: **Remember to refer to these common requirements when applying the knowledge and skill requirements for any specialty at this level.**

(continued)

Level 1-6 (continued)	**950 Points**
Specialty FLD	**(Policy and Planning)** Illustration(s) Knowledge of, and skill in applying: • the organization's mission; and • program management principles sufficient to participate in the development of IT goals, objectives, plans, and policies. **Cross-reference common knowledge and skill requirements for this level.**
Specialty FLD	**(Security)** Illustration(s) Knowledge of, and skill in applying: • IT security principles, methods, and tools; and • the IT security environment sufficient to: • participate in defining IT security requirements; and • implement and support IT security applications. **Cross-reference common knowledge and skill requirements for this level.**
Specialty FLD	**(Systems Analysis)** Illustration(s) Knowledge of, and skill in applying, systems analysis principles and methods sufficient to: • assist in identifying and specifying business requirements for new or enhanced systems; and • develop basic system specifications. **Cross-reference common knowledge and skill requirements for this level.** **(continued)**

Level 1-6 (continued) 950 Points

FLD Specialty

(Applications Software) Illustration(s)

Knowledge of, and skill in applying applications software development principles and methods sufficient to participate in the design, development, testing, and implementation of new or modified applications software.

Cross-reference common knowledge and skill requirements for this level.

FLD Specialty

(Operating Systems) Illustration(s)

Knowledge of, and skill in applying:

- operating systems installation and configuration procedures; and
- the organization's operational environment

sufficient to:

- install, configure, and maintain operating systems components; and
- install updates and temporary fixes to existing programs.

Cross-reference common knowledge and skill requirements for this level.

FLD Specialty

(Network Services) Illustration(s)

Knowledge of, and skill in applying:

- network standards, protocols, and procedures;
- capabilities and applications of network equipment including hubs, routers, switches, bridges, servers, transmission media, and related hardware;
- the organization's network architecture and infrastructure; and
- local area and wide area networking principles and concepts including bandwidth management

sufficient to:

- assist in the development, configuration, installation, and maintenance of networked systems including local area networks (LANs) and wide area networks (WANs); and
- perform routine network configuration management functions.

Cross-reference common knowledge and skill requirements for this level.

(continued)

Level 1-6 (continued) 950 Points

Specialty

FLD

(Data Management) Illustration(s)

Knowledge of, and skill in applying:

- backup and recovery procedures;
- operating systems and platforms used in customer organizations; and
- commonly used query languages, such as SQL

sufficient to:

- maintain database operations;
- assist in returning disrupted database systems to normal operations; and
- create reports and manipulate data in response to customer requirements.

Cross-reference common knowledge and skill requirements for this level.

Specialty

FLD

(Internet) Illustration(s)

Knowledge of, and skill in applying:

- Internet design principles and methods;
- standard graphics mark-up languages, programming languages, and tools;
- standard software validation tools;
- basic Internet server maintenance techniques;
- file formats used in the delivery of Web content;
- Internet clients, such as browsers and streaming audio; and
- the technical requirements of graphical, text, and voice-based browsers

sufficient to:

- provide Internet services such as Web sites and file transfer protocol sites;
- convert user-developed content into workable Web pages;
- create basic scripts or code;
- evaluate code and repair errors;
- carry out server maintenance functions;
- select and apply the most effective delivery formats;
- create easily navigable Web pages; and
- ensure that Web-based content is accessible to all users.

Cross-reference common knowledge and skill requirements for this level.

(continued)

Level 1-6 (continued) 950 Points

Specialty

FLD

(Systems Administration) Illustration(s)

Knowledge of, and skill in applying:

- systems administration methods and procedures;
- software distribution tools and mechanisms; and
- data recovery tools and techniques

sufficient to:

- monitor and troubleshoot systems availability;
- recover data in the event of hardware or software failure; and
- ensure customers receive current versions of supported software as they become available.

Cross-reference common knowledge and skill requirements for this level.

Specialty

FLD

(Customer Support) Illustration(s)

Knowledge of, and skill in applying:

- customer service and customer support principles and methods;
- systems installed in customer organizations;
- training methods; and
- knowledge-based applications

sufficient to:

- participate in the planning and delivery of a full range of customer support services to the organization;
- install, configure, upgrade, and troubleshoot any hardware and software components;
- present formal and informal training and assistance to customers; and
- report, respond to, and resolve customer requests.

Cross-reference common knowledge and skill requirements for this level.

Level 1-7 — 1250 Points

FLD

Series

Information Technology Management, GS-2210

Title

Information Technology Specialist Illustration(s)

Knowledge Required for All Positions in This Series at This Level: Knowledge of, and skill in applying, most of the following:

- IT concepts, principles, methods, and practices;
- the mission and programs of customer organizations;
- the organization's IT infrastructure;
- performance management/measurement methods, tools, and techniques;
- systems testing and evaluation principles, methods, and tools;
- IT security principles and methods;
- requirement analysis principles and methods;
- COTS products and components;
- Internet technologies to analyze the Internet potential of systems, networks, and data;
- new and emerging information technologies and/or industry trends;
- acquisition management policies and procedures;
- cost-benefit analysis principles and methods;
- analytical methods and practices;
- project management principles and methods; and
- oral and written communication techniques

sufficient to accomplish assignments such as:

- plan and carry out difficult and complex assignments and develop new methods, approaches, and procedures;
- provide advice and guidance on a wide range and variety of complex IT issues;
- interpret IT policies, standards, and guidelines;
- conduct analyses and recommend resolution of complex issues affecting the specialty area;
- evaluate and recommend adoption of new or enhanced approaches to delivering IT services;
- test and optimize the functionality of systems, networks, and data;
- identify and define business or technical requirements applied to the design, development, implementation, management, and support of systems and networks;
- ensure optimal use of commercially available products;
- evaluate proposals for the acquisition of IT products or services;
- prepare and present reports;
- represent the organization in interactions with other organizations; and
- provide technical leadership on group projects.

NOTE: **Remember to refer to these common requirements when applying the knowledge and skill requirements for any specialty at this level.**

(continued)

Level 1-7 (continued) 1250 Points

Specialty

FLD

(Policy and Planning) Illustration(s)

Knowledge of, and skill in applying:

- the organization's policy and planning formulation process;
- capital investment planning principles and methods;
- the organization's enterprise IT goals and objectives; and
- IT metrics methods and concepts

sufficient to:

- draft IT policies and plans;
- participate in the IT capital planning process; and
- develop and monitor metrics used in evaluating the accomplishment of IT goals and objectives.

Cross-reference common knowledge and skill requirements for this level.

Specialty

FLD

(Security) Illustration(s)

Knowledge of, and skill in applying:

- methods for evaluating, implementing, and disseminating IT security tools and procedures;
- IT security certification and accreditation requirements;
- network operations and protocols; and
- computer forensics principles

sufficient to:

- develop, implement, and coordinate activities designed to ensure, protect, and restore IT systems, services, and capabilities;
- monitor and evaluate systems' compliance with IT security requirements;
- provide advice and guidance in implementing IT security policies and procedures in the development and operation of network systems; and
- ensure proper protection of evidence used in investigating computer crimes.

Cross-reference common knowledge and skill requirements for this level.

(continued)

Level 1-7 (continued) 1250 Points

Specialty

FLD

(Systems Analysis) Illustration(s)

Knowledge of, and skill in applying:

- systems design tools, methods, and techniques, including automated systems analysis and design tools;
- systems design standards, policies, and authorized approaches;
- systems design precedents or alternative approaches;
- structured analysis principles and methods; and
- business processes and operations of customer organizations

sufficient to:

- develop requirements and specifications for systems that meet business requirements;
- advise on the merits of proposed systems development projects; and
- apply a structured systems analysis approach to the design and development of new or enhanced applications.

Cross-reference common knowledge and skill requirements for this level.

Specialty

FLD

(Applications Software) Illustration(s)

Knowledge of, and skill in applying:

- software design principles, methods, and approaches;
- principles, methods, and procedures for designing, developing, optimizing, and integrating new and/or reusable systems components;
- pertinent government regulations, such as the Americans with Disabilities Act;
- infrastructure requirements, such as bandwidth and server sizing; and
- database management principles and methodologies, including data structures, data modeling, data warehousing, and transaction processing

sufficient to:

- design, write, test, debug, and maintain software applications that meet technical and functional requirements;
- design and develop efficient and effective applications through optimal use of reusable components;
- ensure that applications comply with regulatory requirements; and
- ensure applications are consistent with the current and planned infrastructure and data environments.

Cross-reference common knowledge and skill requirements for this level.

(continued)

Level 1-7 (continued) 1250 Points

Specialty

FLD

(Operating Systems) Illustration(s)

Knowledge of, and skill in applying:

- software design principles and methods; and
- functionality and operability of the current operating environment

sufficient to:

- ensure high reliability and optimal availability of applications;
- develop solutions to complex operational problems; and
- evaluate the feasibility of implementing new technologies with current environments.

Cross-reference common knowledge and skill requirements for this level.

Specialty

FLD

(Network Services) Illustration(s)

Knowledge of, and skill in applying:

- network systems design, development, testing, installation, operations, management, and maintenance concepts and methods; and
- the organization's network architecture, topology, and protocols

sufficient to:

- provide network services that support business requirements; and
- plan, design, develop, and integrate network systems consistent with existing or planned network infrastructures.

Cross-reference common knowledge and skill requirements for this level.

(continued)

Level 1-7 (continued)	1250 Points

Specialty

FLD

(Data Management) Illustration(s)

Knowledge of, and skill in applying:

- database management concepts, principles, and methods including database logical and physical design, normalization, storage capacity management, and backup and recovery;
- sources, characteristics, and uses of the organization's data assets;
- database management systems, query languages, table relationships, and views;
- data mining and data warehousing principles;
- the characteristics of physical and virtual data storage media; and
- data administration and data standardization policies and standards

sufficient to:

- design, develop, and maintain data management systems that meet current and future business requirements of the organization and its customers;
- design, develop, and maintain databases;
- monitor and optimize database performance and tune database operations;
- generate complex queries and reports;
- participate in the design of data mining and data warehousing systems;
- define and allocate storage capacity in the design of data management systems; and
- develop data dictionaries, data models, metadata repositories, and other data management tools.

Cross-reference common knowledge and skill requirements for this level.

(continued)

Level 1-7 (continued) 1250 Points

Specialty

FLD

(Internet) Illustration(s)

Knowledge of, and skill in applying:

- current Internet technologies;
- standard Internet protocols, such as Transmission Control Protocol/Internet Protocol (TCP/IP);
- Internet server operations and operating systems;
- Internet security principles and protocols, such as Security Sockets Layer (SSL) and encryption;
- usability concepts; i.e., navigational aids, site architecture, knowledge management, and information rendering;
- Web-based application and accessibility technologies, such as voice recognition and screen readers;
- U.S. copyright laws;
- accessibility factors and standards;
- database management principles and methods; and
- programming and scripting languages

sufficient to:

- provide guidance in determining the most appropriate methods for delivering information via the Internet;
- create Internet applications that enhance user-developed content and meet business and technical requirements;
- deliver e-commerce and e-Government products and services to internal and external audiences;
- provide Internet services that optimize customer experiences;
- create Web pages that enable all potential users to access information contained on the Web pages;
- advise Web site content providers in the appropriate use of copyrighted electronic property on Web sites;
- ensure Internet services comply with the Americans with Disabilities Act and other related requirements;
- build and implement Web-enabled database applications; and
- manage Internet servers.

Cross-reference common knowledge and skill requirements for this level.

(continued)

Level 1-7 (continued)	1250 Points
Specialty FLD	**(Systems Administration)** Illustration(s) Knowledge of, and skill in applying: • principles and methods for integrating information system components; • performance tuning tools and techniques; and • systems diagnostic tools and fault identification techniques sufficient to: • install and maintain software and hardware, control current versions and future releases of applications software, and document the physical configuration of an information system; • optimize the functionality of networks and systems; and • diagnose and recover failed systems. Cross-reference common knowledge and skill requirements for this level.
Specialty FLD	**(Customer Support)** Illustration(s) Knowledge of, and skill in applying: • a wide variety of applications, operating systems, protocols, and equipment used in customer organizations; and • methods and practices for troubleshooting, recovering, adjusting, modifying, and improving IT systems sufficient to: • provide advice and assistance to customers; • troubleshoot complex problems; and • provide support in a manner that minimizes interruptions in customers' ability to carry out critical business activities. Cross-reference common knowledge and skill requirements for this level.

Level 1-8 1550 Points

FLD

Series

Information Technology Management, GS-2210

Title

Information Technology Specialist Illustration(s)

Knowledge Required for All Positions in This Series at This Level: Mastery of, and skill in applying, advanced IT principles, concepts, methods, standards, and practices sufficient to accomplish assignments such as:

- develop and interpret policies, procedures, and strategies governing the planning and delivery of services throughout the agency;
- provide expert technical advice, guidance, and recommendations to management and other technical specialists on critical IT issues;
- apply new developments to previously unsolvable problems; and
- make decisions or recommendations that significantly influence important agency IT policies or programs.

AND

Mastery of, and skill in applying, most of the following:

- interrelationships of multiple IT specialties;
- the agency's IT architecture;
- new IT developments and applications;
- emerging technologies and their applications to business processes;
- IT security concepts, standards, and methods;
- project management principles, methods, and practices including developing plans and schedules, estimating resource requirements, defining milestones and deliverables, monitoring activities, and evaluating and reporting on accomplishments; and
- oral and written communication techniques

sufficient to accomplish assignments such as:

- ensure the integration of IT programs and services; and develop solutions to integration/interoperability issues;
- design, develop, and manage systems that meet current and future business requirements and apply and extend, enhance, or optimize the existing architecture;
- manage assigned projects;
- communicate complex technical requirements to non-technical personnel; and
- prepare and present briefings to senior management officials on complex/controversial issues.

NOTE: Remember to refer to these common requirements when applying the knowledge and skill requirements for any specialty at this level.

(continued)

Level 1-8 (continued) 1550 Points

Specialty

FLD

(Policy and Planning) Illustration(s)

Mastery of, and skill in applying:

- the business value of information;
- methods and approaches for sharing information through the use of IT assets;
- capital planning regulations and policies, such as the Clinger-Cohen Act, as applied to the agency's business requirements;
- performance measurement tools; and
- methods for identifying and resolving IT workforce issues

sufficient to:

- develop knowledge management program plans, policies, and standards;
- provide input to the IT capital planning process;
- develop, implement, and interpret metrics for the evaluation of IT program effectiveness and efficiency; and
- leverage human resources in the accomplishment of mission requirements.

Cross-reference common knowledge and skill requirements for this level.

Specialty

FLD

(Security) Illustration(s)

Mastery of, and skill in applying:

- total infrastructure protection environment;
- systems security certification and accreditation requirements and processes; and
- Federal information systems security protocols

sufficient to:

- integrate information systems security with other security disciplines;
- certify systems or network accreditation; and
- ensure coordination and/or collaboration on security activities.

Cross-reference common knowledge and skill requirements for this level.

Specialty

FLD

(Systems Analysis) Illustration(s)

Mastery of, and skill in applying, business process engineering concepts and methods sufficient to lead/conduct studies designed to identify potential improvements in the way information technology is applied to key business functions.

Cross-reference common knowledge and skill requirements for this level.

(continued)

Level 1-8 (continued) 1550 Points

Specialty

FLD

(Applications Software) Illustration(s)

Mastery of, and skill in applying, systems engineering concepts and factors, such as:

- structured design;
- supportability;
- survivability;
- reliability;
- scalability, and
- maintainability

sufficient to ensure that applications are optimized for state-of-the-art technology and functionality.

Cross-reference common knowledge and skill requirements for this level.

Specialty

FLD

(Operating Systems) Illustration(s)

Mastery of, and skill in applying:

- systems engineering concepts and methods;
- optimization concepts and methods; and
- software design theories and concepts

sufficient to develop policies, procedures, and strategies that ensure optimization and integration in the installation, configuration, and maintenance of the operating environment.

Cross-reference common knowledge and skill requirements for this level.

Specialty

FLD

(Network Services) Illustration(s)

Mastery of, and skill in applying:

- network systems management methods including end-to-end systems performance monitoring;
- network architecture and topology, including transmissions protocols, broadcasting, switching, control, and management; and
- the agency's network architecture and available resources

sufficient to:

- plan, design, develop, manage, and enhance highly efficient network systems that respond to the agency's business requirements; and
- efficiently apply available resources.

Cross-reference common knowledge and skill requirements for this level.

(continued)

Level 1-8 (continued) 1550 Points

Specialty

FLD

(Data Management) Illustration(s)

Mastery of, and skill in applying:

- data mining, data storage, and data warehousing concepts, methods, and technology;
- data modeling methodologies; and
- database management systems, operating systems, technical architecture, and network topology

sufficient to:

- apply and adapt new and improved approaches to the design, development, and implementation of data mining, data warehousing, and related data storage and retrieval systems;
- develop guidelines for the application of data modeling practices to the development of data management applications; and
- diagnose and resolve the most complex data management problems and issues.

Cross-reference common knowledge and skill requirements for this level.

Specialty

FLD

(Internet) Illustration(s)

Mastery of, and skill in applying:

- Internet services architecture;
- advancing Internet technologies; and
- the agency's strategic business plan

sufficient to:

- develop, implement, and interpret guidelines used by others involved in Internet services design, development, and delivery; and
- formulate a vision that anticipates future requirements and capabilities for the agency's Internet services.

Cross-reference common knowledge and skill requirements for this level.

(continued)

Level 1-8 (continued)	**1550 Points**
Specialty FLD	**(Systems Administration)** Illustration(s) Mastery of, and skill in applying: • modeling and simulation tools and techniques; and • capacity management principles, concepts, and tools. sufficient to: • plan and conduct simulations to determine capacity requirements; and • recommend hardware/software replacements or upgrades to meet current and future requirements. Cross-reference common knowledge and skill requirements for this level.
Specialty FLD	**(Customer Support)** Illustration(s) Mastery of, and skill in applying: • IT problem management methods and practices; and • new and innovative customer support methods and technologies. sufficient to: • plan, implement, and manage problem management systems designed to effectively recognize, report, track, and resolve problems; and • evaluate the feasibility of adapting new methods to enhance customer satisfaction. Cross-reference common knowledge and skill requirements for this level.

Level 1-9	1850 Points

Series

Information Technology Management, GS-2210

Title/Specialties

Information Technology Specialist

(Policy and Planning)	Illustration(s)	**(Network Services)**	
(Security)	Illustration(s)	**(Data Management)**	
(Systems Analysis)		**(Internet)**	Illustration(s)
(Applications Software)	Illustration(s)	**(Systems Administration)**	
(Operating Systems)		**(Customer Support)**	

FLD

Mastery of IT theories, principles, concepts, standards, and practices sufficient to:

- develop new theories, concepts, principles, standards, and methods in the specialty area(s);
- advise other IT experts throughout the agency or in other agencies on a variety of situations and issues that involve applying or adapting new theories, concepts, principles, standards, methods, or practices, that are developed by the employee or result from the employee's leadership; and
- serve as senior expert and consultant to top agency management officials to advise on integrating IT programs with other programs of equivalent scope and complexity.

FACTOR 2 – SUPERVISORY CONTROLS

This factor covers the nature and extent of direct or indirect controls exercised by the supervisor or another individual over the work performed, the employee's responsibility, and the review of completed work. The supervisor determines how much information the employee needs to perform the assignments; e.g., instructions, priorities, deadlines, objectives, and boundaries. The employee's responsibility depends on the extent to which the supervisor expects the employee to develop the sequence and timing of the various aspects of the work, to modify or recommend modification of instructions, and to participate in establishing priorities and defining objectives. The degree of review of completed work depends upon the nature and extent of the review; e.g., close and detailed review of each phase of the assignment; detailed review of the completed assignment; spot check of finished work for accuracy; or review only for adherence to policy. The primary components of this factor are: **How Work Is Assigned, Employee Responsibility,** and **How Work Is Reviewed**.

NOTE: In the tables below, factor level description is abbreviated as FLD.

Level 2-1	25 Points
Series	**Information Technology Management, GS-2210**
FLD	**How Work Is Assigned** – The supervisor or designated employee instructs the employee on what to do, the methods to use, what to look for, and what to bring to the supervisor's or designated employee's attention. When assigning developmental tasks, or tasks involving the use of new formats, methods, or procedures, the supervisor or designated employee typically provides detailed and specific instructions. **Employee Responsibility** – The employee: • performs work as instructed; • consults with the supervisor or designated employee when clarification of instructions is necessary; and • receives guidance on problems and work methods not specifically covered by the original instructions. **How Work Is Reviewed** – The supervisor or designated employee reviews work while in progress and upon completion to see that the employee followed directions and the results are complete and accurate.

Level 2-2 — 125 Points

Series

Information Technology Management, GS-2210

FLD

How Work Is Assigned – The supervisor instructs the employee on the purpose of the assignment and its scope, limitations, expected deadlines, and priorities. The supervisor also advises the employee on peculiarities of new assignments.

Employee Responsibility – The employee:

- works independently, but within the framework the supervisor established and in conformance with established practices and prescribed procedures; and
- refers problems not covered by the supervisor's instructions or guides to the supervisor for help or a decision.

How Work Is Reviewed – The supervisor:

- reviews completed work closely to verify accuracy and conformance to required procedures and any special instructions;
- reviews findings and conclusions to ensure they are supported by facts; and
- typically reviews in detail the more difficult work of a type the employee has not previously done.

Level 2-3 — 275 Points

Series

Information Technology Management, GS-2210

FLD

How Work Is Assigned – The supervisor outlines or discusses possible problem areas and defines objectives, plans, priorities, and deadlines. Assignments have clear precedents requiring successive steps in planning and execution.

Employee Responsibility – The employee:

- independently plans and carries out the assignments in conformance with accepted policies and practices;
- adheres to instructions, policies, and guidelines in exercising judgment to resolve commonly encountered work problems and deviations; and
- brings controversial information or findings to the supervisor's attention for direction.

How Work Is Reviewed – The supervisor:

- provides assistance on controversial or unusual situations that do not have clear precedents;
- reviews completed work for conformity with policy, the effectiveness of the employee's approach to the problem, technical soundness, and adherence to deadlines; and
- does not usually review in detail the methods used to complete the assignment.

Level 2-4 — 450 Points

Series

Information Technology Management, GS-2210

FLD

How Work Is Assigned – The supervisor outlines overall objectives and available resources. The employee and supervisor, in consultation, discuss timeframes, scope of the assignment including possible stages, and possible approaches.

Employee Responsibility – The employee:

- determines the most appropriate principles, practices, and methods to apply in all phases of assignments, including the approach to be taken, degree of intensity, and depth of research in management advisories;
- frequently interprets regulations on his/her own initiative, applies new methods to resolve complex and/or intricate, controversial, or unprecedented issues and problems, and resolves most of the conflicts that arise; and
- keeps the supervisor informed of progress and of potentially controversial matters.

How Work Is Reviewed – The supervisor reviews completed work for soundness of overall approach, effectiveness in meeting requirements or producing expected results, the feasibility of recommendations, and adherence to requirements. The supervisor does not usually review methods used.

Level 2-5 — 650 Points

Series

Information Technology Management, GS-2210

FLD

How Work Is Assigned – The supervisor provides administrative and policy direction in terms of broadly defined missions or functions of the agency.

Employee Responsibility – The employee:

- is responsible for a significant agency or equivalent level IT program or function;
- defines objectives;
- interprets policies promulgated by authorities senior to the immediate supervisor and determines their effect on program needs;
- independently plans, designs, and carries out the work to be done; and
- is a technical authority.

How Work Is Reviewed – The supervisor:

- reviews work for potential impact on broad agency policy objectives and program goals;
- normally accepts work as being technically authoritative; and
- normally accepts work without significant change.

FACTOR 3 – GUIDELINES

This factor covers the nature of guidelines and the judgment employees need to apply them. Individual assignments may vary in the specificity, applicability, and availability of guidelines; thus, the judgment that employees use similarly varies. The existence of detailed plans and other instructions may make innovation in planning and conducting work unnecessary or undesirable. However, in the absence of guidance provided by prior agency experience with the task at hand or when objectives are broadly stated, the employee may use considerable judgment in developing an approach or planning the work. Here are examples of guidelines used in administrative work in the Information Technology Group:

Policies and Guidance – Several policy and guidance statements influence and direct how the Government manages its information resources. These guides include:

- Executive Order 13011, "Federal Information Technology," highlights the need for executive agencies to significantly improve the management of their information systems, by implementing the relevant provisions of the Paperwork Reduction Act (PRA), the Clinger-Cohen Act, and the Government Performance and Results Act (GPRA)
- Presidential Decision Directive 63, "Critical Infrastructure Protection," establishes policies to reduce the cyber and physical infrastructure vulnerabilities of the Federal Government
- Office of Management and Budget (OMB) Circulars:
  - A-11, "Preparing and Submitting Budget Estimates," provides detailed instruction and guidance on the preparation and submission of agency budget requests and related materials, including program performance information
  - "Management of Federal Information Resources 130," establishes policy for the management of Federal information resources and procedural and analytic guidelines for implementing specific aspects of these policies
  - A-94, "Guidelines and Discount Rates for Benefit Cost Analysis of Federal Programs," provides general guidance for conducting cost-benefit and cost-effectiveness analyses and specific guidance on the discount rates to be used in evaluating Federal programs whose benefits and costs are distributed over time
- OMB Memorandum M-97-02 (Raines' Rules), "Funding Information Systems Investments," establishes eight decision criteria that OMB began using in the FY 1998 budget proposals, to evaluate major information system investments proposed for submission in the President's budget
- OMB Capital Programming Guide, provides professionals in the Federal Government a basic reference on principles and techniques for planning, budgeting, procurement, and management of capital assets

Legislation – Several legislative acts influence and direct how the Government manages its information resources. These legislative acts include:

- Information Technology Management Reform Act (ITMRA, also referred to as the Clinger-Cohen Act), requires Federal agencies to focus more on the results achieved through IT investments while streamlining the Federal IT procurement process
- Computer Security Act of 1987, in general establishes minimum acceptable security practices that improve the security and privacy of sensitive information in Federal computer systems

- Government Performance and Results Act (GPRA), requires agencies to set goals, measure performance, and report on their accomplishments; an agency's IT investments should directly support the accomplishment of these goals
- Federal Acquisition Streamlining Act (FASA), requires agencies to define cost, schedule, and performance goals for Federal acquisition programs (to include IT projects) and monitor these programs to ensure that they remain within prescribed tolerances
- Federal Acquisition Reform Act (FARA), requires the head of each executive agency, after consultation with the administrator for Federal Procurement Policy, to establish policies and procedures for the effective management (including accession, education, training, career development, and performance incentives) of the acquisition workforce of the agency
- Paperwork Reduction Act (PRA), requires agencies to minimize the paperwork burden for individuals, small businesses, educational and nonprofit institutions, Federal contractors, State, local and tribal governments, and other persons resulting from the collection of information by or for the Federal Government
- Government Paperwork Elimination Act (GPEA), requires OMB to include alternative information technologies that provide for electronic submission, maintenance, or disclosure of information as a substitute for paper and for the use and acceptance of electronic signatures; it also directs OMB to set procedures for use and acceptance of electronic signatures by Federal agencies and to develop procedures to permit private employers to store, and to file electronically with Federal agencies, forms pertaining to their employees

Other Guidance – Several regulatory documents influence and direct how the Government manages its information resources. These documents include:

- Agency regulations, standard procedures, and established practices governing program operations
- User manuals for hardware and software, installation guides, online references, and workbooks covering daily equipment operations
- Specialized dictionaries and models.

Do not confuse guidelines with the knowledge described under Factor 1 – Knowledge Required by the Position. Guidelines either provide reference data or impose certain constraints on applications. For example, in some of the functional areas covered by this standard, there may be several generally accepted methods of accomplishing work, perhaps set forth in an agency operating manual. However, in a particular office, the policy may be to use only one of those methods; or the policy may state specifically under what conditions the office may use each method. The primary components of this factor are: **Guidelines Used** and **Judgment Needed**.

NOTE: In the tables below, factor level description is abbreviated as FLD.

Level 3-1	25 Points
Series	**Information Technology Management, GS-2210**
FLD	**Guidelines Used** – The employee uses specific and detailed guidelines that cover all aspects of the work. **Judgment Needed** – The employee works in strict adherence to available guidelines, which require little or no judgment. The supervisor or designated employee must authorize any deviations from the guidelines.

Level 3-2	125 Points
Series	**Information Technology Management, GS-2210**
FLD	**Guidelines Used** – The employee uses a number of guidelines that are directly applicable to the assignment. Guidelines prescribe established procedures and techniques and provide clear precedents. **Judgment Needed** – The employee: • uses judgment in selecting and applying the most appropriate guidelines; • determines the appropriateness and applicability of any minor deviations within existing guidelines; and • refers to the supervisor situations to which the existing guidelines cannot be applied or that require significant deviations.

Level 3-3	275 Points
Series	**Information Technology Management, GS-2210**
FLD	**Guidelines Used** – The employee uses a wide variety of reference materials and manuals; however, they are not always directly applicable to issues and problems or have gaps in specificity. Precedents are available outlining the preferred approach to more general problems or issues. **Judgment Needed** – The employee uses judgment in researching, choosing, interpreting, modifying, and applying available guidelines for adaptation to specific problems or issues.

Level 3-4	450 Points
Series	**Information Technology Management, GS-2210**
FLD	**Guidelines Used** – The employee uses guidelines and precedents that are very general regarding agency policy statements and objectives. Guidelines specific to assignments are often scarce, inapplicable or have gaps in specificity that require considerable interpretation and/or adaptation for application to issues and problems. **Judgment Needed** – The employee uses judgment, initiative, and resourcefulness in deviating from established methods to: • modify, adapt, and/or refine broader guidelines to resolve specific complex and/or intricate issues and problems; • treat specific issues or problems; • research trends and patterns; • develop new methods and criteria; and/or • propose new policies and practices.

Level 3-5	650 Points
Series	**Information Technology Management, GS-2210**
FLD	**Guidelines Used** – The employee uses guidelines that are often ambiguous and express conflicting or incompatible goals and objectives, requiring extensive interpretation. **Judgment Needed** – The employee uses judgment and ingenuity and exercises broad latitude to: • determine the intent of applicable guidelines; • develop policy and guidelines for specific areas of work; and • formulate interpretations that may take the form of policy statements and guidelines. Top agency management officials and senior staff recognize the employee as a technical expert.

FACTOR 4 – COMPLEXITY

This factor covers the nature, number, variety, and intricacy of tasks, steps, processes, or methods in the work performed; the difficulty in identifying what needs to be done; and the difficulty and originality involved in performing the work. The primary components of this factor are**: Nature of Assignment, What Needs To Be Done,** and **Difficulty and Originality Involved**.

NOTE: In the tables below, factor level description is abbreviated as FLD.
Factor 4 illustrations are located in Appendix F4.

Level 4-2 — 75 Points

Series

Information Technology Management, GS-2210

Title/Specialties

Information Technology Specialist	Illustration(s)		
(Policy and Planning)		**(Network Services)**	Illustration(s)
(Security)	Illustration(s)	**(Data Management)**	Illustration(s)
(Systems Analysis)	Illustration(s)	**(Internet)**	Illustration(s)
(Applications Software)	Illustration(s)	**(Systems Administration)**	Illustration(s)
(Operating Systems)	Illustration(s)	**(Customer Support)**	Illustration(s)

FLD

Nature of Assignment – Work consists of easily distinguishable tasks involving related steps, processes, methods, and procedures.

What Needs To Be Done – The employee decides what needs to be done by choosing from various alternatives, recognizing differences among a few easily distinguishable situations.

Difficulty and Originality Involved – The employee uses judgment regarding the most appropriate approach that is in accordance with established procedures and practices.

Level 4-3 — 150 Points

Series

Information Technology Management, GS-2210

Title/Specialties

Information Technology Specialist	Illustration(s)		
(Policy and Planning)	Illustration(s)	**(Network Services)**	Illustration(s)
(Security)	Illustration(s)	**(Data Management)**	Illustration(s)
(Systems Analysis)	Illustration(s)	**(Internet)**	Illustration(s)
(Applications Software)	Illustration(s)	**(Systems Administration)**	Illustration(s)
(Operating Systems)	Illustration(s)	**(Customer Support)**	Illustration(s)

FLD

Nature of Assignment – Work consists of various duties that involve applying a series of different and unrelated processes and methods.

What Needs To Be Done – The employee:

- decides what needs to be done based on analyses of the subjects and issues related to the assignment; and
- selects appropriate courses of action from many acceptable alternatives.

Difficulty and Originality Involved – The employee identifies and analyzes important factors and conditions in order to recognize and apply an understanding of interrelationships among different IT functions and activities.

Level 4-4 — 225 Points

Series

Information Technology Management, GS-2210

Title/Specialties

Information Technology Specialist	Illustration(s)		
(Policy and Planning)	Illustration(s)	**(Network Services)**	Illustration(s)
(Security)	Illustration(s)	**(Data Management)**	Illustration(s)
(Systems Analysis	Illustration(s)	**(Internet)**	Illustration(s)
(Applications Software)	Illustration(s)	**(Systems Administration)**	Illustration(s)
(Operating Systems)	Illustration(s)	**(Customer Support)**	Illustration(s)

FLD

Nature of Assignment – Work consists of a variety of duties that involve many different and unrelated processes and methods pertinent to the IT field.

What Needs To Be Done – The employee decides what needs to be done by:

- evaluating unusual circumstances;
- considering different approaches; and
- dealing with incomplete and conflicting data.

Difficulty and Originality Involved – The employee uses judgment and originality by:

- interpreting data;
- planning the work; and
- refining the methods and techniques being used.

Level 4-5 — 325 Points

Series

Information Technology Management, GS-2210

Title/Specialties

Information Technology Specialist	Illustration(s)		
(Policy and Planning)	Illustration(s)	**(Network Services)**	Illustration(s)
(Security)	Illustration(s)	**(Data Management)**	Illustration(s)
(Systems Analysis)	Illustration(s)	**(Internet)**	Illustration(s)
(Applications Software)	Illustration(s)	**(Systems Administration)**	Illustration(s)
(Operating Systems)	Illustration(s)	**(Customer Support)**	Illustration(s)

FLD

Nature of Assignment – Work consists of a variety of duties requiring the application of many different and unrelated processes and methods to a broad range of IT activities or to the in-depth analysis of IT isssues.

What Needs To Be Done – The employee makes decisions that involve major uncertainties with regard to the most effective approach or methodology to be applied. These changes typically result from:

- continuing changes in customer business requirements; or
- rapidly evolving technology in the specialty areas.

Difficulty and Originality Involved – The employee:

- develops new standards, methods, and techniques;
- evaluates the impact of technological change; and/or
- conceives of solutions to highly complex technical issues.

The work frequently involves integrating the activities of multiple specialty areas.

Level 4-6 — 450 Points

FLD

Series

Information Technology Management, GS-2210

Title/Specialties

Information Technology Specialist

(Policy and Planning)	**(Network Services)**
(Security)	**(Data Management)**
(Systems Analysis)	**(Internet)**
(Applications Software)	**(Systems Administration)**
(Operating Systems)	**(Customer Support)**

Nature of Assignment – Work consists of broad functions and processes such as:

- planning and leading efforts to address issues in areas where precedents do not exist; and
- establishing new concepts and approaches.

Assignments are characterized by:

- exceptional breadth and intensity of effort; and
- often involving several activities being pursued concurrently or sequentially with the support of others within or outside the agency.

What Needs To Be Done – The employee decides what needs to be done by conducting extensive investigation and analysis of largely undefined factors and conditions to determine the nature and scope of problems and to devise solutions.

Difficulty and Originality Involved – The employee makes continuing efforts to develop new concepts, theories, or programs, or to solve problems that have previously resisted solution.

FACTOR 5 – SCOPE AND EFFECT

This factor covers the relationships between the nature of work, i.e., the purpose, breadth and depth of the assignment, and the effect of work products or services both within and outside the organization. Effect measures such things as whether the work output facilitates the work of others, provides timely services of a personal nature, or impacts on the adequacy of research conclusions. The concept of effect alone does not provide sufficient information to properly understand and evaluate the impact of the position. The scope of the work completes the picture allowing consistent evaluations. Only consider the effect of properly performed work. The primary components of this factor are: **Scope of the Work** and **Effect of the Work**.

NOTE: In the tables below, factor level description is abbreviated as FLD.
Factor 5 illustrations are located in Appendix F5.

Level 5-1	**25 Points**
Series	**Information Technology Management, GS-2210**
Title/Specialties	**Information Technology Specialist** **(Policy and Planning)** **(Network Services)** **(Security)** **(Data Management)** **(Systems Analysis)** **(Internet)** **(Applications Software)** **(Systems Administration)** **(Operating Systems)** **(Customer Support)**
FLD	**Scope of the Work** – Work involves: • specific, routine duties that include a few separate tasks or procedures; and • assignments that familiarize the employee with IT programs and services. **Effect of the Work** – Work affects the work of others but has little impact beyond the immediate organizational unit or beyond the delivery of limited services in a timely manner to others.

Level 5-2 — 75 Points

Series

Information Technology Management, GS-2210

Title/Specialties

Information Technology Specialist	Illustration(s)		
(Policy and Planning)		**(Network Services)**	Illustration(s)
(Security)	Illustration(s)	**(Data Management)**	Illustration(s)
(Systems Analysis)	Illustration(s)	**(Internet)**	Illustration(s)
(Applications Software)	Illustration(s)	**(Systems Administration)**	Illustration(s)
(Operating Systems)	Illustration(s)	**(Customer Support)**	Illustration(s)

FLD

Scope of the Work – Work involves:

- carrying out tasks requiring application of specific standards, methods, and procedures; and
- a complete segment of an assignment or project of broader scope.

Effect of the Work – Work affects the overall accuracy, reliability, acceptability, and timeliness of the final work products or services developed or delivered by higher-grade co-workers.

Level 5-3 — 150 Points

Series

Information Technology Management, GS-2210

Title/Specialties

Information Technology Specialist	Illustration(s)		
(Policy and Planning)	Illustration(s)	**(Network Services)**	Illustration(s)
(Security)	Illustration(s)	**(Data Management)**	Illustration(s)
(Systems Analysis)	Illustration(s)	**(Internet)**	Illustration(s)
(Applications Software)	Illustration(s)	**(Systems Administration)**	Illustration(s)
(Operating Systems)	Illustration(s)	**(Customer Support)**	Illustration(s)

FLD

Scope of the Work – Work involves a variety of common problems, questions, or situations that are dealt with in accordance with established criteria.

Effect of the Work – Work affects:

- the design, testing, implementation, operation, or support of IT systems; or
- the quality and reliability of services.

Level 5-4 — 225 Points

Series

Information Technology Management, GS-2210

Title/Specialties

Information Technology Specialist	Illustration(s)		
(Policy and Planning)	Illustration(s)	**(Network Services)**	Illustration(s)
(Security)	Illustration(s)	**(Data Management)**	Illustration(s)
(Systems Analysis)	Illustration(s)	**(Internet)**	Illustration(s)
(Applications Software)	Illustration(s)	**(Systems Administration)**	Illustration(s)
(Operating Systems)	Illustration(s)	**(Customer Support)**	Illustration(s)

FLD

Scope of the Work – Work involves:

- establishing criteria;
- formulating projects;
- assessing program effectiveness; and/or
- investigating/analyzing a variety of unusual conditions, problems, or issues.

Effect of the Work – Work affects a wide range of agency activities or the activities of other organizations.

Level 5-5 — 325 Points

Series

Information Technology Management, GS-2210

Title/Specialties

Information Technology Specialist	Illustration(s)		
(Policy and Planning)	Illustration(s)	**(Network Services)**	Illustration(s)
(Security)	Illustration(s)	**(Data Management)**	Illustration(s)
(Systems Analysis)	Illustration(s)	**(Internet)**	Illustration(s)
(Applications Software)	Illustration(s)	**(Systems Administration)**	Illustration(s)
(Operating Systems)	Illustration(s)	**(Customer Support)**	Illustration(s)

FLD

Scope of the Work – Work involves:

- isolating and defining unprecedented conditions;
- resolving critical problems; and/or
- developing, testing, and implementing new technologies.

Effect of the Work – Work affects the work of other technical experts or the development of major aspects of agencywide IT programs.

Level 5-6	450 Points

Series

Information Technology Management, GS-2210 (All Specialties)

Title/Specialties

Information Technology Specialist

(Policy and Planning)	**(Network Services)**
(Security)	**(Data Management)**
(Systems Analysis)	**(Internet)**
(Applications Software)	**(Systems Administration)**
(Operating Systems)	**(Customer Support)**

FLD

Scope of the Work – Work involves planning, developing, and carrying out broad and extensive assignments (e.g., involving several agencies) of significant interest to the public and the Government. Projects typically cut across or strongly influence a number of agencies.

Effect of the Work – Work:

- often leads to recommendations for realigning IT responsibilities among agencies or to expansion or contraction of key governmental functions or other equally significant changes in the future direction of IT programs; and/or
- affects large numbers of people on a long-term or continuing basis.

FACTOR 6 – PERSONAL CONTACTS AND FACTOR 7 – PURPOSE OF CONTACTS

These factors include face-to-face and remote dialogue – e.g., telephone, email, and video conferences – with persons not in the supervisory chain. (**NOTE**: Personal contacts with supervisors are under Factor 2 – Supervisory Controls.) The levels of these factors consider and take into account what is necessary to make the initial contact, the difficulty of communicating with those contacted, the setting in which the contact takes place, and the nature of the discourse. The setting describes how well the employee and those contacted recognize their relative roles and authorities. The nature of the discourse defines the reason for the communication and the context or environment in which the communication takes place. For example, the reason for a communication may be to exchange factual information or to negotiate. The communication may take place in an environment of significant controversy and/or with people of differing viewpoints, goals, and objectives.

Above the lowest levels, credit points under Factors 6 and 7 only for contacts that are essential for successful performance of the work and that have a demonstrable impact on the difficulty and responsibility of the work performed. Factors 6 and 7 are inter-dependent. Accordingly, use the same personal contacts for selection of both the Factor 6 and the Factor 7 levels.

Determine the appropriate level for Personal Contacts and the corresponding level for Purpose of Contacts. Obtain the point value for these factors from the intersection of the two levels as shown on the **Point Assignment Chart** at the end of this section.

PERSONAL CONTACTS	
Information Technology Management, GS-2210	
Level 1	Other employees in the immediate office or related offices. Limited contacts with the public.
Level 2	Employees and managers in the agency, both inside and outside the immediate office or related units, as well as employees, representatives of private concerns, and/or the general public, in moderately structured settings. Contact with employees and managers may be from various levels in the agency, such as: • headquarters; • regions; • districts; • field offices; or • other operating offices at the same location.

(continued)

PERSONAL CONTACTS (continued)	
Level 3	Individuals or groups from outside the agency, including consultants, contractors, vendors, or representatives of professional associations, the media, or public interest groups, in moderately unstructured settings. This level may also include contacts with agency officials who are several managerial levels removed from the employee when such contacts occur on an ad hoc basis. Must recognize or learn the role and authority of each party during the course of the meeting.
Level 4	High-ranking officials from outside the agency at national or international levels, in highly unstructured situations. Typical contacts at this level include: • heads of other agencies and Presidential advisors; • Members of Congress; • State governors or mayors of major cities; • leading representatives of foreign governments; • executives of comparable private sector organizations; • leaders of national stakeholder and/or interest groups; and • nationally recognized representatives of the news media on IT matters of national importance.

PURPOSE OF CONTACTS	
Information Technology Management, GS-2210	
Level A	To acquire, clarify, or exchange information needed to complete the assignments, regardless of the nature of the information. The information may range from easily understood to highly technical.
Level B	To plan, coordinate, or advise on work efforts, or to resolve issues or operating problems by influencing or persuading people who are working toward mutual goals and have basically cooperative attitudes. Contacts typically involve identifying options for resolving problems.
Level C	To influence and persuade employees and managers to accept and implement findings and recommendations. May encounter resistance as a result of issues such as organizational conflict, competing objectives, or resource problems. Must be skillful in approaching contacts to obtain the desired effect; e.g., gaining compliance with established policies and regulations by persuasion or negotiation.
Level D	To present justify, defend, negotiate, or settle matters involving significant or controversial issues; e.g., recommendations changing the nature and scope of programs or dealing with substantial expenditures. The work usually involves active participation in conferences, meetings, hearings, or presentations involving problems or issues of considerable consequence or importance. Persons contacted typically have diverse viewpoints, goals, or objectives requiring the employee to achieve a common understanding of the problem and a satisfactory solution by convincing them, arriving at a compromise, or developing suitable alternatives.

POINT ASSIGNMENT CHART					
Information Technology Management, GS-2210					
		Purpose of Contacts			
	Level	**A**	**B**	**C**	**D**
Personal Contacts	**1**	30	60	130*	230*
	2	45	75	145	245
	3	80	110	180	280
	4	130*	160	230	330

*THIS COMBINATION IS UNLIKELY.

⇐ **BACK**

FACTOR 8 – PHYSICAL DEMANDS

NOTE: Laws and regulations governing pay for irregular or intermittent duty involving unusual physical hardship or hazard are in *section 5545(d), of title 5, United States Code*, and *Subpart I of part 550 of title 5, Code of Federal Regulations.*

NOTE: In the table below, factor level description is abbreviated as FLD.

Level 8-1	**5 Points**
Series	**Information Technology Management, GS-2210**
FLD	The work is sedentary. Some work may require walking and standing in conjunction with travel and to attendance at meetings and conferences away from the work site. Some employees may carry light items such as papers, books, or small parts, or drive a motor vehicle. The work does not require any special physical effort.

FACTOR 9 – WORK ENVIRONMENT

NOTE: Laws and regulations governing pay for irregular or intermittent duty involving unusual physical hardship or hazard are in *section 5545(d), of title 5, United States Code*, and *Subpart I of part 550 of title 5, Code of Federal Regulations.*

NOTE: In the table below, factor level description is abbreviated as FLD.

Level 9-1	**5 Points**
Series	**Information Technology Management, GS-2210**
FLD	The work area is adequately lighted, heated, and ventilated. The work environment involves everyday risks or discomforts that require normal safety precautions. Some employees may occasionally be exposed to uncomfortable conditions in such places as research and production facilities.

GRADE CONVERSION TABLE

Convert total points on all evaluation factors to General Schedule grades using the following table. The shaded areas reflect grade levels commonly attained in this job family.

Point Range	GS Grade
190-250	1
255-450	2
455-650	3
655-850	4
855-1100	5
1105-1350	6
1355-1600	7
1605-1850	8
1855-2100	9
2105-2350	10
2355-2750	11
2755-3150	12
3155-3600	13
3605-4050	14
4055-up	15

APPENDICES

APPENDIX F1 – FACTOR 1 ILLUSTRATIONS

Level 1-6: Information Technology Specialist, GS-2210

Knowledge of, and skill in applying:

- network principles and concepts;
- network equipment and tools;
- systems administration methods and procedures;
- customer support principles;
- IT security principles;
- Troubleshooting methods; and
- communication methods and techniques

sufficient to:

- assist in implementing and maintaining network and systems services;
- monitor network and systems performance and troubleshoot minor problems;
- document and initiate response to security problems; and
- provide guidance and training to customers in accessing network and systems services.

⇐ BACK

Level 1-6: Information Technology Specialist (Policy and Planning), GS-2210

Knowledge of, and skill in applying:

- IT concepts;
- program management principles;
- communication techniques; and
- analytical reasoning

sufficient to:

- provide input to drafting position papers on IT issues such as policy implications of new business strategies; e.g., e-Government, knowledge management, and paperwork elimination;
- identify relevant information including industry standards and practices;
- present alternatives;
- make recommendations; and
- assist in implementing decisions.

⇐ BACK

(continued)

Level 1-6: Information Technology Specialist (Policy and Planning), GS-2210 (continued)

Knowledge of, and skill in applying:

- IT concepts;
- program management principles;
- communication techniques; and
- analytical ability

sufficient to:

- monitor state-of-the-art IT developments; and
- make recommendations on how to address trends and new technologies within the context of agency policies, plans, and management strategies.

⇐ BACK

Knowledge of, and skill in applying:

- IT concepts;
- program management principles;
- communication techniques; and
- analytical ability

sufficient to monitor changes in Federal legislation and agency guidance, policy, regulations, and directives for potential impact on organizational policies.

⇐ BACK

Level 1-6: Information Technology Specialist (Security), GS-2210

Knowledge of, and skill in applying:

- IT security principles and methods;
- commercial systems security products;
- technical documentation methods; and
- performance management methods

sufficient to:

- carry out activities leading to security certification or accreditation;
- conduct integrated analysis of multiple audit logs (e.g., firewall, Web server);
- identify violations and recommend corrective actions; and
- provide input in drafting information systems security documentation (e.g., systems security plans, risk assessments, disaster recovery plans, business continuity plans, and user security guides).

⇐ BACK

Knowledge of, and skill in applying, risk factors associated with maintaining IT security, such as computer viruses, hackers, and denials of service, sufficient to:

- implement corrective or preventive actions; and
- mitigate risks; e.g., installing security patches, running anti-virus or other utilities.

⇐ BACK

(continued)

Level 1-6: Information Technology Specialist (Security), GS-2210 (continued)

Knowledge of, and skill in applying:

- IT security principles and methods; and
- IT security regulations and policies

sufficient to participate in identifying and writing specifications to meet IT security requirements at the applications or network server level.

⇐ BACK

Level 1-6: Information Technology Specialist (Systems Analysis) GS-2210

Knowledge of, and skill in applying:

- systems analysis methods, tools, and techniques;
- basic IT architecture; and
- technical documentation methods

sufficient to:

- participate as a member of a team developing preliminary design specifications;
- meet with customers to collect information about business requirements; and
- present draft specifications to the team leader for discussion.

⇐ BACK

Knowledge of, and skill in applying:

- systems analysis principles and methods;
- analytical methods; and
- life cycle management principles

sufficient to:

- draft customer business requirements;
- assist applications developers in translating requirements into programming specifications; and
- clarify and update requirements where appropriate.

⇐ BACK

Level 1-6: Information Technology Specialist (Applications Software), GS-2210

Knowledge of, and skill in applying:

- applications software principles and methods;
- programming languages;
- systems development processes; and
- technical documentation procedures

sufficient to:

- participate on a team designing, developing, testing, and implementing software for less complex programs, such as modifying input forms;
- document customer business rules;
- develop flow diagrams and/or pseudo-code;
- test and debug programs according to detailed requirements; and
- submit completed applications software to the project leader.

⇐ BACK

Knowledge of, and skill in applying:

- applications software principles and methods;
- programming languages; and
- technical documentation methods and procedures

sufficient to support the maintenance of existing applications software.

⇐ BACK

Level 1-6: Information Technology Specialist (Operating Systems), GS-2210

Knowledge of, and skill in applying:

- software installation and configuration procedures;
- life cycle management principles;
- optimization methods; and
- analytical methods

sufficient to assist in readying the operating environment to support testing activities.

⇐ BACK

(continued)

Level 1-6: Information Technology Specialist (Operating Systems), GS-2210 (continued)

Knowledge of, and skill in applying:

- software installation and configuration procedures;
- operational environments;
- life cycle management concepts; and
- analytical methods

sufficient to:

- assist in the installation of operating systems update packages;
- run tests and correct problems; and
- recognize and refer serious problems to more experienced specialists or vendors.

⇐ BACK

Knowledge of, and skill in applying:

- IT principles and methods;
- operating systems environments; and
- analytical methods

sufficient to:

- analyze reports;
- identify deficiencies in operating systems parameters; and
- recommend remediation to a more experienced specialist.

⇐ BACK

Knowledge of, and skill in applying:

- IT principles and methods;
- operating systems environments;
- scripting languages; and
- analytical methods

sufficient to build automated backup and recovery procedures.

⇐ BACK

Level 1-6: Information Technology Specialist (Network Services), GS-2210

Knowledge of, and skill in applying:

- network standards;
- network management tools; and
- network equipment capabilities

sufficient to troubleshoot and maintain the stability of communications lines and equipment.

⇐ BACK

(continued)

Level 1-6: Information Technology Specialist (Network Services), GS-2210 (continued)

Knowledge of, and skill in applying:

- network standards and equipment;
- network architecture principles; and
- local area network and wide area network (LAN and WAN) principles

sufficient to install, configure, and troubleshoot LAN and WAN components such as routers, hubs, switches, and servers.

⇐ BACK

Knowledge of, and skill in applying:

- network principles and concepts; and
- network equipment and tools

sufficient to:

- assist in maintaining network services, such as Dynamic Host Configuration Protocol (DHCP), Domain Name Server (DNS), and directory services;
- install, test, and configure network workstations and peripherals; and
- instruct customers in logging on and accessing network services.

⇐ BACK

Knowledge of, and skill in applying:

- configuration management concepts; and
- life cycle management concepts

sufficient to identify the need to upgrade or enhance network component capabilities in response to network problems and deficiencies; e.g., degradation of service.

⇐ BACK

Level 1-6: Information Technology Specialist (Data Management), GS-2210

Knowledge of, and skill in applying:

- data management concepts and methods;
- IT security principles; and
- technical documentation procedures

sufficient to update:

- user manuals;
- authentication procedures;
- installation procedures;
- systems administrator functions; and
- related IT security features.

⇐ BACK

(continued)

Level 1-6: Information Technology Specialist (Data Management), GS-2210 (continued)

Knowledge of, and skill in applying:

- data management concepts and methods;
- IT security principles; and
- operating environments

sufficient to execute a variety of database utility functions.

⇐ BACK

Knowledge of, and skill in applying:

- data management methods;
- communication methods; and
- analytical methods

sufficient to assist customers in navigating and accessing databases using various interface methods.

⇐ BACK

Knowledge of, and skill in applying:

- data management principles;
- data storage technology;
- operating systems;
- commonly used platforms; and
- backup and recovery procedures

sufficient to implement operating systems procedures for running timed or scheduled events such as file backups.

⇐ BACK

Level 1-6: Information Technology Specialist (Internet), GS-2210

Knowledge of, and skill in applying:

- Web page design principles and methods;
- graphics markup languages;
- multimedia principles, methods, and tools;
- programming languages;
- file formats; and
- browser technical requirements

sufficient to:

- ensure that new Web pages are consistent with relevant design and formatting standards; and
- advise content developers on Web page requirements.

⇐ BACK

(continued)

Level 1-6: Information Technology Specialist (Internet), GS-2210 (continued)

Knowledge of, and skill in applying:

- Internet operations;
- graphics markup languages;
- programming languages;
- Internet server maintenance techniques;
- software validation tools;
- performance monitoring methods; and
- analytical methods

sufficient to:

- diagnose and troubleshoot Web site operational problems such as broken links or file directory, server, or applications problems;
- make corrections; and
- restore functionality.

⇐ BACK

Knowledge of, and skill in applying:

- Internet principles;
- programming languages;
- optimization or tuning tools;
- Internet clients;
- browser technology;
- quality assurance principles; and
- analytical methods

sufficient to:

- fine tune Web pages and other Internet services to ensure compatibility with different browsers; and
- test new browser versions for compatibility with existing services.

⇐ BACK

Level 1-6: Information Technology Specialist (Systems Administration), GS-2210

Knowledge of, and skill in applying:

- systems administration methods and procedures;
- performance monitoring methods; and
- analytical methods

sufficient to:

- install server upgrades;
- schedule downtime to minimize user impact;
- monitor server performance using performance monitoring tools; and
- recognize and refer problems to more experienced specialists.

⇐ BACK

(continued)

Level 1-6: Information Technology Specialist (Systems Administration), GS-2210 (continued)

Knowledge of, and skill in applying:

- systems administration methods and procedures; and
- performance monitoring methods

sufficient to schedule, monitor, and verify the integrity of system backups and restore files as needed.

⇐ BACK

Knowledge of, and skill in applying:

- systems administration methods;
- IT security principles; and
- analytical reasoning

sufficient to correct security vulnerabilities in assigned systems in response to problems identified in vulnerability reports.

⇐ BACK

Knowledge of, and skill in applying:

- systems administration methods and procedures; and
- analytical methods

sufficient to serve as a member of a team responsible for planning and managing large-scale server deployment.

⇐ BACK

Level 1-6: Information Technology Specialist (Customer Support), GS-2210

Knowledge of, and skill in applying:

- customer support principles;
- installed systems bases;
- IT security principles;
- methods and procedures for documenting resolutions;
- problem resolution databases;
- troubleshooting and data analysis methods; and
- communication methods and techniques

sufficient to:

- receive, respond to, and ensure complete resolution of any help center call;
- document actions taken;
- give needed guidance or training to customers to prevent recurrences; and
- assist more experienced specialists in resolving very complex problems.

⇐ BACK

(continued)

Level 1-6: Information Technology Specialist (Customer Support), GS-2210 (continued)

Knowledge of, and skill in applying:

- customer support concepts and methods;
- the organization's IT infrastructure;
- IT security principles; and
- new IT products and services

sufficient to install, configure, and test software on customer workstations.

⇐ BACK

Level 1-7: Information Technology Specialist, GS-2210

Knowledge of, and skill in applying:

- systems analysis concepts and methods;
- customer business requirements;
- applications software design concepts and methods;
- customer support principles, concepts, and methods; and
- analytical reasoning

sufficient to:

- develop technical requirements for new or modified applications;
- analyze and determine optimal hardware and software configurations;
- provide technical guidance in the design, coding, testing, and debugging process;
- assist customers in installing applications;
- troubleshoot post-installation problems; and
- coordinate the technical support of deployed applications.

⇐ BACK

Level 1-7: Information Technology Specialist (Policy and Planning), GS-2210

Knowledge of, and skill in applying:

- capital planning principles and methods;
- the enterprise architecture;
- the organization's IT goals and objectives;
- policy and planning processes;
- cost benefit analysis methods; and
- performance metrics

sufficient to prepare capital investment plans to support the organization's mission.

⇐ BACK

(continued)

Level 1-7: Information Technology Specialist (Policy and Planning), GS-2210 (continued)

Knowledge of, and skill in applying:

- IT methods and best practices;
- the organization's mission and programs;
- the organization's IT infrastructure;
- performance management methods;
- requirements analysis methods; and
- cost benefits analysis methods

sufficient to assist other organizations in developing business cases including establishing IT performance metrics and anticipated total cost of ownership.

⇐ BACK

Knowledge of, and skill in applying:

- IT best practices;
- the organization's mission and programs; and
- new technologies

sufficient to:

- draft position papers on IT issues such as the implementation of emerging technologies;
- identify and interpret relevant information including industry standards and practices;
- develop alternative approaches to addressing issues;
- recommend solutions; and
- lead the implementation of management decisions.

⇐ BACK

Knowledge of, and skill in applying:

- IT best practices;
- the policy and planning formulation process;
- the organization's mission and programs;
- requirements analysis methods; and
- cost benefit analysis methods

sufficient to:

- evaluate the impact of changes in business needs on current policy;
- conduct feasibility studies;
- identify solutions; and
- present recommendations to management.

⇐ BACK

Level 1-7: Information Technology Specialist (Security), GS-2210

Knowledge of, and skill in applying:

- IT security principles and methods; and
- IT security products and services

sufficient to evaluate, recommend the acquisition of, implement, and disseminate IT security tools, procedures, and practices to protect information assets.

⇐ BACK

Knowledge of, and skill in applying:

- IT security principles and methods;
- requirements analysis principles and methods; and
- procedures for purchasing/using COTS products

Sufficient to plan and coordinate the delivery of an IT security awareness training program for end users at all levels in the organization.

⇐ BACK

Knowledge of, and skill in applying:

- IT security principles and methods;
- analytical ability; and
- communications techniques

sufficient to:

- update the organization's contingency or disaster recovery plans to respond to new security requirements or changes in the IT architecture; and
- present updated plans to the IT security manager for review and approval.

⇐ BACK

Knowledge of, and skill in applying:

- IT security principles and methods;
- requirements for certification and accreditation;
- systems testing and evaluation; and
- performance management methods

sufficient to:

- plan and conduct security accreditation reviews for installed systems or networks; and
- recommend new or revised security measures and countermeasures based on the results of accreditation reviews.

⇐ BACK

(continued)

Level 1-7: Information Technology Specialist (Security), GS-2210 (continued)

Knowledge of, and skill in applying:

- information systems security principles; and
- test and assessment methods

sufficient to:

- evaluate new security authentication technologies such as public key infrastructure certificates, secure cards, and biometrics;
- recommend the purchase of authentication software; and
- administer and monitor implementation.

⇐ BACK

Knowledge of, and skill in applying:

- information systems security principles and methods;
- network operations and protocols; and
- life cycle management principles

sufficient to:

- identify and specify information systems security requirements associated with migrations to new environments; and
- provide guidance in planning and implementing migration activities.

⇐ BACK

Knowledge of, and skill in applying:

- systems security principles and methods; and
- systems security regulations and policies

sufficient to develop specifications to ensure compliance with security requirements at the systems or LAN level.

⇐ BACK

Level 1-7: Information Technology Specialist (Systems Analysis), GS-2210

Knowledge of, and skill in applying:

- systems analysis concepts and techniques;
- structured analysis principles;
- customers' business processes and operations;
- life cycle management concepts;
- cost-benefit analysis methods; and
- Internet technologies

sufficient to:

- evaluate the feasibility of proposed new systems development projects;
- consult with customers to refine functional requirements;
- translate functional requirements into design specifications;
- determine best approaches for implementation within the technical environment; and
- work with applications developers to isolate and solve design problems encountered during testing and implementation stages.

⇐ BACK

Level 1-7: Information Technology Specialist (Applications Software), GS-2210

Knowledge of, and skill in applying:

- applications software development concepts and techniques;
- methods for integrating and optimizing components;
- infrastructure requirements;
- database management features; and
- test and evaluation methods

sufficient to:

- provide technical guidance in designing, coding, testing, debugging, and maintaining programs;
- translating and interpreting functional requirements;
- applying computer assisted software engineering (CASE) tools to the design and development process;
- testing, installing, implementing, documenting, and maintaining software; and
- providing guidance to less experienced coworkers in solving programming problems.

⇐ BACK

Knowledge of, and skill in applying:

- software design concepts and methods;
- procedures for integrating and optimizing components;
- infrastructure requirements;
- database management;
- systems test and evaluation methods; and
- requirements analysis methods

sufficient to design, code, test, and debug large and complex programs; e.g., mission critical or with enterprise-wide impact, including:

- maintaining source code; and
- modifying and upgrading code as necessary.

⇐ BACK

(continued)

Level 1-7: Information Technology Specialist (Applications Software), GS-2210 (continued)

Knowledge of, and skill in applying:

- software design principles and methods;
- infrastructure requirements;
- systems test and evaluation methods; and
- new software design technologies

sufficient to:

- design and update standards used to develop object-oriented graphical user interfaces; and
- set standards applicable to the design, development, and integration of new and reusable systems components.

⇐ BACK

Knowledge of, and skill in applying:

- software design principles and methods;
- test and evaluation methods; and
- project management methods

sufficient to coordinate efforts to enhance software reliability through leadership of discussions of enhanced application design methodologies; e.g., Capability Maturity Model (CMM).

⇐ BACK

Level 1-7: Information Technology Specialist (Operating Systems), GS-2210

Knowledge of, and skill in applying:

- operating systems software principles and methods;
- life cycle management concepts;
- IT infrastructure;
- IT security principles and methods;
- systems testing and evaluation principles and methods; and
- troubleshooting procedures

sufficient to:

- install, configure, test, and implement vendor supplied modifications to existing systems software;
- develop and evaluate test data to validate program modifications; and
- migrate modifications into production systems.

⇐ BACK

Knowledge of, and skill in applying:

- operating systems principles and methods; and
- performance management and measurement methods

sufficient to:

- monitor systems performance data; and
- make appropriate systems tuning adjustments to optimize performance and correct and prevent problems.

⇐ BACK

(continued)

Level 1-7: Information Technology Specialist (Operating Systems), GS-2210 (continued)

Knowledge of, and skill in applying:

- operating systems principles and methods; and
- the operating environment

sufficient to consult with applications developers to determine the effect on end user applications resulting from changes to the operating environment; e.g., new software or hardware installations.

⇐ BACK

Knowledge of, and skill in applying:

- operating systems principles and methods;
- functionality of the current systems environment;
- requirements analysis methods; and
- COTS products and components

sufficient to determine and properly configure systems components such as disk drives, printers, and other peripherals needed to support the operating environment.

⇐ BACK

Knowledge of, and skill in applying:

- operating systems principles and methods;
- the current operating environment;
- life cycle management concepts;
- performance management and optimization methods; and
- acquisition management policies and procedures

sufficient to:

- plan and coordinate the installation, upgrade, and maintenance of the operating environment, including:
  - compilers;
  - utilities;
  - communications systems;
  - systems management products;
  - third-party systems software;
  - security packages;
  - scheduling systems; and
  - applications software packages; and
- evaluate, select, and coordinate the acquisition of appropriate systems software packages and hardware.

⇐ BACK

Level 1-7: Information Technology Specialist (Network Services), GS-2210

Knowledge of, and skill in applying:

- network design principles and concepts;
- network architecture principles and concepts;
- network protocols; and
- remote access technology concepts

sufficient to establish connectivity between remote sites.

⇐ BACK

Knowledge of, and skill in applying:

- network operation and maintenance concepts and methods;
- network architecture principles and concepts; and
- network management tools

sufficient to:

- create network maps; and
- troubleshoot network problems; e.g., outages.

⇐ BACK

Knowledge of, and skill in applying:

- network design principles and concepts;
- configuration management concepts and practices;
- network topology concepts; and
- LAN and WAN development principles and methods

sufficient to develop and implement configuration management plans for complex LANs and WANs.

⇐ BACK

Knowledge of, and skill in applying:

- network operations, management, and maintenance methods and concepts;
- network architecture principles and concepts;
- network optimization techniques; and
- analytical reasoning

sufficient to serve as network administrator, including responsibility for:

- configuring hubs, switches, and routers;
- monitoring network performance;
- performing network diagnostics;
- analyzing network traffic patterns; and
- installing network software fixes and upgrades.

⇐ BACK

(continued)

Level 1-7: Information Technology Specialist (Network Services), GS-2210 (continued)

Knowledge of, and skill in applying:

- network design and development concepts;
- network architecture principles and concepts; and
- acquisition management policies

sufficient to develop requirements for the acquisition of network hardware, software, and services.

⇐ BACK

Level 1-7: Information Technology Specialist (Data Management), GS-2210

Knowledge of, and skill in applying:

- database management concepts and principles;
- the organization's data assets; and
- data administration and data standardization methods

sufficient to:

- develop data models;
- produce database design schema for integrating source data into data management systems;
- ensure compliance with data management standards; and
- recommend new or modified standards to increase efficiency.

⇐ BACK

Knowledge of, and skill in applying:

- database management principles and methods;
- the organization's data assets and technical architecture; and
- performance management and optimization methods

sufficient to:

- conduct performance tuning activities designed to optimize data management processes; and
- recommend performance enhancements such as increasing storage capacity or modifying interfaces.

⇐ BACK

Knowledge of, and skill in applying:

- database management principles and methods;
- the organization's data assets and technical architecture; and
- performance management and optimization methods

sufficient to plan and coordinate the migration of data to a newer version of a database management system.

⇐ BACK

(continued)

Level 1-7: Information Technology Specialist (Data Management), GS-2210 (continued)

Knowledge of, and skill in applying:

- database management principles and methods;
- the organization's data assets;
- storage media tools;
- IT security methods; and
- project management methods

sufficient to:

- perform a wide range of database administration functions;
- run test queries;
- troubleshoot database problems;
- maintain version control of database entities;
- advise customers on new database features; and
- lead studies to evaluate the effectiveness of current database methods and procedures.

⇐ BACK

Level 1-7: Information Technology Specialist (Internet), GS-2210

Knowledge of, and skill in applying:

- available Internet technologies;
- programming and scripting languages;
- Internet protocols;
- usability concepts;
- accessibility requirements;
- customers' missions and programs;
- requirements analysis methods; and
- analytical reasoning

sufficient to:

- optimize existing Web sites; and
- provide guidance in design and development of new Web sites.

⇐ BACK

Knowledge of, and skill in applying:

- Internet technologies;
- programming languages;
- Internet protocols;
- usability concepts;
- IT security principles;
- database management principles; and
- requirements analysis methods

sufficient to provide technical consultation to database developers in the development and implementation of Internet-enabled databases.

⇐ BACK

(continued)

Level 1-7: Information Technology Specialist (Internet), GS-2210 (continued)

Knowledge of, and skill in applying:

- Internet technologies;
- Internet protocols, including security protocols;
- database management principles;
- Internet server operations; and
- analytical reasoning

sufficient to select, implement, and maintain data protection mechanisms to provide secure transmission capabilities for e-Government, e-Business, or e-Commerce applications.

⇐ BACK

Knowledge of, and skill in applying:

- Internet technologies;
- Internet protocols;
- usability concepts;
- Internet security;
- database management principles;
- Internet server operations; and
- COTS products

sufficient to:

- design Internet portals to provide access to services such as email, databases, and management tools; and
- integrate third-party applications into Internet services.

⇐ BACK

Level 1-7: Information Technology Specialist (Systems Administration), GS-2210

Knowledge of, and skill in applying:

- methods to integrate systems components; and
- performance tuning tools

sufficient to:

- optimize systems performance;
- reallocate resources as they become available; and
- recommend additional components to improve overall systems performance.

⇐ BACK

(continued)

Level 1-7: Information Technology Specialist (Systems Administration), GS-2210 (continued)

Knowledge of, and skill in applying:

- systems integration methods;
- performance tuning methods;
- test and evaluation methods and procedures;
- IT security principles and methods; and
- project management principles and methods

sufficient to:

- plan and coordinate the installation of new products or equipment; e.g., servers;
- work closely with customer officials to ensure seamless implementation;
- resolve installation problems;
- identify and mitigate security vulnerabilities and risks; and
- maintain server integrity and availability.

⇐ BACK

Knowledge of, and skill in applying:

- systems integration methods;
- the mission and programs of customer organizations;
- the IT infrastructure;
- requirements analysis methods; and
- new technologies

sufficient to:

- identify and anticipate server performance, availability, capacity or configuration problems; and
- initiate corrective or preventive actions, such as increasing disk or memory capacity to improve performance.

⇐ BACK

Level 1-7: Information Technology Specialist (Customer Support), GS-2210

Knowledge of, and skill in applying:

- customer support concepts and methods; and
- installed applications, operating systems, network systems, protocols, and equipment

sufficient to prepare standard log-in scripts and establish network access protocols to enable customers to gain local or remote access.

⇐ BACK

(continued)

Level 1-7: Information Technology Specialist (Customer Support), GS-2210 (continued)

Knowledge of, and skill in applying:

- customer support concepts and methods;
- procedures for troubleshooting and recovering systems and files; and
- customer organizations' IT infrastructures

sufficient to review, validate, and standardize problem resolutions for inclusion in the problem resolution database.
⇐ BACK

Knowledge of, and skill in applying:

- customer support concepts and methods;
- installed operating systems, network systems, applications, protocols, and equipment; and
- the IT infrastructure

sufficient to serve as senior customer technical analyst with responsibility for resolving the most complex customer problems; e.g., by reimaging customer workstations and correcting other workstations affected by similar problems.
⇐ BACK

Knowledge of, and skill in applying:

- customer support concepts and practices; and
- new customer support technologies

sufficient to:

- evaluate and report on new tools and trends in the customer support field such as browser-based and speech-enabled customer support services;
- organize vendor demonstration sessions for other specialists; and
- recommend purchase of new tools to enhance the delivery of customer support services.

⇐ BACK

Level 1-8: Information Technology Specialist, GS-2210

Mastery of, and skill in applying:

- interrelationships of multiple IT disciplines;
- business requirements of customer organizations;
- systems development principles and approaches;
- information systems security principles and concepts;
- applications software design concepts and methods;
- network management methods;
- customer support principles, methods, and practices; and
- project management methods

sufficient to:

- lead IT systems development projects from design to support;
- evaluate the effectiveness of installed systems and services; and
- provide advice on and devise solutions to a wide range of IT issues.

⇐ BACK

Level 1-8: Information Technology Specialist (Policy and Planning), GS-2210

Mastery of, and skill in applying:

- policy and planning concepts and practices;
- interrelationships of multiple IT disciplines;
- the enterprise IT architecture;
- performance management and measurement methods and tools; and
- project management methods

sufficient to:

- lead development of an enterprise IT modernization plan;
- work with other departments to establish priorities for IT investments,
- build business cases,
- demonstrate total cost of investment; and
- establish metrics and associated performance measurement tools.

⇐ BACK

Mastery of, and skill in applying:

- policy and planning concepts and practices;
- interrelationships of multiple IT disciplines; and
- project management methods

sufficient to manage communities of interest involved in the development and implementation of workable approaches to IT architecture, capital investment planning, e-Government, and other IT-related legislative and policy initiatives.

⇐ BACK

Level 1-8: Information Technology Specialist (Security), GS-2210

Mastery of, and skill in applying:

- IT systems security principles, concepts, and methods; and
- the infrastructure protection environment;

sufficient to develop long-range plans for IT security systems that anticipate, identify, evaluate, mitigate, and minimize risks associated with IT systems vulnerabilities.

⇐ BACK

Mastery of, and skill in applying:

- information systems security principles and concepts;
- the enterprise IT architecture;
- new IT security developments; and
- project management principles and methods

sufficient to:

- lead the implementation of security programs designed to anticipate, assess, and minimize system vulnerabilities; e.g., intrusion detection or access authentication programs;
- coordinate the implementation of security programs across platforms; and
- establish vulnerability reporting criteria.

⇐ BACK

Mastery of, and skill in applying:

- information systems security concepts and methods;
- multiple IT disciplines,
- enterprise IT architecture; and
- project management principles and methods

sufficient to:

- review and evaluate security incident response policies;
- identify need for changes based on new security technologies or threats;
- test and implement new policies; and
- institute measures to ensure awareness and compliance.

⇐ BACK

Mastery of, and skill in applying:

- information systems security principles, concepts, and methods;
- the infrastructure protection environment; and
- interrelationships of multiple IT disciplines

sufficient to:

- review proposed new systems, networks, and software designs for potential security risks;
- recommend for mitigation or countermeasures; and
- resolve integration issues related to the implementation of new systems within the existing infrastructure.

⇐ BACK

(continued)

Level 1-8: Information Technology Specialist (Security), GS-2210 (continued)

Mastery of, and skill in applying:

- information systems security principles, and concepts;
- infrastructure protection environment;
- interrelationships of multiple IT disciplines; and
- the Federal IT security hierarchy

sufficient to:

- implement higher-level security requirements such as those resulting from laws, regulations, or Presidential directives;
- integrate security programs across disciplines; and
- define the scope and level of detail for security plans and policies applicable to the security program.

⇐ BACK

Mastery of, and skill in applying, systems security principles, methods, regulations, and policies sufficient to plan and coordinate the development of specifications to meet security requirements at the agency or wide area network (WAN) level.

⇐ BACK

Level 1-8: Information Technology Specialist (Systems Analysis), GS-2210

Mastery of, and skill in applying:

- systems analysis principles and techniques;
- process engineering concepts; and
- new IT technologies

sufficient to:

- assess new systems design methodologies to improve software quality;
- accurately represent customer requirements;
- effectively measure software development risk;
- present recommendations for adoption of new methodologies; and
- lead implementation.

⇐ BACK

Mastery of, and skill in applying:

- systems analysis principles and techniques;
- enterprise IT architecture; and
- new IT technologies

sufficient to:

- review the impact of new systems design policies on the systems design process;
- recommend most beneficial implementation approaches; and
- lead implementation activities.

⇐ BACK

Level 1-8: Information Technology Specialist (Applications Software), GS-2210

Mastery of, and skill in applying:

- software design concepts and methods;
- relationships among multiple IT disciplines;
- the IT infrastructure; and
- project management principles and methods

sufficient to:

- lead a multifunctional development project in software analysis, design, development, and implementation for a new system or major enhancement to an existing system;
- draft project plans;
- identify resource requirements;
- assign tasks to project members;
- report progress;
- ensure customer and management involvement throughout the software development process;
- resolve critical issues affecting the configuration of the IT infrastructure; and
- coordinate the demonstration of new and enhanced applications to customers and management.

⇐ BACK

Mastery of, and skill in applying:

- applications software design concepts and methods;
- new technologies; and
- project management principles;

sufficient to lead the applications development process to identify and correct:

- weaknesses in critical performance parameters; and
- variances in achieving cost, schedule, and performance goals.

⇐ BACK

Mastery of, and skill in applying:

- applications software design principles and methods; and
- interrelationships between IT disciplines; and
- new software design technologies

sufficient to:

- investigate, evaluate, and select tools and methods for improving productivity and software quality throughout the life cycle;
- assess the feasibility of adopting new software design technologies within the current systems environment; and
- develop best practices guides for use by other applications software specialists.

⇐ BACK

Level 1-8: Information Technology Specialist (Operating Systems), GS-2210

Mastery of, and skill in applying:

- operating systems theories and concepts; and
- interrelationships of multiple IT disciplines

sufficient to:

- provide authoritative advice to other specialists in areas such as disaster recovery, capacity planning, applications development, hardware strategy, and operating systems security; and
- develop and implement agency guidelines.

⇐ BACK

Mastery of, and skill in applying:

- operating systems theories and concepts;
- the interrelationships of multiple IT disciplines; and
- project management principles, methods, and practices

sufficient to:

- lead a major operating systems project, e.g., installation of new operating environments or implementation of new operating systems patches, upgrades, and releases;
- consult with developers or vendors in defining requirements and identifying integration issues;
- oversee installation, customization, testing, and implementation of the operating environment; and
- work with vendor software engineers to correct problems and enhance performance.

⇐ BACK

Mastery of, and skill in applying:

- operating systems theories and concepts;
- Internet technologies;
- the interrelationships of multiple IT disciplines; and
- the operating environment

sufficient to:

- evaluate the impact of new and proposed applications on the operating environment; and
- recommend changes to ensure the functionality and stability of the operating environment.

⇐ BACK

Level 1-8: Information Technology Specialist (Network Services), GS-2210

Mastery of, and skill in applying:

- network management methods;
- network enterprise architecture;
- bandwidth management concepts;
- work flow concepts,
- IT security methods;
- agency-level business and mission requirements; and
- project management principles

sufficient to manage a large and complex network including:

- conducting cost-benefit analyses and total cost of ownership and capacity studies;
- establishing routing schema;
- establishing security practices;
- developing contingency and recovery plans;
- maintaining directory services;
- managing domain name services;
- providing intranet, Internet, or extranet gateways; and
- coordinating other actions to ensure the implementation of networks that support mission requirements.

⇐ BACK

Mastery of, and skill in applying:

- network management systems concepts;
- network architecture;
- advanced network technologies; and
- project management methods

sufficient to lead the implementation of major projects such as:

- upgrading from hubs to switches;
- consolidating regional networks; and
- redesigning network infrastructure in response to changes in network technologies or network requirements.

⇐ BACK

Mastery of, and skill in applying:

- network management systems;
- network architectures;
- IT security; and
- project management methods

sufficient to develop contingency plans to ensure continuous availability and accessibility of network resources in the event of emergencies.

⇐ BACK

(continued)

Level 1-8: Information Technology Specialist (Network Services), GS-2210 (continued)

Mastery of, and skill in applying:

- network management systems methods;
- network and IT architectures;
- available bandwidth resources; and
- IT security policies

sufficient to manage the design of network architectures, including:

- evaluating and defining infrastructure requirements;
- selecting hardware and software components;
- assembling installation teams;
- coordinating network implementation planning; and
- overseeing testing and implementation.

⇐ BACK

Level 1-8: Information Technology Specialist (Data Management), GS-2210

Mastery of, and skill in applying:

- database management concepts and techniques;
- project management principles and methods;
- data mining, storage, and warehousing methods; and
- the agency-level IT infrastructure

sufficient to:

- lead a project to develop and implement new data management schema;
- plan and coordinate the development of data structures and access strategies in alignment with business and mission requirements;
- develop technical designs;
- identify systems requirements;
- validate data sources;
- establish testing, implementation, and post-implementation support procedures;
- develop user instructions; and
- coordinate the evaluation and selection of data management tools.

⇐ BACK

(continued)

Level 1-8: Information Technology Specialist (Data Management), GS-2210 (continued)

Mastery of, and skill in applying:

- data management concepts and techniques;
- the enterprise IT infrastructure;
- interrelationships among multiple IT specialties; and
- project management principles and methods

sufficient to:

- plan and manage the migration of databases to new technologies, such as the migration from client-server to Web-enabled databases; and
- plan and oversee the installation or reinstallation process and coordinate with specialists in other functional areas to resolve connectivity, compatibility, reliability, security, and related issues.

⇐ BACK

Level 1-8: Information Technology Specialist (Internet), GS-2210

Mastery of, and skill in applying:

- Internet services concepts and best practices;
- Internet services architecture;
- interrelationships of multiple IT disciplines; and
- project management principles

sufficient to:

- lead the development of agency-level Internet policies ;
- identify policy needs and priorities;
- establish policy development agendas; and
- prepare and implement metrics for measuring policy effectiveness.

⇐ BACK

Mastery of, and skill in applying:

- Internet services;
- project management principles and methods; and
- the enterprise IT architecture

sufficient to:

- formulate a vision for future applications of Internet services to meet agency missions; and
- develop business plans to align Internet services with business requirements.

⇐ BACK

(continued)

Level 1-8: Information Technology Specialist (Internet), GS-2210 (continued)

Mastery of, and skill in applying:

- Internet technologies and services; and
- new Internet technologies

sufficient to:

- research, evaluate, and report on new and emerging developments in the Internet services area; and
- recommend adoption of new technologies that will improve the delivery of Internet services to the agency.

⇐ BACK

Level 1-8: Information Technology Specialist (Systems Administration), GS-2210

Mastery of, and skill in applying:

- systems administration and systems engineering theories, concepts, and methods;
- interrelationships of multiple IT disciplines;
- modeling and simulation tools;
- the enterprise IT architecture; and
- new systems administration developments

sufficient to:

- generate and run simulation models for future applications; and
- evaluate and verify impacts on the current and planned enterprise IT architecture.

⇐ BACK

Mastery of, and skill in applying:

- systems administrations theories, concepts, and methods;
- interrelationships of multiple IT disciplines;
- information systems security standards and methods; and
- IT architecture principles and concepts

sufficient to develop and implement migration strategies including planning for continuity of operations during the deployment of new server technology.

⇐ BACK

Mastery of, and skill in applying:

- systems administration theories, concepts, and methods;
- IT architecture principles and concepts;
- new technologies; and
- project management principles and methods

sufficient to develop and present plans for integrating new server technology into existing architecture.

⇐ BACK

(continued)

Level 1-8: Information Technology Specialist (Systems Administration), GS-2210 (continued)

Mastery of, and skill in applying:

- the enterprise-level network infrastructure;
- enterprise management software systems; and
- project management principles and methods

sufficient to plan and coordinate the installation, configuration, maintenance, and upgrade of enterprise management software and related enterprise-level changes to the systems infrastructure.

⇐ BACK

Level 1-8: Information Technology Specialist (Customer Support), GS-2210

Mastery of, and skill in applying:

- customer support principles, methods, and practices;
- the interrelationships among different IT disciplines;
- the enterprise IT infrastructure; and
- project management principles and methods

sufficient to manage special projects that have a significant impact on the delivery of customer support services; e.g., infrastructure or work force relocation

⇐ BACK

Mastery of, and skill in applying:

- customer support principles, methods, and practices;
- interrelationships between multiple IT disciplines;
- the agency-level IT infrastructure; and
- project management methods

sufficient to:

- represent the customer support office in planning for the installation and implementation of new systems; e.g., upgrade to a new operating system; and
- lead efforts to define post-implementation support requirements.

⇐ BACK

Mastery of, and skill in applying:

- customer support principles, concepts, and methods; and
- IT performance measurements tools and techniques

sufficient to:

- develop service level agreements (SLAs) that define requirements and expectations for the delivery of customer support services; and
- develop and implement performance criteria to ensure that requirements are achieved.

⇐ BACK

Level 1-9: Information Technology Specialist (Policy and Planning), GS-2210

Mastery of:

- IT policy and planning concepts, methods, and practices; and
- project management methods and concepts

sufficient to:

- represent the agency on interagency work groups established to develop governmentwide IT policy initiatives and solutions to critical issues;
- negotiate for the acceptance of agency positions on key governmentwide policy initiatives;
- develop guidelines for implementing broad governmentwide directives; and
- align agency internal business practices with governmentwide regulations and policies.

⇐ BACK

Mastery of:

- IT policy and planning concepts, methods, and practices; and
- project management methods and concepts

sufficient to:

- lead the evaluation of agency missions, goals, plans, programs, and business processes to develop an enterprise IT architecture plan for the agency;
- conduct continuing evaluations of agency business needs to ensure that IT architecture plans are aligned with those needs and that the current and planned IT infrastructure supports the architecture plan;
- develop plans and strategies to modify the IT infrastructure to support short and long range agency goals, objectives, and plans; and
- evaluate, select, and advise others on the application of architecture modeling tool sets used to document, maintain, and enhance the architectural planning process.

⇐ BACK

Level 1-9: Information Technology Specialist (Security), GS-2210

Mastery of:

- IT security theories and concepts, practices, and emerging issues; and
- project management methods and concepts

sufficient to:

- plan, develop, and coordinate agency-level information assurance or information security programs and strategies, e.g., the agency workforce security training program or security audit program; and
- formulate agency-level IT security program initiatives in response to critical IT security issues.

⇐ BACK

(continued)

Level 1-9: Information Technology Specialist (Security), GS-2210 (continued)

Mastery of:

- IT security theories and concepts, practices, and emerging issues, and
- project management methods and concepts

sufficient to plan and coordinate agencywide implementation of governmentwide IT security defense strategies to ensure protection of the IT infrastructure.

⇐ BACK

Level 1-9: Information Technology Specialist (Applications Software), GS-2210

Mastery of:

- software engineering theories, concepts, and practices; and
- project management methods and concepts

sufficient to:

- manage the enterprise-wide implementation of new approaches to software development, such as major changes to the life cycle management process or implementation of the capability maturity model (CMM) approach;
- develop new work methods, standards, and practices designed to significantly improve the safety, quality, reliability, predictability, reusability, and cost performance of applications software systems; and
- create and lead teams to review software code and develop quality assurance measurement criteria.

⇐ BACK

Mastery of:

- software engineering theories, concepts, and practices; and
- project management methods and concepts

sufficient to lead teams conducting independent validation and verification of agencywide or multi-agency applications software prior to final acceptance.

⇐ BACK

Level 1-9: Information Technology Specialist (Internet), GS-2210

Mastery of:

- state-of-the-art Internet technologies, methods, standards, and issues (e.g., security, privacy, accessibility); and
- project management methods and concepts

sufficient to:

- lead the development and management of a Web site or Web portal for a major national program that involves privacy, access, and authentication issues; e.g., access to personnel records;
- provide guidance to a multi-specialty work group of applications developers, data management specialists, network specialists, and others involved in the planning, design, implementation, and maintenance of the agency Web site or Web portal; and
- ensure ongoing satisfaction of customers and IT management with the delivery of Internet services.

⇐ BACK

APPENDIX F4 – FACTOR 4 ILLUSTRATIONS

Level 4-2: Information Technology Specialist, GS-2210

Nature of Assignment – Work consists of a limited range of activities involved with monitoring, maintaining, and supporting installed systems and services.

What Needs To Be Done – Follows established procedures to ensure that systems and services are functioning properly.

Difficulty and Originality Involved – Determines the appropriate methods for monitoring the proper functioning of installed systems and services.

⇐ BACK

Level 4-2: Information Technology Specialist (Security), GS-2210

Nature of Assignment – Work consists of maintaining IT systems security documentation.

What Needs To Be Done – Makes periodic revisions, as directed, in response to new requirements or changes in policies.

Difficulty and Originality Involved – Makes decisions on the most efficient methods for updating documentation.

⇐ BACK

Nature of Assignment – Work consists of monitoring and analyzing systems logs to identify systems security trends.

What Needs To Be Done – Follows established procedures to monitor system activities for potential security events.

Difficulty and Originality Involved – Identifies and refers potential problems to more experienced specialists.

⇐ BACK

Level 4-2: Information Technology Specialist (Systems Analysis), GS-2210

Nature of Assignment – Work consists of reviewing a variety of program documents (e.g., mission statements) and attending preliminary design meetings with more experienced specialists to obtain an understanding of the mission and programs of customer organizations.

What Needs To Be Done – Conducts preliminary analyses of business processes for which systems are being developed and collects additional information from customers as needed.

Difficulty and Originality Involved – Decisions are limited to selecting the most effective methods for specifying requirements.

⇐ BACK

Level 4-2: Information Technology Specialist (Applications Software), GS-2210

Nature of Assignment – Work consists of maintaining one or more modules of a well-established applications software program.

What Needs To Be Done – Makes periodic revisions to code or updates technical documentation in response to changes in the activities being supported. Debugs source code to correct program execution errors.

Difficulty and Originality Involved – Exercises judgment in determining the most efficient methods for updating, testing, and debugging code.

⇐ BACK

Level 4-2: Information Technology Specialist (Operating Systems), GS-2210

Nature of Assignment – Work consists of maintaining documentation of installations and modifications made to systems software programs.

What Needs To Be Done – Follows established procedures for documenting installation activities.

Difficulty and Originality Involved – Determines the most effective ways to organize documentation to facilitate use by more experienced specialists in troubleshooting problems.

⇐ BACK

Level 4-2: Information Technology Specialist (Network Services), GS-2210

Nature of Assignment – Work consists of monitoring network performance through use of established online network monitoring tools.

What Needs To Be Done – Follows established procedures to isolate potential sources of network problems.

Difficulty and Originality Involved – Monitors and alerts network administrators regarding deterioration in performance and implements established actions, as directed, to restore network functionality.

⇐ BACK

Nature of Assignment – Work consists of installing and testing new network software including upgrades, fixes, and patches.

What Needs To Be Done – Uses well-documented performance monitoring tools in carrying out assignments.

Difficulty and Originality Involved – Exercises judgment in evaluating software performance based on established parameters.

⇐ BACK

Level 4-2: Information Technology Specialist (Data Management), GS-2210

Nature of Assignment – Work consists of maintaining databases that are accessible over the network to customers throughout the organization.

What Needs To Be Done – Applies troubleshooting skills in responding to basic accessibility, availability, or operability problems.

Difficulty and Originality Involved – Recognizes and refers major problems encountered in maintaining database to the supervisor or a more experienced specialist.

⇐ BACK

Level 4-2: Information Technology Specialist (Internet), GS-2210

Nature of Assignment – Work consists of uploading Web page changes to the organization's Web site.

What Needs To Be Done – Determines file names and directory locations based on established criteria.

Difficulty and Originality Involved – Resolves common problems and refers situations requiring higher level expertise to a more experienced specialist.

⇐ BACK

Nature of Assignment – Work consists of collecting, organizing, and validating Web site statistics.

What Needs To Be Done – Follows established procedures.

Difficulty and Originality Involved – Prepares tables and charts to be reviewed by more experienced Internet specialists.

⇐ BACK

Level 4-2: Information Technology Specialist (Systems Administration), GS-2210

Nature of Assignment – Work consists of adding, deleting, and modifying user accounts and settings under the direction of a more experienced specialist.

What Needs To Be Done – Works directly with customers in obtaining information needed to establish or change accounts.

Difficulty and Originality Involved – Makes decisions such as choosing the most effective methods for gathering information from customers.

⇐ BACK

Nature of Assignment – Work consists of performing routine systems backups including changing backup tapes.

What Needs To Be Done – Executes commands, monitors the progress of backups, and recognizes problems.

Difficulty and Originality Involved – Refers unfamiliar problems to a more experienced specialist.

⇐ BACK

(continued)

Level 4-2: Information Technology Specialist (Systems Administration), GS-2210 (continued)

Nature of Assignment – Work consists of maintaining an automated inventory database of equipment and software licenses.

What Needs To Be Done – Prepares periodic reports and provides information used in the physical inventory process.

Difficulty and Originality Involved – Exercises judgment in determining the most effective methods for presenting information for use by others.

⇐ BACK

Level 4-2: Information Technology Specialist (Customer Support), GS-2210

Nature of Assignment – Work consists of responding to customer help requests according to written procedures. Responses to most requests can be found in the knowledge database.

What Needs To Be Done – Resolves problems or refers more complex problems to more experienced specialists.

Difficulty and Originality Involved – Maintains currency with the latest versions of the applications or systems being supported.

⇐ BACK

Level 4-3: Information Technology Specialist, GS-2210

Nature of Assignment – Work consists of providing a variety of services essential to the effective performance of installed systems.

What Needs To Be Done – Performs the following duties:

- monitors the availability and functionality of networks and systems, and detects and reports problems;
- participates in testing and installing systems modifications and upgrades;
- provides information and assistance to customers on using installed systems; and
- participates on teams responsible for implementing major systems changes.

Difficulty and Originality Involved – Exercises judgment to:

- identify, determine the nature and potential sources of, and select appropriate actions in response to problems;
- evaluate test data; and
- anticipate customers' needs for information and assistance.

⇐ BACK

Level 4-3: Information Technology Specialist (Policy and Planning), GS-2210

Nature of Assignment – Work consists of reviewing contract proposals to acquire hardware, software, or IT services to determine whether they address business needs and comply with current policies.

What Needs To Be Done – Selects the best approach to use in carrying out reviews of multiple proposals.

Difficulty and Originality Involved – Responsible for:

- comparing multiple proposals that involve different technical approaches or different levels of functionality; and
- recognizing situations or issues that require the attention of a more experienced specialist or are potentially precedent setting.

⇐ BACK

Level 4-3: Information Technology Specialist (Security), GS-2210

Nature of Assignment – Work consists of installing, configuring, initializing, and maintaining firewalls that protect the network from intrusions, threats, and compromises. The work also involves setting up and configuring firewall logs.

What Needs To Be Done – Performs the following duties:

- sets up and configures servers;
- applies filtering rules; and
- performs other tasks required to activate firewall services.

Difficulty and Originality Involved – Monitors firewall services and initiates action in response to attempted intrusions.

⇐ BACK

Nature of Assignment – Work consists of analyzing and defining security requirements for new software applications.

What Needs To Be Done – Performs the following duties:

- reviews technical specifications;
- performs risk analyses, including risk assessments;
- identifies potential security risks; and
- recommends program modifications to ensure proper levels of security are implemented.

Difficulty and Originality Involved – Devises solutions to security issues related to the testing and implementation of new applications.

⇐ BACK

Level 4-3: Information Technology Specialist (Systems Analysis), GS-2210

Nature of Assignment – Work consists of developing design specifications for a major module or component of a new or enhanced software system.

What Needs To Be Done – Performs the following duties:

- translates and interprets customer-provided business requirements to produce technical specifications;
- works with other design team members in integrating specifications at the system level;
- participates in preparing test plans; and
- reviews and analyzes test data.

Difficulty and Originality Involved – Exercises judgment in performing a variety of duties such as:

- assists in troubleshooting design problems encountered during testing and implementation; and
- modifies specifications as necessary to improve design features.

⇐ BACK

Nature of Assignment – Work consists of:

- reducing and refining functional requirements provided by customers to eliminate duplication; and
- grouping and categorizing requirements preliminary to the development of technical specifications.

What Needs To Be Done – Performs the following duties:

- works with customers in prioritizing and rating requirements according to their relative importance and urgency; and
- works closely with applications developers and data management specialists in mapping requirements to specifications.

Difficulty and Originality Involved – Exercises judgment in:

- evaluating functional requirements for feasibility; and
- recommending modifications to improve the functionality of proposed applications.

⇐ BACK

Level 4-3: Information Technology Specialist (Applications Software), GS-2210

Nature of Assignment –Work consists of building applications software.

What Needs To Be Done – Performs the following duties:

- works from requirements approved by a more experienced specialist;
- generates code for multiple applications;
- translates, compiles, links, tests, and debugs programs;
- prepares instructions for operating personnel; and
- maintains complete records of program development and revisions.

Difficulty and Originality Involved – Provides post-implementation support that involves troubleshooting and correcting problems with program execution.

⇐ BACK

Level 4-3: Information Technology Specialist (Operating Systems), GS-2210

Nature of Assignment – Work consists of scheduling the installation of changes to the operating environment.

What Needs To Be Done – Performs the following duties:

- works closely with vendors and customers in coordinating the installation; and
- tests processes according to plans approved at a higher level.

Difficulty and Originality Involved – Responds to a variety of unanticipated problems.

⇐ BACK

Nature of Assignment – Work consists of tuning operating systems performance parameters including installing patches and downloading new drivers to optimize performance.

What Needs To Be Done – Selects and applies standard optimization tools and techniques.

Difficulty and Originality Involved – Exercises judgment in determining:

- the order in which changes must be made; and
- the impact of changes on the current configuration and on other elements of the operating environment.

⇐ BACK

Level 4-3: Information Technology Specialist (Network Services), GS-2210

Nature of Assignment – Work consists of monitoring the ongoing operation of local and wide area networks to ensure that systems are functioning properly and meeting optimal performance standards.

What Needs To Be Done – Performs the following duties:

- administers customer accounts;
- provides initial orientations to new customers;
- diagnoses and resolves operating problems;
- maintains documentation of LAN configuration including schematic diagram with layout and location of all components;
- executes systems backups;
- implements and monitors compliance with systems security procedures; and
- ensures that proposed software applications will function in the current network environment.

Difficulty and Originality Involved – Work is complicated by:

- the need to ensure network availability;
- the need to implement changes to the network configuration; and
- the responsibility for troubleshooting problems.

⇐ BACK

(continued)

Level 4-3: Information Technology Specialist (Network Services), GS-2210 (continued)

Nature of Assignment – Work consists of reviewing personnel reports and security databases to identify unused network accounts.

What Needs To Be Done – Recommends deletion of accounts or changes to access privileges based on the analysis of usage patterns.

Difficulty and Originality Involved – Work is complicated by:

- difficulties in obtaining current and accurate user information; and
- the need to coordinate activities with management officials in other organizations.

⇐ BACK

Nature of Assignment – Work consists of troubleshooting network problems.

What Needs To Be Done – Performs the following duties:

- reviews audit logs and trace files to identify, analyze, and isolate potential problem sources; and
- initiates contacts with applications developers or systems engineers to assist in resolving problems involving equipment, applications, or infrastructure.

Difficulty and Originality Involved – Develops and implements solutions in a way that minimizes interruptions to network services.

⇐ BACK

Level 4-3: Information Technology Specialist (Data Management), GS-2210

Nature of Assignment – The work consists of maintaining and supporting databases including adding new elements to databases as directed.

What Needs To Be Done – Uses COTS database management tools and utilities in monitoring, optimizing, and managing assigned databases.

Difficulty and Originality Involved – Troubleshoots problems, such as corrupted tables and consumption of table space, by identifying the most likely problem sources and recommending solutions.

⇐ BACK

Level 4-3: Information Technology Specialist (Internet), GS-2210

Nature of Assignment – Work consists of reviewing, testing, and implementing new Web pages on the organization's Web site.

What Needs To Be Done – Performs the following duties:

- edits source code to place new pages in the appropriate location on the Web site,
- tests new pages to ensure correct formatting, optimum display of graphics, and properly functioning links; and
- publishes pages on the Web server.

Difficulty and Originality Involved – Coordinates efforts with network and security specialists to ensure compliance with applicable policies.

⇐ BACK

(continued)

Level 4-3: Information Technology Specialist (Internet), GS-2210 (continued)

Nature of Assignment – Work consists of testing Web pages to identify broken links.

What Needs To Be Done – Runs and interprets the results of a variety of Web diagnostic programs and responds to user problem reports.

Difficulty and Originality Involved – Exercises judgment to:

- isolate and investigate the most likely problem sources;
- modify source code or take other actions required to fix broken links;
- locate linked files; and
- use proper syntax to prevent future occurrences.

⇐ BACK

Level 4-3: Information Technology Specialist (Systems Administration), GS-2210

Nature of Assignment – Work consists of deinstalling software or replacing hardware components.

What Needs To Be Done – Performs the following duties:

- removes drivers and edits systems files related to deinstalled software as necessary;
- runs systems backups; and
- sanitizes hardware removed from service.

Difficulty and Originality Involved – Exercises judgment to:

- determine the most effective approach to ensure continuing operation during the deinstallation process;
- troubleshoot problems related to deinstallation or replacement actions (e.g., registry settings problems); and
- coordinate corrective actions with vendors and customers when required.

⇐ BACK

Nature of Assignment – Work consists of implementing and monitoring equipment preventive maintenance schedules to minimize disruptions to systems operations.

What Needs To Be Done – Performs the following duties:

- works closely with customers to determine times when service activities will be least disruptive; and
- provides information and instructions related to the maintenance and service process.

Difficulty and Originality Involved – Exercises judgment to evaluate and recommend improvements to established systems maintenance procedures.

⇐ BACK

Level 4-3: Information Technology Specialist (Customer Support), GS-2210

Nature of Assignment – Work consists of responding to all types of customer trouble calls that are beyond the capability of the entry-level specialist.

What Needs To Be Done – Performs the following duties:

- reviews lower level referrals and troubleshoots and resolves problems to the extent possible;
- refers more difficult requests to the appropriate levels; and
- recommends changes in standard customer support procedures where existing procedures no longer provide solutions or are outdated.

Difficulty and Originality Involved – Exercises judgment to:

- provide support to customers with varying levels of computing skills; and
- support a wide range of applications running on a variety of platforms.

⇐ BACK

Level 4-4: Information Technology Specialist, GS-2210

Nature of Assignment – Work consists of defining client requirements for new and modified systems and coordinating systems design, implementation, and support in response to client requirements.

What Needs To Be Done – Performs the following duties:

- defines client requirements for new and modified systems and services based on analysis of business needs and practices;
- assists in planning and coordinating systems design, acquisition, testing, installation, and support;
- serves as primary liaison with clients on all matters related to systems operations and support.

Difficulty and Originality Involved – Exercises judgment to:

- evaluate and determine optimal systems development approaches;
- integrate a variety of systems development activities;
- solve a wide range of operational and support problems and issues; and
- ensure that changes in client requirements are addressed.

⇐ BACK

Level 4-4: Information Technology Specialist (Policy and Planning), GS-2210

Nature of Assignment – Work consists of analyzing and evaluating a portion of the enterprise IT capital investment portfolio.

What Needs To Be Done – Performs the following duties:

- recommends adjustments to IT funding priorities in response to changes in business requirements;
- conducts periodic analysis of projects in the assigned portfolio for consistency with the overall IT architecture and infrastructure and relative contributions to meeting business requirements;
- prioritizes projects according to IT program plans, goals, and objectives;
- prepares recommendations for an investment review board or similar approval authority; and
- implements decisions.

Difficulty and Originality Involved – Exercises judgment to:

- monitor changes in the organization's business plans;
- initiate analysis of the impact of changes on the assigned portfolio; and
- identify the most viable options for consideration by approval authorities.

⇐ BACK

Nature of Assignment – Work consists of developing training plans for the organization's IT workforce.

What Needs To Be Done – Performs the following duties:

- assesses and analyzes training needs that address current competency gaps as well as new competency requirements that will:
  - ensure alignment with the organization's mission, goals, objectives, and plans; and
  - enhance the effectiveness of the IT workforce; and
- evaluates and recommends training sources.

Difficulty and Originality Involved – Exercises judgment to:

- assess changes in the organization's mission; and
- ensure that changing requirements are addressed in training plans.

⇐ BACK

(continued)

Level 4-4: Information Technology Specialist (Policy and Planning), GS-2210 (continued)

Nature of Assignment – Work consists of conducting audits of IT systems development, operations, and management to ensure:

- agency compliance with all applicable laws and regulations;
- necessary controls are in place; and
- systems operate as intended and provide all necessary capabilities.

What Needs To Be Done – Performs the following duties:

- reviews systems documentation, including IT project implementation plans, security policies and procedures, hardware, software, and network diagrams and configuration management controls, database administration controls, and contractual agreements for technical support for compliance with applicable standards;
- interviews agency officials and contractors responsible for systems; and
- assesses whether user requirements are being met by the agency's IT systems.

Difficulty and Originality Involved – Exercises judgment to:

- present audit findings to program officials; and
- develop recommendations for improvements in IT management, where appropriate.

⇐ BACK

Level 4-4: Information Technology Specialist (Security), GS-2210

Nature of Assignment – Work consists of implementing and maintaining IT security systems that are applied to a variety of applications.

What Needs To Be Done – Performs the following duties:

- assesses the security effectiveness of installed systems based on analysis of reported security problems;
- implements modifications to minimize vulnerabilities;
- troubleshoots security threats and vulnerabilities in response to incident reports;
- identifies and isolates problem sources; and
- recommends solutions or corrects problems.

Difficulty and Originality Involved – Exercises judgment to continually evaluate and recommend the adoption of new IT security methods that will enhance capabilities.

⇐ BACK

Nature of Assignment – Work consists of developing standard operating procedures and user guides that provide detailed instructions for implementing IT systems security policies.

What Needs To Be Done – Determines the need for new or updated IT security guidance based on policy and technology changes.

Difficulty and Originality Involved – Exercises judgment and originality to:

- anticipate the need for changes to avert potential systems, data, or network exposure; and
- determine the level of difficulty in gaining management acceptance of more restrictive IT security policies where required.

⇐ BACK

(continued)

Level 4-4: Information Technology Specialist (Security), GS-2210 (continued)

Nature of Assignment – Work consists of implementing network security guidelines, e.g., router packet filtering and firewall configuration procedures, to protect network infrastructures;

What Needs To Be Done – Performs the following duties:

- provides guidance to network administrators in implementing network security guidelines;
- conducts periodic reviews for compliance with guidelines;
- initiates updates to existing guidelines to meet new requirements;
- evaluates and implements new network security technologies; and/or
- initiates actions to network security challenges.

Difficulty and Originality Involved – Exercises judgment to:

- ensure that network security guidelines are kept current;
- adapt guidelines in response to changes in network infrastructures; and
- apply advances in network security technology.

⇐ BACK

Nature of Assignment – Work consists of providing guidance, assistance, and coordination to systems developers, systems administrators, and other IT specialists to ensure the proper and timely implementation of IT security standards for systems both under development and already deployed.

What Needs To Be Done – Performs the following duties:

- monitors, evaluates, and reports on the status and condition of IT security programs; and
- directs corrective actions to eliminate or reduce risks.

Difficulty and Originality Involved – Exercises judgment and originality to carry out in-depth analyses of systems development plans to ensure that:

- security requirements and specifications are effectively implemented; and
- security features are sufficiently rigorous to provide adequate levels of protection throughout the systems life cycle.

⇐ BACK

Level 4-4: Information Technology Specialist (Systems Analysis), GS-2210

Nature of Assignment – Work consists of the end-to-end development of design specifications for new applications.

What Needs To Be Done – Leads and integrates the efforts of a design team in accomplishing individual components of the development efforts.

Difficulty and Originality Involved – Exercises judgment and originality to:

- work closely with the applications development team and customers throughout the software design process; and
- coordinate the modification of specifications as required.

⇐ BACK

(continued)

Level 4-4: Information Technology Specialist (Systems Analysis), GS-2210 (continued)

Nature of Assignment – Work consists of analyzing work activities to determine the feasibility of developing new applications to meet customer business requirements.

What Needs To Be Done – Performs the following duties:

- works with program representatives to:
  - identify and specify requirements;
  - identify specific operations, processes, transactions, data, and work products adaptable to automation; and
  - develop specifications for inputs and outputs, systems interfaces, and other design features;
- uses available tools, techniques, and standards to produce detailed systems specifications, prepare test plans, and define acceptance criteria;
- evaluates alternatives for application development (i.e., contractor vs. Government performance) and recommends actions based on time, cost, and quality; and
- participates in systems integration testing and applies test results to modify specifications and correct problems and faults as necessary.

Difficulty and Originality Involved – Exercises judgment and originality to troubleshoot complex design problems during the entire systems development life cycle.

⇐ BACK

Level 4-4: Information Technology Specialist (Applications Software), GS-2210

Nature of Assignment – Work consists of the full range of applications development activities for major software projects.

What Needs To Be Done – Performs the following duties:

- identifies system objectives, functions, and customer requirements;
- evaluates hardware and software alternatives and systems design strategies based on need and availability;
- analyzes existing systems capabilities, compatibility, and interoperability;
- prepares technical specifications;
- monitors development;
- designs and monitors testing; and
- conducts post-installation evaluation.

Projects usually involve balancing competing requirements, integrating multiple technologies, and coordinating with network, security, and data management specialists to ensure security, privacy, and interoperability of applications under development.

Difficulty and Originality Involved – Exercises judgment to:

- establish troubleshooting procedures; and
- document solutions to common problems for reference by other specialists.

⇐ BACK

(continued)

Level 4-4: Information Technology Specialist (Applications Software), GS-2210 (continued)

Nature of Assignment – Work consists of analyzing work processes and operations to determine the feasibility of developing new or upgrading existing systems to improve the efficiency and productivity of business processes.

What Needs To Be Done – Performs the following duties:

- develops and presents automation options to management that take into account time, cost, and resource availability;
- finalizes requirements; prepares design documents; writes code; and tests, implements, and maintains applications; and
- makes decisions at various stages in the process including:
  - recommending software; e.g., COTS vs. customized applications;
  - determining technical training requirements;
  - defining the number of programs and program interfaces; and
  - developing production procedures.

Difficulty and Originality Involved – Exercises judgment and originality to:

- facilitate active customer involvement throughout the design and development process; and
- ensure that changing customer requirements are addressed.

⇐ BACK

Nature of Assignment – Work consists of developing, implementing, and providing guidance in the application of standards, methods, and procedures for software testing.

What Needs To Be Done – Performs the following duties:

- analyzes current operating procedures;
- develops new or supplemental guidance to improve the quality of the testing process and the reliability and predictability of test results; and
- develops metrics and benchmarks for use by systems analysts and applications developers in evaluating the adequacy of test plans and test data.

Difficulty and Originality Involved – Exercises judgment and originality to ensure that testing methods and procedures are updated to adopt improvements in software testing technology.

⇐ BACK

Level 4-4: Information Technology Specialist (Operating Systems), GS-2210

Nature of Assignment – Work consists of installing, testing, and implementing vendor-supplied modifications to existing systems software.

What Needs To Be Done – Performs the following duties:

- tests and validates the operating environment;
- designs input and output forms and documents;
- explains the effects of modifications in the environment to applications developers, data management specialists, and customer support specialists; and
- troubleshoots problems resulting from modifications.

Difficulty and Originality Involved – Exercises judgment and originality to:

- independently determine the feasibility of installing modifications; and
- schedule implementation to ensure continuity of operations.

⇐ BACK

(continued)

Level 4-4: Information Technology Specialist (Operating Systems), GS-2210 (continued)

Nature of Assignment – Work consists of monitoring performance data and modifying systems tuning parameters to optimize overall systems performance and correct and prevent problems with the systems environment.

What Needs To Be Done – Performs the following duties:

- interprets and evaluates performance data; and
- isolates potential sources of performance problems.

Difficulty and Originality Involved – The employee decides on the most effective approaches for optimizing software performance and analyzes performance data and operating conditions to:

- troubleshoot and correct current problems; and
- anticipate future problems.

⇐ BACK

Level 4-4: Information Technology Specialist (Network Services), GS-2210

Nature of Assignment – Work consists of serving as local area network (LAN) administrator.

What Needs To Be Done – Performs the following duties:

- coordinates installation, maintenance, troubleshooting, and fine-tuning of the LAN including all hardware, software, telecommunications, and networking components;
- develops plans and designs for network modifications and enhancements;
- ensures confidentiality, integrity, and availability of systems and data accessible on the LAN;
- reviews proposed applications for compatibility and interoperability;
- analyzes LAN utilization statistics, performance measures, and system profiles to ensure network robustness;
- identifies potential performance or capacity problems and plans for changes to avert problems; and
- analyzes systems malfunctions and implements necessary corrective actions.

Difficulty and Originality Involved – Exercises independent judgment in resolving the wide variety of problems that are encountered in managing the network, including making decisions on issues where there is often conflicting and incomplete information.

⇐ BACK

(continued)

Level 4-4: Information Technology Specialist (Network Services), GS-2210 (continued)

Nature of Assignment – Work consists of evaluating and recommending appropriate solutions to meet enterprise network requirements.

What Needs To Be Done – Performs the following duties:

- analyzes missions, plans, organization structure, current and planned infrastructures, and other related factors affecting enterprise network requirements;
- evaluates the effectiveness of current network systems;
- evaluates available enterprise network systems including performance, security, capacity, scalability, cost, and other relevant factors; and
- recommends optimal network solutions.

Difficulty and Originality Involved – Exercises judgment and originality to consider:

- both current and future business needs;
- planned changes to the infrastructure;
- evolving network technology; and
- other related factors that affect network requirements.

⇐ BACK

Level 4-4: Information Technology Specialist (Data Management), GS-2210

Nature of Assignment – Work consists of enhancing database management practices, such as implementing new database structures and formats and converting legacy data to new formats.

What Needs To Be Done – Decides on the most effective technical methods and approaches based on an in-depth knowledge of, and skill in applying, database management concepts and a comprehensive understanding of the data management needs of customer organizations.

Difficulty and Originality Involved – Exercises judgment and originality to:

- analyze performance data;
- research alternative technical solutions; and
- modify systems and database configurations to correct problems that affect the confidentiality, integrity, and availability of data.

⇐ BACK

Nature of Assignment – Work consists of developing user manuals and instructions that guide customers in executing data access functions such as running queries and reports.

What Needs To Be Done – Determines the need to revise user guides based on changes to database functions and customer needs.

Difficulty and Originality Involved – Exercises originality in writing instructions that are:

- understandable to audiences with varying levels of computing skills; and
- compatible with different data delivery and access methods.

⇐ BACK

(continued)

Level 4-4: Information Technology Specialist (Data Management), GS-2210 (continued)

Nature of Assignment – Work consists of designing the logical data relationships and query structures of new databases considering factors such as access methods, access frequency, storage media, data volatility, query requirements, and operating environments.

What Needs To Be Done – Performs the following duties:

- describes the organization, format, and database content;
- documents standard data elements within the logical structure; and
- determines physical storage requirements based on analysis of volume, size of records and files, expected growth, access methods, and available data compression methods.

Difficulty and Originality Involved – Exercises judgment and originality to coordinate implementation of database designs and modifications of design characteristics in response to performance problems, changing requirements, or new design methods.

⇐ BACK

Level 4-4: Information Technology Specialist (Internet), GS-2210

Nature of Assignment – Work consists of providing a variety of services that deliver information using the Internet.

What Needs To Be Done – Evaluates and recommends the most effective uses of Internet technologies that may range from creating dynamic Web pages to linking relational databases with Web servers.

Difficulty and Originality Involved – Encounters difficulty as a result of the need to:

- evaluate and apply advances in Internet technology;
- manage customer expectations; and
- ensure consideration of relevant security and accessibility and authentication issues.

⇐ BACK

Nature of Assignment – Work consists of managing and optimizing Internet protocol (IP) servers to ensure high availability and optimal performance of the organization's Web site.

What Needs To Be Done – Selects and applies load-balancing tools in an effort to provide faster throughput, increase server link resiliency, and enhance reliability.

Difficulty and Originality Involved – Exercises judgment to determine when to reconfigure and upgrade IP servers in response to changing customer usage patterns and server capacity management considerations.

⇐ BACK

Level 4-4: Information Technology Specialist (Systems Administration), GS-2210

Nature of Assignment – Work consists of planning and coordinating the maintenance, upgrade, and support of servers.

What Needs To Be Done – Performs the following duties:

- schedules maintenance activities during off-peak usage periods;
- resolves problems, such as defective hardware components or corrupted software;
- runs tests to verify operability and functionality; and
- implements systems security plans and policies and preventive maintenance schedules.

Difficulty and Originality Involved – Exercises judgment and ingenuity to evaluate and recommend the adoption of improvements in server management technologies.

⇐ BACK

Nature of Assignment – Work consists of monitoring and managing the operation of a complex, networked environment with a large number of customers.

What Needs To Be Done – Performs the following duties:

- oversees installation, implementation, configuration, maintenance, and support of network components;
- conducts functional and connectivity testing to ensure continuing operability;
- provides ongoing optimization and problem solving support;
- achieves recovery from systems malfunctions and security intrusions; and
- develops network usage policies and procedures.

Difficulty and Originality Involved – Exercises judgment and ingenuity to maintain a high degree of technical proficiency in implementing and supporting a variety of hardware and software systems.

⇐ BACK

Nature of Assignment – Work consists of analyzing usage and audit logs to ensure that systems are operating within design parameters and comply with security policies.

What Needs To Be Done – Applies performance measurement techniques and metrics and, based on results, recommends configuration changes, reallocation of resources, or upgrading network operating systems to enhance performance.

Difficulty and Originality Involved – Exercises judgment and initiative in identifying and recommending potential areas for enhancing systems reliability and functionality.

⇐ BACK

Level 4-4: Information Technology Specialist (Customer Support), GS-2210

Nature of Assignment – Work consists of resolving the most difficult customer support requests; e.g., those involving integration or configuration related issues. Systems supported involve a wide variety of different platforms, operating systems, applications, and desktop configurations.

What Needs To Be Done – Performs the following duties:

- identifies and breaks down problems using structured problem resolution approaches; and
- works with network specialists, applications developers, and security specialists to prevent recurring problems.

Difficulty and Originality Involved – Exercises judgment for documenting solutions to problems and for recommending fundamental changes to systems configurations to prevent recurrences.

⇐ BACK

Nature of Assignment – Work consists of managing the problem resolution knowledge database.

What Needs To Be Done – Performs the following duties:

- reviews proposed additions to the database;
- approves resolutions that are most likely to be used on a regular basis;
- reviews the contents of the database on a regular basis to clear duplicate and outdated responses;
- trains new specialists in using the database; and
- investigates and recommends purchase of improved knowledge base tools and technologies.

Difficulty and Originality Involved – Exercises judgment and originality for evaluating usage patterns and recommending methods for improving the functionality of the problem resolution knowledge base.

⇐ BACK

Level 4-5: Information Technology Specialist, GS-2210

Nature of Assignment – Work consists of planning and coordinating projects that involve multiple stages in the systems development life cycle management process; e.g.,

- systems analysis;
- software development;
-
- data base administration; and
- customer support.

What Needs To Be Done – Performs the following duties:

- defines overall project requirements;
- plans and coordinates systems design, development, and implementation;
- oversees support of installed systems and services; and
- resolves a wide range of technical and management issues.

Difficulty and Originality Involved – Exercises judgment, originality, and resourcefulness in ensuring that systems and services are developed and delivered in accordance with customer requirements and current technology.

⇐ BACK

Level 4-5: Information Technology Specialist (Policy and Planning), GS-2210

Nature of Assignment – Work consists of representing the agency on interagency committees.

What Needs To Be Done – Performs the following duties:

- articulates and defends agency positions on critical policy issues; and
- briefs senior agency management on the status of committee activities.

Difficulty and Originality Involved – Exercises judgment and originality in making decisions on whether to accept compromises of agency positions.

⇐ BACK

Nature of Assignment – Work consists of leading major agency-wide IT policy development efforts.

What Needs To Be Done – Performs the following duties:

- directs work assigned to a project team and reviews and refines final products prior to submission to management; and
- coordinates policy dissemination, manages policy maintenance, and develops mechanisms to measure policy effectiveness and compliance.

Difficulty and Originality Involved – Exercises considerable judgment and ingenuity to:

- continually evaluate the effectiveness of the current IT policy framework; and
- recommend changes that will ensure alignment with the agency's mission requirements.

⇐ BACK

Nature of Assignment – Work consists of updating strategic plans for the IT program.

What Needs To Be Done – Performs the following duties:

- meets with IT managers to discuss progress toward meeting strategic goals;
- identifies potential problems in attaining goals; and
- reviews agency strategic plans to ensure that plans for the IT program are integrated with agency strategic goals.

Difficulty and Originality Involved – Exercises considerable judgment and a high degree of initiative in anticipating the effects of changing business requirements and new technologies on strategic plans for the IT program.

⇐ BACK

Level 4-5: Information Technology Specialist (Security), GS-2210

Nature of Assignment – Work consists of establishing, implementing, and interpreting the requirements for agency compliance with higher level policy directives and Executive orders governing infrastructure protection.

What Needs To Be Done – Performs the following duties:

- coordinates the review and evaluation of the agency infrastructure protection program, including policies, guidelines, tools, methods, and technologies;
- identifies current and potential problem areas;
- updates or establishes new requirements; and
- makes recommendations for a fully compliant infrastructure protection program to be implemented throughout the agency.

Difficulty and Originality Involved – Exercises considerable judgment in:

- monitoring agency compliance with infrastructure protection requirements across IT programs; and
- adjusting program guidelines in response to changing technologies.

⇐ BACK

Level 4-5: Information Technology Specialist (Systems Analysis), GS-2210

Nature of Assignment – Work consists of planning and coordinating agency-wide implementation of process improvement methods and concepts to improve the quality of software products.

What Needs To Be Done – Performs the following duties:

- serves as the principal advocate within the agency for the application of process improvement concepts and practices; and
- consults with senior specialists and IT managers throughout the agency in the implementation of process improvement practices.

Difficulty and Originality Involved – Exercises considerable judgment and ingenuity in advocating the benefits of implementing business-driven quality and process improvement approaches.

⇐ BACK

Nature of Assignment – Work consists of developing and standardizing systems design methods.

What Needs To Be Done – Performs the following duties:

- identifies and evaluates highly effective systems design methodologies and benchmarks best practices from industry and other government organizations;
- develops and tests prototypes;
- evaluates test results; and
- selects methods that will result in quality design and high customer satisfaction.

Difficulty and Originality Involved – Exercises considerable judgment and ingenuity in championing the implementation of standardized methods throughout the agency.

⇐ BACK

Level 4-5: Information Technology Specialist (Applications Software), GS-2210

Nature of Assignment – Work consists of leading teams that design and develop agency-wide applications.

What Needs To Be Done – Performs the following duties:

- reviews and approves technical requirements for projects;
- develops project plans;
- provides technical guidance to team members; and
- serves as primary liaison between customers and vendors and IT management throughout the development process.

Difficulty and Originality Involved – Exercises considerable judgment to ensure that:

- applications are thoroughly tested and documented; and
- security certifications are obtained prior to deployment.

⇐ BACK

Level 4-5: Information Technology Specialist (Operating Systems), GS-2210

Nature of Assignment – Work consists of managing major changes to the systems environment; e.g., implementation of major new applications or conversion to new operating systems.

What Needs To Be Done – Performs the following duties:

- plans and coordinates change activities with applications developers, telecommunications specialists, facilities managers, vendors, and customers;
- manages implementation and deployment; and
- keeps senior management informed of project progress through periodic briefings and reports.

Difficulty and Originality Involved – Exercises considerable judgment to resolve virtually all technical and management problems including resource issues such as schedule delays and cost overruns.

⇐ BACK

Level 4-5: Information Technology Specialist (Network Services), GS-2210

Nature of Assignment – Work consists of serving as local area network (LAN) manager for agencywide LAN systems.

What Needs To Be Done – Performs the following duties:

- identifies and controls all LAN hardware and software configuration;
- develops technical standards and procedures for LAN development, implementation, and management;
- establishes performance management metrics; and
- evaluates overall LAN performance against relevant standards.

The work also involves providing technical advice and consultation to LAN administrators throughout the agency.

Difficulty and Originality Involved – Exercises considerable judgment to:

- keep abreast of the rapid evolution of networking technologies;
- maintain continual vigilance against threats to network confidentiality, integrity and availability; and
- constantly determine ways to efficiently apply scarce resources.

⇐ BACK

(continued)

Level 4-5: Information Technology Specialist (Network Services), GS-2210 (continued)

Nature of Assignment – Work consists of assigning and coordinating the work of a multi-disciplinary team in diagnosing sources of service interruptions and developing and implementing corrective actions.

What Needs To Be Done – Leads efforts to perform the following duties:

- quickly and accurately isolate sources of service problems;
- identify and implement required corrective actions; and
- devise solutions to prevent future interruptions.

Difficulty and Originality Involved – Exercises ingenuity and originality in recommending actions to management to avert future challenges to the integrity and availability of the network.

⇐ BACK

Level 4-5: Information Technology Specialist (Data Management), GS-2210

Nature of Assignment – Work consists of developing logical data models to be translated into workable physical database schema and structures in the database development process.

What Needs To Be Done – Performs the following duties:

- selects modeling methodologies and tools (e.g., CASE data modeling products);
- generates models that are capable of accommodating new and unanticipated business requirements and processes;
- verifies model integrity; and
- maintains and revises existing models.

Difficulty and Originality Involved – Exercises considerable judgment and ingenuity to:

- anticipate changes in business requirements;
- ensure that data models are capable of responding to changing requirements; and
- adapt modeling tools and approaches to meet the unique requirements of the assignment.

⇐ BACK

Nature of Assignment – Work consists of designing and implementing enterprise database strategies for functions such as backup, recovery and migration or to correct extremely complex operational and performance problems.

What Needs To Be Done – Performs the following duties:

- evaluates current and future enterprise database requirements;
- develops strategies designed to meet requirements;
- issues strategies in draft format for developer, administrator, and customer review; and
- incorporates relevant comments and suggestions.

Difficulty and Originality Involved – Exercises considerable ingenuity and originality to coordinate implementation of new database strategies on an enterprise-wide basis including:

- defining implementation plans and actions; and
- interpreting strategies as required.

⇐ BACK

Level 4-5: Information Technology Specialist (Internet), GS-2210

Nature of Assignment – Work consists of planning, designing, developing, testing, implementing, and managing internal and external Web sites to optimize communication with relevant clientele.

What Needs To Be Done – Performs the following duties:

- maps overall Web design and structure;
- ensures Web site functionality, integrity, and security;
- reviews and integrates new Web pages;
- analyzes Web site statistics; and
- directs on-going maintenance and enhancement efforts.

Difficulty and Originality Involved – Exercises considerable judgment and ingenuity in:

- providing technical consultation in developing Web-based applications including Web-based database management projects; and
- possibly leading a multi-disciplinary Web site team of Government employees and contractors to develop plans for major new Web initiatives.

⇐ BACK

Nature of Assignment – Work consists of evaluating new Internet technologies and capabilities that will enhance the functionality of Internet-based applications deployed by the agency.

What Needs To Be Done – Performs the following duties:

- researches new technologies;
- conducts comprehensive evaluations based on current and future agency requirements; and
- prepares and presents position papers proposing adoption of promising new developments.

Difficulty and Originality Involved – Exercises considerable ingenuity and originality when planing and coordinating pilot testing and eventual implementation of successfully tested technologies on an enterprise-wide basis.

⇐ BACK

Level 4-5: Information Technology Specialist (Systems Administration), GS-2210

Nature of Assignment – Work consists of exercising overall responsibility for the continuing functionality of all servers in the enterprise LAN.

What Needs To Be Done – Performs the following duties:

- develops standards and criteria for assessing server performance; and
- oversees their application by administrators throughout the enterprise LAN.

Difficulty and Originality Involved – Exercises considerable judgment in developing performance standards that can be applied uniformly throughout the LAN and for identifying actions required to correct performance deficiencies.

⇐ BACK

(continued)

Level 4-5: Information Technology Specialist (Systems Administration), GS-2210 (continued)

Nature of Assignment – Work consists of developing agency-wide procedures for responding to new threats to systems confidentiality, integrity, and availability; e.g., checking key files for problems and reviewing running operations to ensure that only authorized processes are running.

What Needs To Be Done – Performs the following duties:

- oversees the agency-wide implementation of new procedures for responding to systems threats; and
- interprets procedures in response to questions received from systems administrators.

Difficulty and Originality Involved – Provides authoritative technical advice and guidance to systems administrators throughout the agency in responding to serious systems threats.

⇐ BACK

Level 4-5: Information Technology Specialist (Customer Support), GS-2210

Nature of Assignment – Work consists of leading quick response teams in responding to customer service problems resulting from catastrophic events, such as virus infections or power outages.

What Needs To Be Done – Performs the following duties:

- consults with experts in other specialty areas to develop integrated action plans;
- issues technical bulletins via the intranet to inform customers of problems and to instruct them in taking necessary actions; and
- develops and updates customer support policies and procedures to ensure appropriate responses to future incidents of a similar nature.

Difficulty and Originality Involved – Exercises considerable judgment in planning and coordinating actions with interagency infrastructure protection groups to ensure an integrated response to problems of a potentially more extensive scope and impact.

⇐ BACK

Nature of Assignment – Work consists of serving as client manager with responsibility for working directly with customer organizations to customize services to meet specific customer requirements.

What Needs To Be Done – Performs the following duties:

- explores ways to upgrade or enhance the level of services provided;
- implements changes in response to changes in customer requirements; and
- resolves issues related to the delivery of services.

Difficulty and Originality Involved – Exercises considerable judgment to:

- keep abreast of changes in customer mission requirements through interaction with management in customer organization; and
- initiate service modifications to meet changing requirements.

⇐ BACK

(continued)

Level 4-5: Information Technology Specialist (Customer Support), GS-2210 (continued)

Nature of Assignment – Work consists of representing the customer service discipline on applications development teams to ensure that customer service requirements are addressed during the systems development process from translation of functional requirements through systems testing.

What Needs To Be Done – Performs the following duties:

- reviews technical and design specifications;
- recommends changes, as needed, to address customer support requirements;
- develops specifications for user instruction manuals based on customer's needs; and
- defines procedures for providing post-implementation support.

Difficulty and Originality Involved – Exercises considerable judgment and ingenuity in negotiating with other senior members of the applications development team to ensure applications are customer oriented.

⇐ BACK

APPENDIX F5 – FACTOR 5 ILLUSTRATIONS

Level 5-2: Information Technology Specialist, GS-2210

Scope of the Work – Work involves applying established methods, procedures, and practices to monitoring, maintaining, and supporting IT systems and services.

Effect of the Work – Work ensures that systems and services supported by the IT organization operate effectively.
⇐ BACK

Level 5-2: Information Technology Specialist (Security), GS-2210

Scope of the Work – Work involves taking vulnerability scans and ensuring that the accountable parties have responded appropriately to vulnerability findings.

Effect of the Work – Work contributes to reducing or eliminating IT security vulnerabilities and complying with IT security regulations and policies.
⇐ BACK

Scope of the Work – Work involves assisting in the preparation of IT systems security alerts that warn systems administrators of potential viruses, intrusions, or other IT systems security threats. The work also involves maintaining a searchable archive of previous security alerts.

Effect of the Work – Work contributes to the protection of networks, systems, and data from unwarranted access.
⇐ BACK

Level 5-2: Information Technology Specialist (Systems Analysis), GS-2210

Scope of the Work – Work involves applying standard practices in developing information about customer functional requirements.

Effect of the Work – Work enables more experienced specialists to accurately identify and specify business requirements that lead to the production of quality software.
⇐ BACK

Level 5-2: Information Technology Specialist (Applications Software), GS-2210

Scope of the Work – Work involves:

- maintaining an assigned module of code for a deployed application; and
- modifying assigned code according to well-established procedures.

The employee also debugs newly added code.

Effect of the Work – Work ensures that applications supported by the organization operate effectively.
⇐ BACK

Level 5-2: Information Technology Specialist (Operating Systems), GS-2210

Scope of the Work – Work consists of maintaining technical manuals, procedures, and customer instructions for systems software in a cross-platform production environment.

Effect of the Work – Work ensures current, accurate, and complete documentation needed by other technical specialists and customers.

⇐ BACK

Level 5-2: Information Technology Specialist (Network Services), GS-2210

Scope of the Work – Work involves providing assistance in maintaining basic network services, such as domain name services, assignment of IP addresses, firewall and other security services, network printing, remote access, file and directory sharing, and the like.

Effect of the Work – Work contributes to the sustained delivery of vital network services.

⇐ BACK

Scope of the Work – Work involves monitoring network traffic to identify deviations from traffic parameters. The employee reports potential traffic problems to a more experienced network specialist and assists in implementing problem resolutions.

Effect of the Work – Work contributes to maintaining network operations.

⇐ BACK

Level 5-2: Information Technology Specialist (Data Management), GS-2210

Scope of the Work – Work involves maintaining one or more databases for an organization according to a standard maintenance plan. The employee also reviews usage transaction logs and identifies trends that may require action.

Effect of the Work – Work is important to the effective management of data used for a variety of business functions.

⇐ BACK

Level 5-2: Information Technology Specialist (Internet), GS-2210

Scope of the Work – Work involves reviewing new and modified Web pages for proper formatting and consistency with the organization's Web site guidelines and accepted standards. The employee answers routine inquiries and corrects basic technical problems related to the maintenance of the Web site; e.g., repairing source code.

Effect of the Work – Work contributes to the organization's ability to provide timely information about its services to the public via the Internet.

⇐ BACK

Level 5-2: Information Technology Specialist (Systems Administration), GS-2210

Scope of the Work – Work involves managing the software inventory to ensure compliance with licensing agreements.

Effect of the Work – Work affects the organization's ability to comply with legal requirements related to the use of commercial software.

⇐ BACK

Scope of the Work – Work involves executing systems backups on a regular schedule under the direction of more experienced specialists.

Effect of the Work – Work ensures the organization's ability to continue operations in the event of systems failure.

⇐ BACK

Level 5-2: Information Technology Specialist (Customer Support), GS-2210

Scope of the Work – Work involves responding to customer requests that are covered by the problem resolution database. The work also provides the employee with the training and experience needed to respond to more complicated requests.

Effect of the Work – Work provides the customers with assistance in the effective use of a wide range of applications.

⇐ BACK

Level 5-3: Information Technology Specialist, GS-2210

Scope of the Work – Work involves installing, maintaining, monitoring performance, and troubleshooting networks, systems, and applications installed in the assigned customer organizations.

Effect of the Work – Work ensures optimal availability, interoperability, and functionality of systems installed in customer organizations.

⇐ BACK

Level 5-3: Information Technology Specialist (Policy and Planning), GS-2210

Scope of the Work – Work involves modifying established IT plans and policies in response to new legislation, regulations, directives, or other guidance affecting the IT program. The employee evaluates the impact of new guidance on current programs and recommends changes to existing plans and policies to ensure compliance and responsiveness.

Effect of the Work – Work affects the ability of the organization to maintain a current and responsive IT planning and policy framework.

⇐ BACK

Level 5-3: Information Technology Specialist (Security), GS-2210

Scope of the Work – Work involves installing, implementing, and maintaining firewall services that prevent unauthorized access to the organization's Web site. The work also involves recommending modifications to existing firewall hardware and software based on analyses of incident reports.

Effect of the Work – Work contributes to the protection of the infrastructure from unauthorized access.
⇐ BACK

Scope of the Work – Work involves responding to systems security incidents reported by customers and network administrators; e.g., corrupted data, inaccessible files, virus infections, loss of confidentiality, authentication problems, and the like. The employee analyzes incident reports, interviews customers as needed, isolates potential sources, and recommends solutions to a more experienced specialist.

Effect of the Work – Work contributes to ensuring confidentiality, integrity, and availability of systems, networks, and data.
⇐ BACK

Level 5-3: Information Technology Specialist (Systems Analysis), GS-2210

Scope of the Work – Work involves leading group discussions with functional customers to elicit, identify, and specify requirements for the development of new applications software. The employee works with customers in evaluating and reducing the list of functional requirements to those considered to be most important. The work also involves assisting applications developers in translating or mapping functional requirements to technical specifications.

Effect of the Work – Work results in the development of clear and specific business requirements that lead to the development of systems that effectively serve customer needs.
⇐ BACK

Scope of the Work – Work involves developing functional specifications for a Web-enabled tracking system. This includes translating customer business requirements into specifications that unambiguously describe the systems design to developers. The work also involves preparing test plans to ensure that implementation matches design and revising design specifications to respond to changes in requirements.

Effect of the Work – Work results in the delivery of reliable and cost-effective software products.
⇐ BACK

Level 5-3: Information Technology Specialist (Applications Software), GS-2210

Scope of the Work – Work consists of writing applications, according to technical specifications, using a variety of applications programming languages and programming tools, such as CASE tools. The employee also participates in the planning and execution of unit and systems testing, installing programs at customer sites, providing support on execution problems, and modifying applications as necessary.

Effect of the Work – Work results in the development and delivery of applications that enhance the performance of customer business activities.

⇐ BACK

Scope of the Work – Work consists of customizing commercial software applications to meet specific customer business requirements. This includes evaluating and recommending the purchase of software programs that partially match technical specifications, modifying code, testing functionality, coordinating installation and implementation, and maintaining customizations across new releases.

Effect of the Work – Work results in the modification of applications that enhance the performance of customer business activities.

⇐ BACK

Level 5-3: Information Technology Specialist (Operating Systems), GS-2210

Scope of the Work – Work involves installing and validating systems software patches and fixes provided by vendors. The employee runs tests to ensure functionality and interoperability within the systems environment, identifies faults, and ensures that vendors correct problems.

Effect of the Work – Work contributes to providing a reliable systems environment.

⇐ BACK

Level 5-3: Information Technology Specialist (Network Services), GS-2210

Scope of the Work – Work involves installing, configuring, and maintaining network hubs, switches, routers, and servers that support a wide-area network. The employee is required to optimize and fine tune performance, troubleshoot problems ranging from common to complex, and evaluate and recommend upgrades and enhancements to the current network infrastructure.

Effect of the Work – Work ensures that the organization's network is able to provide a wide range of services that are vital to the accomplishment of mission requirements.

⇐ BACK

Scope of the Work – Work involves performing a wide range of tasks in support of network administration including managing user accounts, monitoring service levels, and troubleshooting and restoration. The work also involves analyzing the impact of new applications, new customers, or other changes on network performance.

Effect of the Work – Work supports efforts to continually enhance network efficiency and reliability.

⇐ BACK

Level 5-3: Information Technology Specialist (Data Management), GS-2210

Scope of the Work – Work involves implementing, maintaining, and updating databases. The work may also involve diagnosing and correcting database access and availability, reliability, and security problems.

Effect of the Work – Work ensures the organization has access to current information that is stored cost-effectively and securely.

⇐ BACK

Scope of the Work – Work involves participating in the migration of production databases; e.g., to newer versions, according to established migration plans and strategies. The employee performs a broad scope of functions including running migration utilities, writing scripts, and preparing documentation. The employee also updates backup, restoration, and recovery procedures and user guides as necessary.

Effect of the Work – Work results in enhancements in the availability, accessibility, and reliability of databases used by the organization for a variety of key business functions.

⇐ BACK

Scope of the Work – Work involves performing routine database administration functions such as developing queries and reports based on customer requirements, modifying or developing database views, and managing backup and recovery operations.

Effect of the Work – Work results in the availability and usefulness of the data needed by customer organizations.

⇐ BACK

Level 5-3: Information Technology Specialist (Internet), GS-2210

Scope of the Work – Work involves monitoring and ensuring the operability of intranet services that provide intranet customers with access to applications and data. The employee implements the intranet deployment strategy, configures, monitors, and fine-tunes dedicated servers, coordinates the implementation of new services, analyzes site statistics, troubleshoots problems, identifies trends that may require action such as increasing bandwidth, and participates in planning for enterprise growth.

Effect of the Work –Work provides employees with the capability to improve productivity using systems and applications available on the intranet.

⇐ BACK

Level 5-3: Information Technology Specialist (Systems Administration), GS-2210

Scope of the Work – Work involves maintaining the functionality and availability of systems. This includes maintaining, optimizing, and troubleshooting server hardware and software, reviewing server loads and recommending server load balancing, and implementing and verifying systems backup and restoration.

Effect of the Work – Work affects the availability of systems used by employees at all levels in the organization to effectively accomplish critical business processes.

⇐ BACK

Level 5-3: Information Technology Specialist (Customer Support), GS-2210

Scope of the Work – Work involves resolving a full range of customer problems including problems that are referred from a lower level. The work also involves training customers and less experienced customer support employees in the use of systems and applications supported by the customer support organization.

Effect of the Work – Work results in the resolution of complex problems that enables customers to be more productive in carrying out assignments by minimizing downtime.

⇐ BACK

Level 5-4: Information Technology Specialist, GS-2210

Scope of the Work – Work involves:

- analyzing customer requirements;
- developing specifications for new or modified systems;
- planning and coordinating the design, development, testing, installation, and support of new and modified systems, including hardware and software; and
- serving as the primary liaison with customer organizations on all IT-related matters.

Effect of the Work – Work enables customer organizations to accomplish mission requirements in the most effective manner possible through the optimal application of information technology.

⇐ BACK

Level 5-4: Information Technology Specialist (Policy and Planning), GS-2210

Scope of the Work – Work involves reviewing IT programs to assess overall compliance with IT plans and policies and alignment with business requirements.

Effect of the Work – Work affects the organization's ability to effectively incorporate information technology in meeting its core business requirements.

⇐ BACK

(continued)

Level 5-4: Information Technology Specialist (Policy and Planning), GS-2210 (continued)

Scope of the Work – Work involves modifying IT plans and policies to respond to changes in the organization's business requirements and processes or changes in legislation or regulatory requirements.

Effect of the Work – Work affects the effectiveness of plans and policies that serve as guideposts for the successful application of information technology to the organization's mission.

⇐ BACK

Scope of the Work – Work involves:

- auditing requirements for IT computer systems including specifications for individual systems and agency policies and procedures for specific IT functions such as security or systems development;
- analyzing user requirements, system documentation, and operational conditions to determine if the system meets business and mission needs and is operating as intended;
- working in a team environment to reach consensus on how/if the agency's IT systems meet established performance measures or goals; and
- working directly with an audit manager in the preparation and delivery of presentations to management on audit findings.

Effect of the Work – Work provides valuable feedback to agency management on the effectiveness of their IT investments and management practices.

⇐ BACK

Level 5-4: Information Technology Specialist (Security), GS-2210

Scope of the Work – Work involves:

- analyzing and defining the security requirements for new enterprise applications available on the organization's intranet;
- selecting, installing, and monitoring the performance of appropriate security tools, including firewalls, intrusion detection systems, and vulnerability self-assessment programs; and
- troubleshooting IT security problems that affect the availability of intranet applications and recommending actions that will minimize risks.

Effect of the Work – Work results in the continuing accessibility and availability of a variety of mission critical applications.

⇐ BACK

Scope of the Work – Work involves developing, implementing, and administering an IT security program consisting of standards, procedures, and guidance designed to protect information available on a major wide area network from unauthorized access.

Effect of the Work – Work ensures protection of the organization's IT assets through the administration of effective IT security programs.

⇐ BACK

Level 5-4: Information Technology Specialist (Systems Analysis), GS-2210

Scope of the Work – Work involves:

- defining and validating the need for proposed new systems through consultation with program officials in customer program organizations;
- reviewing general business and functional requirements that support the need for systems;
- identifying and evaluating potential systems design approaches; and
- developing final technical specifications for new systems.

Effect of the Work – Work contributes to the development of applications that improve the organization's efficiency in accomplishing a wide variety of functions and activities.

⇐ BACK

Scope of the Work – Work involves serving as an information systems member of a business process reengineering study. In this role the employee participates in:

- defining business processes and evaluating alternatives;
- identifying IT solutions that will enable recommended process changes and improvements;
- writing business cases from a technical standpoint; and
- coordinating the implementation of improved IT tools and practices that will foster continuous process improvement.

Effect of the Work – Work results in improvements in the efficiency and quality of business processes.

⇐ BACK

Level 5-4: Information Technology Specialist (Applications Software), GS-2210

Scope of the Work – Work involves analyzing and translating technical specifications into integrated applications that automate business processes. The work also involves executing the life cycle change process of applications and implementing design changes in response to changes in customer functional requirements.

Effect of the Work – Work results in the reduction of costs and improvement of the quality of a wide range of customer business processes.

⇐ BACK

Scope of the Work – Work involves:

- monitoring software development contracts to ensure compliance with specifications;
- planning and coordinating the testing, installation, and implementation of vendor provided software;
- conducting post-implementation assessments to evaluate cost efficiency and performance; and
- monitoring configuration control.

Effect of the Work – Work ensures the delivery and deployment of vendor-developed software in accordance with cost and performance specifications.

⇐ BACK

Level 5-4: Information Technology Specialist (Operating Systems), GS-2210

Scope of the Work – Work involves:

- planning and coordinating the installation, configuration, and implementation of major hardware or software upgrades to the systems environment;
- overseeing testing and migration to the production environment, ensuring minimal disruption to current operations; and
- advising customer support specialists in providing post-implementation support to end-users.

Effect of the Work – Work affects the ability to make major enhancements to the systems environment in a manner that is not disruptive to customers.

⇐ BACK

Scope of the Work – Work involves:

- serving as a systems engineering expert on an applications development project;
- ensuring the appropriate configuration of the operating environment; and
- ensuring the allocation of sufficient systems resources to support new applications.

Effect of the Work – Work ensures that new applications are integrated seamlessly within the current systems environment.

⇐ BACK

Scope of the Work – Work involves:

- monitoring and fine-tuning the systems environment to ensure optimal performance; and
- recommending efficient ways to improve performance such as modifying operating systems parameters.

Effect of the Work – Work results in the optimization of the systems environment that supports the execution of a wide variety of mission-oriented applications.

⇐ BACK

Level 5-4: Information Technology Specialist (Network Services), GS-2210

Scope of the Work – Work involves serving as LAN manager with responsibility for defining and executing the total breadth of activity required to ensure the continuous availability of the organization's LAN.

Effect of the Work – Work enables the organization to sustain critical business operations using networked systems.
⇐ BACK

Scope of the Work – Work involves leading a major network project such as reestablishing connectivity for relocated employees, accommodating disabled employees, and implementing telecommuting support activities. Responsibilities include developing project plans, assigning and prioritizing the work of other network specialists, and overseeing the implementation of project activities.

Effect of the Work – Work ensures the timely and resource-efficient accomplishment of critical network projects that enhance network capabilities and services.
⇐ BACK

Level 5-4: Information Technology Specialist (Data Management), GS-2210

Scope of the Work – Work involves:

- designing, implementing, and maintaining multi-user databases;
- ensuring that databases meet the business requirements of client organizations, are accessible to authorized customers through the LAN, and are kept up-to-date;
- reviewing usage logs;
- determining the need for changes in access methods, storage media, or other elements based on usage and performance trends; and
- troubleshooting accessibility and availability problems; and
- initiating corrective actions.

Effect of the Work – Work enables the organization to manage information in a highly efficient and effective manner.
⇐ BACK

Scope of the Work – Work involves designing physical data models that describe the structure for data storage, data indexing, data manipulation, and data retrieval applications. The employee selects database management software, defines hardware requirements, and determines whether databases will be relational or object oriented.

Effect of the Work – Work ensures that databases are designed, developed, and configured to ensure quality and reliability in meeting customers' business requirements.
⇐ BACK

Level 5-4: Information Technology Specialist (Internet), GS-2210

Scope of the Work – Work involves developing and refining Internet services (e.g., Web sites, list servers, and FTP sites) and consulting with program specialists in developing new services or enhancing existing services that expand current information dissemination capabilities.

Effect of the Work – Work facilitates the efficient delivery of program information to clients and the exchange of information between the organization and other organizations interested in or affected by the information.

⇐ BACK

Scope of the Work – Work involves:

- serving as a technical specialist in the application of Internet technologies to meet the needs of functional customers;
- leading or participating on teams responsible for the planning, design, development, testing, integration, and deployment of Web-based applications that interface with varied configurations of hardware and software; and
- evaluating, recommending, developing, and maintaining software tools and utilities that support development and maintenance of Web applications and interfaces.

Effect of the Work – Work contributes directly to customers' ability to manage mission critical information through the optimal application of Internet technologies.

⇐ BACK

Level 5-4: Information Technology Specialist (Systems Administration), GS-2210

Scope of the Work – Work involves developing and presenting training on the operation and maintenance of new systems to the IT staff including specialists in a variety of specialty areas.

Effect of the Work – Work ensures that new systems are properly managed.

⇐ BACK

Scope of the Work – Work involves:

- adapting and implementing systems diagnostic and maintenance tools to ensure the availability and functionality of systems required to support organizational objectives; and
- evaluating and recommending selection of new systems diagnostic tools.

Effect of the Work – Work affects the availability of systems needed to meet the organization's business requirements.

⇐ BACK

Level 5-4: Information Technology Specialist (Customer Support), GS-2210

Scope of the Work – Work involves developing, updating, and maintaining a comprehensive database of technical queries and corresponding resolutions. The work also involves providing group and individual training to other customer support specialists on technical issues and new customer support technologies.

Effect of the Work – Work ensures that customer support services are provided effectively and responsively.
⇐ BACK

Scope of the Work – Work involves resolving the complete range of problems within the scope of the help desk and referring problems requiring highly specialized expertise to the appropriate IT specialty office. The work also involves conducting trend analyses to identify areas where additional customer training and assistance is needed and initiating appropriate action, such as defining new training requirements.

Effect of the Work – Work enables employees throughout customer organizations to effectively apply IT resources to accomplish mission requirements.
⇐ BACK

Level 5-5: Information Technology Specialist, GS-2210

Scope of the Work – Work involves planning and coordinating efforts to develop and deliver systems and services that are responsive to the needs of customer organizations.

Effect of the Work – Work ensures the agency's ability to respond to meet mission requirements through the optimal application of IT systems and services.

⇐ BACK

Level 5-5: Information Technology Specialist (Policy and Planning), GS-2210

Scope of the Work – Work involves the assessment of the impact of forecasted changes in technology and business requirements on the agency's long-range IT investment plans and recommending appropriate changes to plans and strategies.

Effect of the Work – Work ensures the agency's ability to respond to major changes in business models and new technologies that affect the accomplishment of the agency mission.

⇐ BACK

Scope of the Work – Work involves leading evaluations of the agency's business processes and IT infrastructure to determine the feasibility of adopting enterprise applications. The work also involves developing plans for implementing enterprise level applications.

Effect of the Work – Work affects the agency's ability to effectively and efficiently apply available IT resources.

⇐ BACK

Scope of the Work – Work involves providing expert technical advice and guidance to senior management officials in the appropriate application of technology to agency mission and programs including providing advice regarding emerging IT issues and the impact of emerging issues on the agency business requirements.

Effect of the Work – Work enhances the agency's ability to make informed decisions on the focus and direction of IT planning and investment.

⇐ BACK

Level 5-5: Information Technology Specialist (Security), GS-2210

Scope of the Work – Work involves:

- representing the organization in the investigation of serious IT security violations that potentially affect the integrity of the organization's infrastructure, e.g., unauthorized access to financial systems;
- coordinating internal investigations with the Office of the Inspector General (OIG) and with criminal investigation and law enforcement organizations;
- recommending remediations based on findings;
- following up to ensure the implementation of corrective actions; and
- serving as expert witness at trials and hearings, as required.

Effect of the Work – Work contributes directly to the successful investigation of serious IT security violations and has a deterrent effect on future security attacks.

⇐ BACK

(continued)

Level 5-5: Information Technology Specialist (Security), GS-2210 (continued)

Scope of the Work – Work involves:

- identifying significant actual and potential cybersecurity problems, trends, and weaknesses;
- recommending specific modifications and solutions to reduce IT security risks; and
- developing strategies for responding to future IT security challenges.

Effect of the Work – Work results in protecting the systems infrastructure that is vital to the accomplishment of the agency mission.

⇐ BACK

Level 5-5: Information Technology Specialist (Systems Analysis), GS-2210

Scope of the Work – Work involves evaluating the feasibility of new systems design methodologies in terms of meeting agency systems design requirements and recommending the adoption of the most promising new methodologies. The work may also involve developing implementation plans where appropriate.

Effect of the Work – Work results in the continuous evaluation of new technologies that lead to improvements in the agency's systems design and development process and the delivery of high quality information systems that support achievement of core agency mission requirements.

⇐ BACK

Scope of the Work – Work involves leading multiple design teams in the development of systems specifications for major new applications. The work encompasses all phases of the design process from requirements analysis to post-implementation support.

Effect of the Work – Work results in the development of well-designed systems that support the accomplishment of strategic business requirements.

⇐ BACK

Level 5-5: Information Technology Specialist (Applications Software), GS-2210

Scope of the Work – Work involves:

- developing, adapting, and implementing new applications development methods and models that incorporate new technologies, such as object oriented design and analysis and software architecture;
- researching emerging technologies;
- planning, developing, and organizing pilot tests in controlled environments; and
- recommending adoption of new methodologies based on favorable feasibility analyses.

Effect of the Work – Work results in improvements in the design and development of applications that enhance the agency's ability to accomplish mission critical program activities.

⇐ BACK

Level 5-5: Information Technology Specialist (Network Services), GS-2210

Scope of the Work – Work involves:

- leading an enterprise-level network project, such as establishing connectivity for new mission requirements or new customer organizations or accommodating changes in legislation; and
- carrying out the full range of project management functions from project planning through evaluation and reporting of project accomplishments.

Projects typically involve coordinating the work of other network specialists, technical specialists from other disciplines, and customer representatives.

Effect of the Work – Work ensures the capability of the network services program to respond to new and changing requirements.

⇐ BACK

Scope of the Work – Work involves:

- leading feasibility studies of new network technologies, such as integrating video with data and voice services;
- recommending investments in new networking technologies to senior agency management where warranted; and
- providing consultation during the planning and implementation of successfully tested new technologies.

Effect of the Work – Work ensures that the agency takes full advantage of advances in network technologies to enhance the delivery of services in support of mission requirements.

⇐ BACK

Level 5-5: Information Technology Specialist (Data Management), GS-2210

Scope of the Work – Work involves:

- developing and maintaining enterprise data models that define the agency's information needs and business processes; and
- updating models to reflect major changes in business requirements and the introduction of new data management technologies.

Effect of the Work – Work enhances the agency's ability to manage data in a manner that contributes to the accomplishment of agency mission requirements.

⇐ BACK

(continued)

Level 5-5: Information Technology Specialist (Data Management), GS-2210 (continued)

Scope of the Work – Work involves:

- establishing and providing guidance in the application of standards and guidelines for the creation of metadata that address current and future needs;
- evaluating potential metadata applications;
- identifying and evaluating tools for creating metadata; and
- designing metadata model formats and templates.

Effect of the Work – Work results in the application of effective approaches for identifying, describing, and locating data and informing potential customers of the value, attributes, and applications of data being maintained.

⇐ BACK

Level 5-5: Information Technology Specialist (Internet), GS-2210

Scope of the Work – Work involves:

- developing Internet policies that establish parameters and guidelines for the agency-wide application of Internet technologies; and
- promoting application of the Internet throughout the agency as a means to more effectively accomplish critical business requirements.

Effect of the Work – Work ensures that the agency takes optimum advantage of Internet technologies to accomplish agency mission requirements.

⇐ BACK

Scope of the Work – Work involves:

- participating in the planning, development, and implementation of an e-Government site used to deliver services to the public;
- coordinating the acquisition, installation, and configuration of the end-to-end infrastructure supporting the site; and
- ensuring the availability and security of applications installed on the site.

Effect of the Work – Work provides customer organizations with the ability to deliver mission critical services to a broad client base with optimum effectiveness.

⇐ BACK

Level 5-5: Information Technology Specialist (Systems Administration), GS-2210

Scope of the Work – Work involves integrating diverse server platforms into the existing architecture to increase and enhance the availability of applications and services throughout the agency.

Effect of the Work – Work enhances the agency's ability to effectively and efficiently apply the established IT architecture to accomplish vital business processes.

⇐ BACK

Scope of the Work – Work involves serving as the principal point-of-contact with external groups in the planning and coordination of efforts to enhance the agency's potential to interoperate across agency lines. The work also involves the development of policies and procedures that facilitate cross-agency systems interoperability.

Effect of the Work – Work enables the agency to manage critical business knowledge effectively, efficiently, and securely.

⇐ BACK

Level 5-5: Information Technology Specialist (Customer Support), GS-2210

Scope of the Work – Work involves:

- researching and evaluating new customer service management systems;
- recommending purchase of systems where it is determined that they would enhance the quality and effectiveness of the customer support program;
- overseeing implementation of new systems and services; and
- developing training guides for customer support employees.

Effect of the Work – Work enhances the quality and responsiveness of customer support services which, in turn, contributes to the agency's ability to effectively apply information systems in meeting business and mission requirements.

⇐ BACK

Scope of the Work – Work involves:

- developing performance metrics to evaluate the efficiency and effectiveness of the customer support center and to apply results in increasing productivity and professionalism and improving service quality;
- integrating metrics within existing performance measurement systems; and
- guiding customer support supervisors and managers in their application.

Effect of the Work – Work provides the center with the capability to continually improve the quality and effectiveness of customer services and to develop strategies for achieving excellence in service delivery.

⇐ BACK

APPENDIX G – INFORMATION TECHNOLOGY GLOSSARY

This glossary contains commonly used information technology (IT) terms. This list is by no means exhaustive and will be updated periodically to reflect changes in the IT field.

ACCESSIBILITY – The process for ensuring that users have access to all content on Web pages.

APPLICATION – A program or group of programs designed for end users. Applications software includes database programs, word processors, and spreadsheets.

ARCHITECTURE – A design for a computer system that defines its broad outlines. The architecture may also define specific hardware and software components and how they work together.

AUTHENTICATION – The verification of the identity of a person or process.

BANDWIDTH – The maximum speed at which data can be transmitted between computers in a network. Bandwidth is usually expressed in bits per second (BPS).

CAPABILITY MATURITY MODEL (CMM) – A structured approach, generally applied to the development of software, that is used to measure the quality of software that an organization is capable of producing.

CLIENT SERVER ARCHITECTURE – A network configuration in which each computer on the network is either a client or a server. Servers are powerful computers used to manage disk drives (file servers), printers (print servers), or network traffic (network servers). Clients are personal computers or workstations on which users run applications.

COMMERCIAL OFF-THE-SHELF (COTS) – Hardware and software components that are available commercially rather than being custom developed.

COMPILER – A program that translates source code written by programmers into object code. Object code instructs computers to execute specific actions.

DATA – Distinct pieces of information, usually formatted in a special way. All software is divided into two general categories – data and programs. Programs are collections of instructions for manipulating data.

DATABASE – A collection of information organized so that a computer program can quickly select desired pieces of data. A database can be thought of as an electronic filing system.

DATA BASE MANAGEMENT SYSTEM (DBMS) – Computer programs that enable users to create, maintain, manipulate, and retrieve file data and create useful reports.

DATA MINING – A class of database applications software that searches for relationships or patterns in a group of data.

DATA WAREHOUSING – The process of storing data in a structured and organized manner that ensures its availability for queries and analysis.

ELECTRONIC COMMERCE (E-COMMERCE) – The process of conducting business on-line or using the Internet.

ENCRYPTION – The process of converting data into "unreadable code" to prevent unauthorized access.

END USER – The ultimate user of a product or service.

ENTERPRISE – Typically used to refer to systems or applications that serve multiple organizational levels; e.g., enterprise resource planning systems.

EXTRANET – A network that allows information to be accessed by authorized users in external organizations.

FILE SERVER – A computer that has been modified to store and transfer large amounts of data to other computers.

FIREWALL – A combination of specialized hardware and software designed to keep unauthorized users from accessing information within a networked computer system.

FIRMWARE – Computer software that has been permanently installed into a computer and that performs tasks normally associated with computer hardware.

GOVERNMENT OFF-THE-SHELF (GOTS) – Hardware and software components that are available from Government agencies.

HARDWARE – Objects in a computer system that you can actually touch, like disks, disk drives, monitors, keyboards, printers, boards, and chips.

INFORMATION – Data that is organized according to the context in which it is used.

INFORMATION ASSURANCE – Operations that protect and defend information and information systems by ensuring their availability, integrity, authentication, confidentiality, and nonrepudiation.

INFRASTRUCTURE – All of the components that are necessary to support IT activities; e.g., hardware, software, and networks.

INTERNET – A global network connecting millions of computers.

INTRANET – An internal network, based on Internet protocols, that is accessible only by users with proper authorization. An intranet's Web sites look and act just like any other Web sites, but the firewall surrounding an intranet prevents unauthorized access.

INTERNET PROTOCOL (IP) ADDRESS – An identifier for a computer or device on a network. The format of an IP address is a 32-bit numeric address written as four numbers separated by periods; e.g., 1.160.10.240 could be an IP address.

KNOWLEDGE MANAGEMENT – An organized process for getting the right information to the right people at the right time.

LOCAL AREA NETWORK (LAN) – A computer network designed to share data and resources among several computers. Most LANs are confined to a single building or group of buildings. A group of LANs connected in this way is called a wide area network (WAN). LANs are capable of transmitting data at very fast rates but the distances are limited, and there is also a limit on the number of computers that can be attached to a single LAN.

METADATA – A description of 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.

METRICS – Standards, methods, or tools for measuring and evaluating performance, typically used in referring to the measurement of systems or software performance.

NETWORK – A group of two or more computer systems linked together to communicate and share resources. There are many types of computer networks, including local area networks and wide area networks.

NORMALIZING – The process of organizing data to minimize duplication. The term is generally applied to database design.

OPERATING SYSTEM – The program that runs other programs. Operating systems perform basic tasks, such as recognizing input from the keyboard, sending output to the monitor, keeping track of files and directories, and controlling peripheral devices such as disk drives and printers. For large systems, the operating system acts like a traffic cop – it makes sure that different programs and users running at the same time do not interfere with each other.

Operating systems provide a platform on top of which other programs, called application programs, can run. Examples of commonly used operating systems are Windows NT and UNIX.

OUTSOURCING – Efforts to consider private sector alternatives for providing and delivering services required by the Government.

PROGRAMMING LANGUAGE – A set of rules that instructs a computer as to what operations to perform. Each programming language has a unique set of keywords (words that it understands) and a special syntax for organizing program instructions. The choice of which language to use depends on the type of computer the program will run on, the tasks to be accomplished, and the training of the applications developer. The term programming language usually refers to higher-level languages, such as BASIC, C, C++, COBOL, and FORTRAN, as opposed to a lower-level language, such as assembly language or machine language.

PROTOCOL – A standard format for transmitting data between sending and receiving devices. An example of commonly used communications protocol is TCP/IP (Transmission Control Protocol/Internet Protocol).

SERVER – A computer or device on a network that manages network resources. For example, a *file server* is a computer dedicated to storing files. A *print server* is a computer that manages one or more printers. A *database server* is a computer that processes database queries.

SOFTWARE – Programs that instruct a computer as to how to process data and the documentation that explains how these programs should be used.

SYSTEM – A combination of components working together; e.g., a computer system including both hardware and software.

SYSTEMS DEVELOPMENT LIFE CYCLE – The complete process of developing information systems from requirements definition through maintenance.

SYSTEMS SOFTWARE – Low-level programs that interact with the computer at a very basic level. This includes operating systems, compilers, and utilities that manage computer resources.

TELECOMMUNICATIONS – Systems of hardware and software used to carry voice, video, and/or data between locations.

TOPOLOGY – The physical configuration of a network or networks. The term is generally used to refer to where each of the component parts is located in relation to each other.

VIRUS – A program which attaches itself to, overwrites, or otherwise replaces another program in order to reproduce itself without the knowledge of the computer user.

WEB PAGE – A document accessible on the world wide Web. Every Web page is identified by a unique Uniform Resource Locator (URL).

WEB PORTAL – A Web site that offers a broad array of resources and services, such as email and search engines.

WEB SITE – A site (location) on the world wide Web. Each Web site contains a home Web page, which is the first document users see when they enter the site. The site might also contain additional Web pages, documents, and files.

WIDE AREA NETWORK (WAN) – A network that spans a relatively large geographical area. A WAN typically consists of two or more local area networks (LANs).

WORLD WIDE WEB – A system of Internet servers that provides access to specially formatted documents usually referred to as Web sites or Web pages.

APPENDIX H – HISTORICAL RECORD AND EXPLANATORY MATERIAL

This appendix describes the development of this job family standard (JFS). We highlight some key dates and milestones and provide information about proposals we tested and about our deliberations as we crafted the final version of the standard for issuance. We believe users will find the information helpful as background for understanding and applying the job family standard. Readers with extensive position classification experience may recall the forerunner of this appendix as the Explanatory Memorandum that we formerly issued with some final position classification standards.

KEY DATES AND MILESTONES

In **April 1999,** the Classification Programs Division (CPD) within the Office of Personnel Management (OPM) notified agencies that we were about to begin a study to develop the Job Family Position Classification Standard for two-grade interval work in the information technology (IT) field. This signaled our plan to establish a new occupational group for information technology within the occupational structure of the General Schedule. Among other things, this development would formally acknowledge through a fundamental Federal human resources management system the pervasive and profound impact that information technology has had on the ways agencies accomplish their missions throughout the Government.

We focused our initial efforts on establishing parenthetical specialty titles for the Computer Specialist Series, GS-0334, as part of a set of integrated activities planned and carried out by several OPM program offices in cooperation with the Interagency Advisory Group of Federal Personnel Directors (now the Human Resources Management Council) and the Federal IT Work Force Committee of the interagency Chief Information Officers (CIO) Council. Throughout this effort, staff from OPM's classification and employment policy offices, as well as research staff from OPM's Personnel Resources and Development Center, worked together with user groups to generate products that would meet their needs. We convened a series of focus groups during the summer of 1999 to explore the nature and extent of IT specializations that have developed within the broader Computer Specialist, GS-0334, occupational series and related occupational series (e.g., Telecommunications, GS-0391). On the basis of the information we obtained in the focus groups, in **October 1999** we proposed eleven new specialty titles for review and comment. Based on the comments received on the proposed titles, OPM established eleven new parenthetical specialty titles for the Computer Specialist Series, GS-0334, and made them available for optional use Governmentwide in **March 2000**.

Proceeding from the work done to identify the specialty titles, we undertook intensive factfinding for the new IT job family standard beginning in March 2000 and continuing through May 2000. We conducted this factfinding primarily by using focus groups composed of both IT and human resources (HR) specialists. We convened over 45 focus groups involving over 500 employees from virtually all major agencies. Our goal was to prepare a draft job family position classification standard covering two-grade interval administrative work then covered by the GS-0334 series, as well as positions performing two-grade interval IT work in other series where knowledge of IT principles, concepts, and methods is the paramount knowledge requirement.

We applied the information gathered from the focus groups, along with information obtained from other sources such as position descriptions, organization charts, and online resources, and released the draft IT job family standard (JFS) for a 90-day review, test application, and comment period commencing in **July 2000**. In response to the draft JFS, we received comments from over 35 individual agencies in addition to comments from employees and others interested in the IT standard. We analyzed all of the comments, made changes and added material to address those that we determined were appropriate, and prepared the final JFS for issuance. In **March 2001**, we offered agencies a chance to conduct a final, 30-day "quick review" (i.e., without test application) of a pre-release edition of the final JFS before its official issuance in the spring. We made a few additional refinements to the standard based on the comments received from the "quick review."

This JFS is built around a successor occupation to the old Computer Specialist Series, GS-0334. Thus, with this issuance, we establish a new occupational series, the **Information Technology Management Series**, **GS-2210,** and cancel both the GS-0334 series and the GS-0334 position classification standard.

This JFS, now released here in final form for Governmentwide implementation, is the "first installment" of standards for a new occupational group, the Information Technology Group, GS-2200. As discussed below, we plan to add other IT series to this group that will encompass a broader Federal IT field.

DEFINING PRESENT AND FUTURE STUDY COVERAGE

As noted above, from the outset, the occupational study that produced the present JFS focused on the Computer Specialist Series, GS-0334. Future occupational studies will focus on additional occupations that are relevant to the new Information Technology Group, GS-2200. Several other job series involve IT work. The Computer Operation Series, GS-0332, and the Computer Clerk and Assistant Series, GS-0335, are one-grade interval support and assistance occupations. We plan to initiate a study of the one-grade interval IT occupations and develop a JFS to cover that Assistance Work in the Information Technology Group, GS-2200. The Computer Engineering Series, GS-0854, and Computer Science Series, GS-1550, are two-grade interval series. We will consult with the IT and HR communities to decide on an appropriate course of action for reviewing these occupations and determining their appropriate place in the Federal occupational structure.

In the discussion here, the Telecommunications Series, GS-0391, deserves some special attention. In October 1999, we requested agency comment on a proposal to abolish the GS-0391 series and consolidate the series into the proposed Information Technology Management Series. The basis for proposing this action was to recognize the evolving convergence between telecommunications and information technology. The response to this proposal was almost evenly divided between agencies favoring the consolidation and agencies opposing it. Given the lack of consensus, we deferred any action on this proposal. However, the present job family standard makes clear that work previously classified as Telecommunications, GS-0391, should be classified to the Information Technology Management Series, GS-2210, when knowledge of information technology, as defined in this standard, is paramount.

Based on consultation with both the HR and IT communities, it appears that a significant number of positions previously classified to the GS-0391 series will be covered by the new Information Technology Management Series, GS-2210. This includes positions involved in data, voice, and video communications and network design, development, and administration that will be covered under the "Network Services" parenthetical specialty. Other GS-0391 positions may also be covered under one or more of the other parenthetical specialties for the new GS-2210 series.

OPM plans to continue to study the GS-0391 work that will not be covered by the new GS-2210 series to determine the most appropriate course of action. One option is to establish another occupational series within the Information Technology Group, GS-2200 to cover the remainder of the GS-0391 work and to eventually abolish the GS-0391 series. This option, which is consistent with OPM's job family approach to the development of position classification standards, would require factfinding, analysis, and review of relevant occupational information in a manner analogous to the process that was used to define the new GS-2210 series and its parenthetical specialties. Another option would be to retain the GS-0391 series and to include it in the job family occupational study covering other Administrative Work in the General Administration, Clerical, and Offices Services Group, GS-0300, which we will undertake in the future. Selection of this option would signal that the remainder of the GS-0391 work not covered by the new GS-2210 series does not belong in the Information Technology Occupational Group. OPM will continue to consult with our stakeholders in determining the most appropriate approach to this matter.

RESULTS OF AGENCY REVIEW, COMMENT, AND TEST APPLICATION

A. JOB FAMILY STANDARDS – GENERAL ISSUES. In addition to using the job family standard approach to developing and issuing position classification standards, we make every attempt to simplify and streamline position classification concepts, documents, and procedures with each succeeding issuance of a new job family standard (JFS). This standard incorporates many lessons learned from recent JFS issuances.

1. **Eliminating Occupational Category Code(s) from Job Family Standard Designations.** The draft JFS for Administrative Work in the Information Technology Group, GS-2200 had the letter "A" appended to the occupational group code to indicate that it covered administrative work. Since the release of the draft, we have considered the pros and cons of using such a designation, particularly with respect to classification standards for one-grade interval work. For that type of work, we want to acknowledge the declining use of the term "clerical" to describe support and assistance work, as well as some confusion that has developed over time with regard to using the term "technician" in a position title and the definition of technical occupations. In addition, OPM is reexamining the use and meaning of the term "professional" as it applies to occupations in the Federal service. For these reasons and to prevent future confusion, we have decided not to append the occupational category letters (i.e., P, A, T, and/or C) to the occupational group code for JFSs. This does not mean that positions will no longer have the designated P, A, T, or C occupational categories. We will continue to use those categories and record them in the Central Personnel Data File (CPDF). This change should have no impact on agency application of the JFS.

2. **Using Defined Specialties and Prescribed Parenthetical Titles.** From the start, the effort to revise classification guidance for IT work focused not only on the immediate task, but also on the continuing challenge to maintain up-to-date guidance for this area where technology is constantly changing. Previous attempts to deal with obsolete guidance for the GS-0334 Computer Specialist Series and meet users' needs had led to reverting to a broadly defined occupation. Over time, however, that breadth and lack of definition had led to other problems for managing the various kinds of work in the field. After discussions with users in the IT and human resources (HR) communities, we decided once again to define specialties and prescribe parenthetical titles. The JFSs issued for administrative work and for assistance work in the Human Resources Management Occupational Group, GS-0200 use a similar structure, in part to recognize the evolution of the HR generalist in those kinds of work. However, in the case of IT work, we are using this approach of establishing a broad occupational series with several defined specialties and prescribed parenthetical specialty titles as part of an overall strategy to keep the standard current more easily. This specific strategy is described in more detail in section B.2. below.

   The draft standard proposed using a "General" parenthetical title for positions that could not be classified in any of the proposed specialties. We specifically requested comments about this proposal, as well as comments on the idea of using more than two parenthetical specialty titles.

   Agency Comments: Many agencies opposed establishment of the "General" specialty title. The prevailing opinion was that this title provided no descriptive information about the work being performed or about the special knowledge and skill needed and therefore did not serve the purpose of a specialty title. With respect to dealing with multiple specialties, the majority of the agencies that responded stated that it was not practical or necessary to use more than two specialty titles for a single position. Many of these same agencies stated that situations where more than two specialty titles were necessary were limited except in small or remote organizations where positions may be assigned three or more specialties for practical reasons. The most common suggestion for titling positions involving more than two specialties was to use the basic title without any parenthetical specialty titles. Some agencies expressed concern that using even two parenthetical specialties would result in excessively long titles that would exceed the limits of imposed by the information systems used to manage HR data. Many agencies recommended shortening the proposed titles to accommodate the limits of human resources management information systems.

   Agencies also asked for further clarification of the policies for using agency-established parenthetical titles. Some agencies stated that they preferred to use parenthetical specialty titles different from those established in the draft.

   Our Response: We have eliminated the "General" specialty title. Titling instructions now clarify that the basic title, ***Information Technology Specialist***, used without any parenthetical title is the appropriate official title for positions (1) for which there is no established specialty, or (2) that involve work in more than two of the established specialties. Otherwise, agencies are to use the established specialties and prescribed parenthetical titles individually or in any combination of two such titles.

We revised and shortened several specialty titles. To accommodate automated HR information systems, we also authorized the use of abbreviations and established approved abbreviations for the basic title (***IT Specialist*** or ***ITSPEC***) and for each of the specialty titles. Using the abbreviations is optional. We will make similar changes to other JFSs and use this policy with future JFSs.

We also clarified that agencies may still use their agency-established parenthetical titles as unofficial titles. We recognized that during the period after OPM had deleted earlier prescribed parenthetical titles that had become badly outdated, some agencies exercised their discretion to establish their own parenthetical titles and consider them part of the official position title. However, that was an option only so long as OPM had prescribed no parenthetical titles. With the issuance of this JFS, OPM has once again prescribed certain parenthetical titles to use in official position titles, which forecloses the option for agencies to use their own in official titles. As before, when the established specialties and prescribed parenthetical titles are not appropriate, agencies are free to use parenthetical titles that they establish within unofficial titles for organizational purposes.

3. **Distinguishing between Two-Grade Interval Work and One-Grade Interval Work.** The draft job family standard released for comment did not include guidance on how to distinguish specialist (i.e., two-grade interval) positions from assistant (i.e., one-grade interval) positions.

   Agency Comments: Several agencies requested that OPM provide additional guidance on distinguishing between two-grade interval IT work and one-grade interval IT work. In most cases, this interest in additional guidance stemmed from the need to distinguish between higher level assistant positions and entry and developmental level specialist positions where the nature of the work is often similar.

   Our Response: We have added a section on **DISTINGUISHING BETWEEN SPECIALIST WORK AND ASSISTANT WORK** to **GENERAL SERIES, TITLING, AND OCCUPATIONAL GUIDANCE** and will use similar guidance in other JFSs when it is relevant.

4. **Providing Information about Standard Occupational Classification (SOC) Codes.** The Office of Management and Budget requires OPM, as a Federal agency that uses and reports statistical information about employment, to use the Standard Occupational Classification (SOC) system to identify occupations. These SOC codes and this requirement have no impact on the administration of any Federal human resources management systems. To help our users acquaint themselves with the SOC structure and coding scheme, we provided information in a new table, "Crosswalk to the Standard Occupational Classification," within **GENERAL SERIES, TITLING, AND OCCUPATIONAL GUIDANCE** to indicate the SOC codes that apply to Federal positions in the job family on the basis of their occupational series and position titles.

   Agency Comments: Some agencies had questions about the purpose of providing this information. They suggested that we eliminate it or clarify its application.

Our Response: We amended the introductory language to clarify that the crosswalk is for information only and that the SOC system has no immediate impact on agency application of the job family standard. We also simplified the information and codes we included in the crosswalk.

5. **Clarifying the Use of Factor Level Descriptions and Illustrations in Assigning Factor Point Values.** In the draft JFS, we implemented our relatively new approach of providing factor level descriptions (FLDs) and linking them to illustrations that provided more specific actual work examples. The illustrations are, in effect, factor-relevant portions of their predecessor benchmark position descriptions (PDs). In the interests of providing maximum flexibility, the instructions for applying the FLDs and illustrations stated that the user should "compare each factor in the position description to the appropriate FLDs and/or illustrations in the standard."

   Agency Comments: In general, agencies did not provide extensive comments about the FLDs and illustrations. However, one agency suggested that giving users the option of using the FLD <u>or</u> the illustration to assign point values could be problematic for those factors where the FLD is very general.

   Our Response: We amended the instructions for **HOW TO USE THIS STANDARD** to clarify that users should consider both FLDs <u>and</u> illustrations (not "and/<u>or</u> illustrations") in assigning factor point values. This change should prevent confusion, particularly for Factors 4 and 5 where by design we have made the FLDs very general to avoid their becoming quickly out-of-date and will rely on more easily updated illustrations to guide the user in their application. This change also helps clarify the application of series-wide and specialty-specific requirements for Factor 1, as described in A.7. below.

   In addition, we added directions to clarify how users should apply illustrations. We note that they should consider each illustration in its entirety and not simply focus on selected language. We also note that an illustration may describe a level of work that is somewhat higher than the threshold level of its related FLD and that a PD need fully match only the FLD to merit its point value.

6. **Retaining "Knowledge Required by the Position" To Describe Factor 1.** The occupational study that produced this JFS included other efforts undertaken in cooperation with OPM's Employment Service (ES) to pilot a competency-based job profile for use in examining and qualifying employees for IT positions. As one indication of the relationship between the classification standard development and the qualifications refinement, we had proposed renaming Factor 1 to " Competencies Required by the Position."

   Agency Comments: Although reviewers of the draft JFS strongly supported the OPM effort to consider required competencies for IT work, some expressed concern about the confusion that using the "competencies" label for this factor could cause. Moreover, they noted, correctly, that the competencies that ES describes in the job profile are not confined to the classification and grading criteria covered by Factor 1.

Our Response: We will continue to use "Knowledge Required by the Position" as the name of Factor 1 in this and future JFSs. As required for implementation of the Factor Evaluation System and its Primary Standard, factor level descriptions for this factor will continue to focus on the kind or nature of the knowledge and skill needed and how that knowledge and those skills are used in doing the work. However, given the intense stakeholder interest in the application of competencies to employment decisions for filling positions covered by this JFS, we have added material on **THE ROLE OF COMPETENCIES**, including a link to the competency-based job profile, in the **GENERAL SERIES, TITLING, AND OCCUPATIONAL GUIDANCE** section of this JFS.

7. **Clarifying and Cross-referencing Factor 1's Series-wide and Specialty-specific Knowledge and Skill Requirements.** A significant feature of the revision to the classification guidance for IT work is its establishment of specialties with prescribed parenthetical titles within a more general occupational series. We defined those specialties in the **GENERAL SERIES, TITLING, AND OCCUPATIONAL INFORMATION** section. Beyond that, they were also quite clearly delineated through FLDs for each specialty provided at most levels of Factor 1 – Knowledge Required by the Position. At those levels that provide a separate FLD for each specialty, we also provided knowledge and skill requirements that cut across the specialties and apply to all positions within the more general occupational series. Among other things, this facilitated properly classifying IT positions for which no specialty had been defined.

   Agency Comments: Some agencies had questions about the knowledge requirements listed at the start of each level of Factor 1 that apply to all positions covered by the series. Specifically, they asked for further guidance about the relationship between those requirements and the requirements that are listed for a specialty. Their questions concerned whether all the series-wide requirements, as well as any specialty-specific requirements, must be met for a PD to merit the point value for a given level. They cited the instructions in **HOW TO USE THIS STANDARD**, which directed the user to compare the factor information in the PD to "the appropriate FLDs and/<u>or</u> illustrations in the standard" [emphasis added], as particularly confusing because the illustrations tend to focus more on the specialty-specific knowledge and do not necessarily reflect the series-wide requirements. This meant that a user might rely on a match between the PD and an illustration as the basis for assigning a factor level without giving due regard to the more general requirements.

   In addition, some agencies asked for further guidance about whether we really meant that a position had to meet all the series-wide requirements at a level to properly assign that level's point value. They questioned whether this was realistic and observed that a given position that otherwise clearly exceeded the next lower level's requirements might indeed require <u>most</u> of the series-wide requirements, but not <u>all</u> of them.

   Our Response: We considered these comments carefully. To reinforce the connection between FLDs and illustrations, we eliminated the option of comparing a PD to appropriate FLDs <u>or</u> to illustrations. The instructions now say only "FLDs and illustrations." Further, to reinforce the connection between series-wide requirements and specialty-specific requirements, we relabeled the former as "Knowledge Required for All Positions in This Series at This Level" to indicate their series-wide application. We also added a note at the

close of these series-wide requirements reminding users to "refer to these common requirements when applying the knowledge and skill requirements for any specialty at this level." Finally, at the close of each set of specialty-specific requirements, we added a hypertext link back to the series-wide requirements with the label "Cross-reference to common knowledge and skill requirements at this level."

With respect to the question of whether all the series-wide requirements must be met to assign a level's point value, we considered this issue and discussed options with some of the stakeholders who commented. We acknowledge that a position in a given specialty could well fit the overall context of the level as described in the Primary Standard and related guidance without necessarily requiring knowledge and application of every single listed requirement. If we failed to moderate the described requirements, applying the standing policy that these FLDs are to be used as a threshold that must be met entirely would have resulted in assigning lower factor levels than the nature of the work really merited. Consequently, we inserted the modifier "most of the following" after the routine introductory "Knowledge of, and skill in applying" statement.

Finally, we wanted to acknowledge and illustrate that some positions could meet the common, series-wide FLDs and would be properly classified and titled without a parenthetical specialty title (e.g., where the work involves more than two specialties and none predominates or in advance of the formal recognition and establishment of an emerging specialty). Therefore, we added illustrations that use the basic title without a prescribed parenthetical title for several levels on all three factors that use illustrations (i.e., Factor 1 – Knowledge Required by the Position, Factor 4 – Complexity, and Factor 5 – Scope and Effect).

8. **Describing Grading Criteria at Factor Level 1-9 for Administrative Work.** Our past practice has been to describe a factor level only when that level represents a significant sample of nonsupervisory jobs found during an occupational study and when the jobs are similar enough to form the basis for a valid factor level description. As a result, only a few existing administrative FES standards contain Factor Level 1-9 criteria.

   We are changing that practice. By its nature, factfinding for job family studies is not and cannot be exhaustive. Given that limitation, we must weigh the implications of not finding work at a certain level with what else we know about the evolution of work in a particular area, as well as with users' needs for comprehensive grading criteria. Past guidance for grading positions that appeared to exceed the available factor level descriptions was to cross-reference related standards and guides and/or apply the Primary Standard. That guidance was appropriate in the past, when agencies carried substantial staffs of experienced position classification specialists. Such staff resources are waning, however, and agencies will probably not reestablish those previous resource levels. Consequently, we have decided to describe Factor Level 1-9 for both professional and administrative occupations, when we believe there is justification, so that users can be more fully equipped to make classification determinations.

   However, along with this change in practice, we must also urge caution. It is important for users to understand that we are adding Factor Level 1-9 criteria for administrative

occupations only to support accurate position classification determinations. We are not including them to signal that work at that level was found to be typical for the occupations. We expect that very few work situations will justify crediting Factor Level 1-9 in either professional or administrative occupations. Agency officials must be vigilant to maintain classification accountability, as has always been the case.

B. THE GS-2200 JOB FAMILY STANDARD FOR ADMINISTRATIVE WORK IN THE INFORMATION TECHNOLOGY GROUP – SPECIFIC ISSUES. We also requested responses to a set of specific questions relevant to the draft GS-2200 job family standard for administrative work in the IT group.

1. **Ensuring the Adequacy of Guidance and Criteria for Evaluating Covered Positions.** We asked agencies whether the criteria in the standard were adequate for classifying covered positions.

   Agency Comments: Most agencies stated that the draft standard provided adequate information for classifying covered positions and represented a significant improvement over the current GS-0334 Computer Specialist standard. Several agencies requested that OPM review the FLDs and illustrations for internal consistency, and several also requested additional occupational information. Several agencies provided additional information and illustrations.

   Our Response: We used the comments on this question to make refinements to the JFS and its grading criteria. We conducted an extensive review of the FLDs and illustrations for adequacy and consistency that included validation by a special focus group of IT subject-matter experts. We made several adjustments as a result of this review and added a number of new illustrations where appropriate. We also added an expanded glossary in a new **APPENDIX G — INFORMATION TECHNOLOGY GLOSSARY**. We incorporated an overview of IT specialties in the **GENERAL SERIES, TITLING, AND OCCUPATIONAL GUIDANCE** section and provided additional occupational information to enhance the user's understanding of the occupation.

2. **Implementing A Strategy for Maintaining Adequate and Current Coverage of Major Specialty Areas.** We asked agencies if the new specialties adequately covered all major specialty areas in the occupation and, if not, what other specialties they would recommend. We also asked for any suggestions about keeping the standards for this dynamic occupation current.

   Agency Comments: Most agencies stated that the parenthetical specialty titles adequately covered all major IT specialty areas. Several agencies suggested revisions to the titles and/or additional specialty titles.

   Almost every agency that responded to the standard emphasized the importance of keeping this standard current. The primary reason given for this was the expectation that the IT occupation will continue to evolve in a very rapid manner, thereby requiring us to make appropriate adjustments to the standard to ensure its continued viability. Agencies offered many suggestions for ensuring the currency of the standard. The most commonly suggested

way was to conduct a joint OPM, HR, and IT community review of the standard at least every 12 to 18 months to identify changes in the occupation and to determine the manner in which they should be addressed in the standard. Most agencies favored using subject-matter expert focus groups to collect the occupational information needed to update the standard.

Our Response: We did not add new titles at this time. We received several suggestions for additional specialties from reviewers of the draft standard, but the number of suggestions and extent of interest for any individual specialty was not sufficient to warrant adding more specialties at this time. Examples of suggested new specialties include: configuration management, wireless communications, geographic information, spectrum management, and forensics. We will be evaluating these suggestions and others more closely after this initial installment of the JFS has been issued.

In addition, several reviewers noted that project management continues to surface as an area for which a specialty might be considered. However, we have heard very similar observations from other areas of administrative and professional work throughout the Federal Government. Consequently, we plan to look at project management work more generally to determine an appropriate approach to its proper classification. Options include establishing a functional guide that could be applied across different subject matter areas.

We readily acknowledge a continuing need to review the defined specialties issued in this JFS and their prescribed parenthetical titles in light of inevitable changes in the nature of IT work. This review could result in the addition of new specialties, the deletion of outdated specialties, or the revision of existing specialties. We will employ a range of tactics for maintaining the currency of the specialties and titles, but we will be relying on our stakeholders in both the HR and IT communities to alert us to the need to review and consider changes to the specialties based on their experiences using the JFS and their operational knowledge of the occupation.

We expect to continue our partnership with the HR and IT communities to keep the standard current. We will use the Human Resources Management Council and the Chief Information Officers' Council as our primary liaisons with the respective communities. In cooperation with these groups, we will establish a procedure for regularly reviewing and, as necessary, revising the JFS. We believe that the format used in this IT JFS and other recently published JFSs, which includes much of the occupation- or specialty-specific information in appendices, will facilitate the updating process. For these reasons, we believe our overall strategy is sound. We have established a broad occupation (i.e., Information Technology Management, GS-2210) as an umbrella under which we can add and refine emerging and evolving specialties using limited tests and accelerated reviews without necessarily requiring full-scale review and test application of an entire JFS.

3. **Assessing Impact on Grades.** We followed our usual practice of requesting that agencies report any effects that applying the draft job family standard had on the grades of the tested positions.

   Agency Comments: Most agencies reported the test application of the draft job family standard resulted in no changes to current grades.

Our Response: Based on the results of agency test application and final review and on our accommodations of final comments and concerns, we had ample justification to release the final JFS and thereby establish up-to-date classification guidance for this important work.