On-line access to contract ordering information, terms and conditions, up-to-date pricing, and the option to create an electronic delivery order are available through GSA Advantage!, a menu-driven database system. The INTERNET address for GSA Advantage! is: GSAAdvantage.gov.

SCHEDULE TITLE: SIN 54151S – Information Technology Professional Services

CONTRACT NUMBER: GS35F108GA

CONTRACT PERIOD: December 5, 2016 – December 4, 2021

PLANET DEFENSE:

PLANET DEFENSE LLC
10640 Main Street, Suite 300
Fairfax, VA 22030 USA
Phone: 571-332-7424
E-Mail: isingh@planetdefensellc.com

PLANET DEFENSE’S ADMINISTRATION SOURCE:

PLANET DEFENSE LLC
Michael G. Oehler, Contract Administrator
Phone: 702-497-8882
E-Mail: moehler@planetdefensellc.com

BUSINESS SIZE: Small Business

CUSTOMER INFORMATION:

1a. TABLE OF AWARDED SPECIAL ITEM NUMBERS (SINS)

<table>
<thead>
<tr>
<th>SIN</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>54151S</td>
<td>Information Technology Professional Services</td>
</tr>
</tbody>
</table>

1b. LOWEST PRICED MODEL NUMBER AND PRICE FOR EACH SIN:

N/A

2. MAXIMUM ORDER*: $500,000 per SIN and order

*If the best value selection places your orders over the Maximum Order identified in this catalog/pricelist, you have an opportunity to obtain a better schedule contract price. Before placing your order, contact the aforementioned Planet Defense for a better price. Planet Defense may (1) offer a new price for this requirement (2) offer the lowest price available under this contract or (3) decline the order. A delivery order that exceed
the maximum order may be placed the schedule contract in accordance with FAR 8.404.

3. **MINIMUM ORDER**: $100

4. **GEOGRAPHIC COVERAGE**: Domestic, 50 states, Washington, DC, Puerto Rico, US Territories and to a CONUS port or consolidation port for orders received from overseas activities

5. **POINT(S) OF PRODUCTION**: Various

6. **DISCOUNT FROM LIST PRICES**: 0.00% from the accepted pricelist. For calculation of the GSA Schedule price (price paid by customers ordering from the GSA Schedule, and the price to be loaded into GSA Advantage), Planet Defense should deduct the appropriate basic discount from the list price and add the prevailing IFF rate to the negotiated discounted price (Net GSA price). Current IFF rate is 0.75%.

7. **QUANTITY DISCOUNTS**: None

8. **PROMPT PAYMENT TERMS**: Net 30

9a. Government purchase cards are accepted at or below the micro-purchase threshold.

9b. Government purchase cards are accepted or not accepted above the micro-purchase threshold: Contact Planet Defense

10. **FOREIGN ITEMS**: None

11a. **TIME OF DELIVERY**: Not applicable.

11b. **EXPEDITED DELIVERY**: Not applicable.

11c. **Overnight and 2-day delivery**: Not applicable.

11d. **URGENT REQUIREMENTS**: Not applicable.

12. **F.O.B. POINT**: Origin

13a. **ORDERING ADDRESS**: Same as Planet Defense

14. **PAYMENT ADDRESS**: Same as Planet Defense

15. **WARRANTY PROVISION**: Standard Commercial Warranty.

16. **Export packing charges**: Not applicable.

17. **TERMS AND CONDITIONS OF GOVERNMENT PURCHASE CARD ACCEPTANCE** (any thresholds above the micro-purchase level)
18. TERMS AND CONDITIONS OF RENTAL, MAINTENANCE, AND REPAIR (if applicable): Not applicable.

19. TERMS AND CONDITIONS OF INSTALLATION (if applicable): Not applicable.

20. TERMS AND CONDITIONS OF REPAIR PARTS INDICATING DATE OF PARTS PRICE LISTS AND ANY DISCOUNTS FROM LIST PRICES (if applicable): Not applicable.

20a. TERMS AND CONDITIONS FOR ANY OTHER SERVICES (if applicable): Not applicable.

21. LIST OF SERVICE AND DISTRIBUTION POINTS (if applicable): Not applicable.

22. LIST OF PARTICIPATING DEALERS (if applicable): Not applicable.

23. PREVENTIVE MAINTENANCE (if applicable): Not applicable.

24a. SPECIAL ATTRIBUTES SUCH AS ENVIRONMENTAL ATTRIBUTES (e.g., recycled content, energy efficiency, and/or reduced pollutants).

24b. Section 508 compliance for EIT: Not applicable.

25. DUNS NUMBER: 080081457

26. NOTIFICATION REGARDING SYSTEM FOR AWARD MANAGEMENT (SAM): Registration valid.
TERMS AND CONDITIONS APPLICABLE TO INFORMATION TECHNOLOGY (IT) PROFESSIONAL SERVICES (SPECIAL ITEM NUMBER 54151S)

SIN 54151S Information Technology Professional Services

54151S IT Professional Services and/or labor categories for database planning and design; systems analysis, integration, and design; programming, conversion and implementation support; network services, data/records management, and testing.

NOTE: Subject to Cooperative Purchasing

Cooperative Purchasing: Yes
Set Aside: No
FSC/PSC Code : DA01
Maximum Order : $500,000

NAICS

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>Business Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>541511</td>
<td>Custom Computer Programming Services</td>
<td>$30 million</td>
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<tr>
<td>541512</td>
<td>Computer Systems Design Services</td>
<td>$30 million</td>
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<tr>
<td>541513</td>
<td>Computer Facilities Management Services</td>
<td>$30 million</td>
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<tr>
<td>541519</td>
<td>Other Computer Related Services</td>
<td>$30 million</td>
</tr>
</tbody>
</table>

Instructions:
1. Specific Instructions for SIN 54151S - Information Technology Professional Services:

* All services shall be billed in arrears in accordance with 31 U.S.C. 3324.
LABOR CATEGORY DESCRIPTIONS

Description of Services
As a small business, we provide expertise in a range of IT services. Our core competencies are network engineering/design, systems engineering, software engineering/development, systems integration/training and customer support.

Network Engineering/Design
- Expert level knowledge of computer network architecture, design, implementation, operations and support
- Design and implementation of security best practices using hardware firewalls, VPN devices and IDS systems. This also includes software-based security measures such as access-control lists, traffic policing and segmentation using VLANs
- Extensive knowledge of network protocols (IPV4 and IPV6, TCP/UDP, Multicast), LAN/WAN network topologies and Quality of Service design
- Configuration and troubleshooting knowledge of Cisco switches, routers, VPN Concentrators, PIX and ASA series firewalls and Foundry switches and routers
- Employee Cisco CCNP, CCDP and CCSP certified talent
- Network analysis, monitoring, and detection systems – HP Openview, Snort, NMAP and Ethereal

Systems Engineering
- Enterprise-wide design, engineering, administration, analysis, programming and support of highly available clustered systems and networks
- Enterprise design, configuration and deployment
- Continuity of Operations and Disaster recovery models, methodologies, design and engineering
- Design and configuration of various storage systems: NAS, SAN, iSCSI and geo-clustering
- Broker and implement full range support of network, platform and information sharing technologies between Intelligence Community organizations and other Federal Departments, Agencies and Organizations which require Top Secret level access
- Microsoft SharePoint server and portal design
- Extensive use of terminal services/Citrix, thin client design and anti-virus systems
- Microsoft Systems Center Operations Manager with Audit Collection Services and clustering design
- SoftGrid design and engineering
- Microsoft’s MCSE for 2000, 2003 and 2008 talent with expert knowledge in Active Directory modeling and Group Policy administration

Software Engineering/Development
- Extensive experience designing, developing, deploying and maintaining complex
collaboration and work flow applications in a secure environment

- Significant experience developing data extraction, translation and loading tools
- Well versed in the integration of third party tools with relational database management systems
- Expert knowledge of a wide range of development tools - JAVA, JavaScript, Microsoft C++, Microsoft C# and Visual Basic

**Systems Integration/Training**

- Production of detailed engineering and deployment documents, security plans, technical briefings and tutorials
- Familiar with various government project management frameworks
- Utilization of portfolio management within the organization to maximize the value of the customer’s technology investments
- Expertise in providing all necessary training on deployed systems

**Customer Support**

- Comfortable and experienced with work in high-stress environments – mission-critical network upgrades, network fault isolation, troubleshooting and deployment support work in overseas environments
- Primary support for several unique encryption systems (ex: STU III and Cisco VPN technologies)

**Labor Category Descriptions**

Details are provided in content section below.

**Labor Category Levels**

Table 1 lists the desirable education and experience at four levels - Expert, Senior, Journeyman/Full Performance, and Entry/Developmental for all job categories. It also provides tradeoffs - equivalent fewer years of experience for additional education - to add flexibility in mapping other labor categories to those provided here. All experience and education are in a technical field directly related to the labor category. All diplomas, CED certificates, and degrees are from accredited institutions.

**Table 1: Education, Experience and Equivalency for Labor Category Levels**

<table>
<thead>
<tr>
<th>Category Level</th>
<th>Education &amp; Experience</th>
<th>Education &amp; Experience</th>
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<tbody>
<tr>
<td></td>
<td>IT Related Education</td>
<td>Plus</td>
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<tr>
<td></td>
<td>Acquired Degree</td>
<td>Plus</td>
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<tr>
<td>I: Expert</td>
<td>Bachelor’s or higher</td>
<td>&gt; 8 years</td>
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<td></td>
<td>Masters</td>
<td>Plus</td>
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<td></td>
<td>Associate</td>
<td>Plus</td>
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<td></td>
<td>High School/GED</td>
<td>Plus</td>
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<tr>
<td>Level: Senior</td>
<td>Degree</td>
<td>Experience</td>
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<tr>
<td>Bachelor’s or higher</td>
<td>Plus 4-7 years</td>
<td>Doctorate</td>
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</table>

**Systems Engineer**

Other Government and Industry IT Job Titles: Computer Systems Analyst, Chief Engineer, Information Engineer, principal Information Engineer, and Open-Systems Engineer, Application Engineer, Requirements Manager

**Systems Engineer Job Description**

Identifies system integrity issues and solutions for the full system life cycle from concept to disposal. Performs technical planning, system integration, verification and validation, cost and risk, and supportability and effectiveness analyses for total systems. Ensures designs are compatible with the architecture and allocates requirements to segments.

Analyzes science, engineering, business, and all other data processing problems for application to electronic data processing systems. Analyzes user requirements, procedures, and problems to automate or improve existing systems and review computer system capabilities, workflow, and scheduling limitations. May analyze or recommend commercially available software. May supervise computer programmers.

**Systems Engineer Tasks**

- Ensure the logical and systematic conversion of customer or product requirements into total systems solutions that acknowledge technical, schedule, and cost constraints.
- Perform functional analysis, timeline analysis, cost estimation, trade studies, requirements allocation and interface definition studies to translate customer requirements into hardware and software specifications.
- Provide staff and users with assistance solving computer related problems, such as malfunctions
and program problems.
- Test, maintain, and monitor computer programs and systems, including coordinating the installation of computer programs and systems.
- Use object-oriented programming languages, as well as client/server applications development processes and multimedia and Internet technology.
- Confer with clients regarding the nature of the information processing or computation needs a computer program is to address.
- Coordinate and link the computer systems within an organization to increase compatibility and so information can be shared.
- Consult with management to ensure agreement on system principles.
- Expand or modify system to serve new purposes or improve workflow.
- Analyze and study complex system requirements.
- Design software tools and subsystems to support: software reuse and domain analyses and manages their implementation.
- Manage software development and support using formal specifications, data flow diagrams, other accepted design techniques and Computer Aided Software Engineering (CASE) tools.
- Estimate software development costs and schedule. Review existing programs and assist in making refinements, reducing operating time, and improve current techniques. Supervise software configuration management.
- Apply the concept of operations set of disciplines for the planning, analysis, design and construction of information systems across a major sector of the organization.
- Develop analytical and computational techniques and methodology for problem solutions.
- Perform strategic systems planning, business information planning, business and analysis.
- Provide technical guidance in software engineering techniques and automated support tools.
- Analyze functional business applications and design specifications for functional activities
- Develops block diagrams and logic flow charts. Translate detailed design into computer software.
- Tests, debugs, and refines the computer software to produce the required product.
- Prepare required documentation, including both program-level and user-level documentation.
- Enhance software to reduce operating time or improve efficiency.
- Provide technical direction to programmers to ensure program deadlines are met.
- Apply business process improvement practices to re-engineer methodologies and principles and business process modernization projects.
- Apply, as appropriate, activity and data modeling, transaction flow analysis, internal control and risk analysis and modern business methods and performance measurement techniques.
- Assist in establishing standards for information systems procedures.
- Develop and apply organization-wide information models for use in designing and building integrated, shared software and database management systems.
- Construct sound, logical business improvement opportunities consistent with the CIM guiding principles, cost savings, and open system architecture objectives.

**Systems Architect**
Other Government and Industry Job Titles: Architectural Engineer, Systems Architect, Data Architect, Chief Engineer

**Systems Architect Job Description**
Designs and develops solutions to complex applications problems, system administration issues, or network concerns. Performs systems management and integration functions. Analyzes science, engineering, business, and all other data processing problems for application to electronic data processing systems. Analyzes user requirements, procedures, and problems to
automate or improve existing systems and review computer system capabilities, workflow, and scheduling limitations. May analyze or recommend commercially available software. Incorporates engineering strategies for introducing new technology into the Sponsor's infrastructure related business processes, namely, Collection, Analysis, Production and Dissemination. Develops future technology and architectural advancements to support CIO architectural strategy, technology migration, and integration and evolution. Applies knowledge of enterprise IT needs to design improved processes, generate valid requirements, and ensures these are consistent with the Sponsor's CIO enterprise technical architecture (ETA) and Federal Enterprise Architecture (FEA). Acts as an advisor and proposes changes to the ETA based on analysis of requirements and new technology. Works with appropriate parties to resolve discrepancies between proposed IT systems and enterprise quality and security standards. Provides technical and administrative direction for personnel performing software development tasks, makes recommendations, if needed, for approval of major systems installations. Designs and develops computer software possessing a wide range of capabilities, including numerous engineering, business, and records management functions.

**Systems Architect Tasks**
- Collaborate with engineers or software developers to select appropriate design solutions or ensure the compatibility of system components.
- Complete models and simulations, using manual or automated tools, to analyze or predict system performance under different operating conditions.
- Communicate with staff or clients to understand specific system requirements.
- Define and analyze objectives, scope, issues, or organizational impact of information systems.
- Design and conduct hardware or software tests.
- Develop or approve project plans, schedules, or budgets.
- Develop system engineering, software engineering, system integration, or distributed system architectures.
- Direct the installation of operating systems, network or application software, or computer or network hardware.
- Direct the analysis, development, and operation of complete computer systems.
- Document design specifications, installation instructions, and other system-related information.
- Establish functional or system standards to ensure operational requirements, quality requirements, and design constraints are addressed.
- Evaluate current or emerging technologies to consider factors such as cost, portability, compatibility, or usability.
- Evaluate existing systems to determine effectiveness and suggest changes to meet organizational requirements.
- Identify system data, hardware, or software components required to meet user needs.
- Investigate system component suitability for specified purposes and make recommendations regarding component use.
- Monitor system operation to detect potential problems.
- Perform ongoing hardware and software maintenance operations, including installing or upgrading hardware or software.
- Perform security analyses of developed or packaged software components.
- Communicate project information through presentations, technical reports or white papers.
- Provide advice on project costs, design concepts, or design changes.
- Provide technical guidance or support for the development or troubleshooting of systems.
- Provide guidelines for implementing secure systems to customers or installation teams.
- Train system users in system operation or maintenance.
- Verify stability, interoperability, portability, security, or scalability of system architecture.
- Configure servers to meet functional specifications.
- Develop application-specific software.
- Develop efficient and effective system controllers.
- Research, test, or verify proper functioning of software patches and fixes.
- Define, document, and maintain the system and network architecture within the organization.
- Work as a team lead or member to evaluate and make tactical and strategic recommendations for the system architecture, architecture of the hardware, communications, data security, messaging, applications, office automation, printing, administration, support, performance, and availability.
- Lead or participate as a member of a team to assess and recommend a migration strategy to new technologies.
- Establish applicable standards and practices for development through the Developer's Forum(s) and the Sponsor's Enterprise Technical Architecture.
- Provide guidance through support to developers on effects of bandwidth constraints on applications.
- Provide support staff daily supervision and direction.
- Develop plans for Information Technology (IT) systems from project inception to conclusion.
- Analyze the problem and the information to be processed.
- Define the problem, and develop system requirements and program specifications, from which programmers prepare detailed designs, programs, and tests.
- Coordinate with programmers to ensure proper implementation of program according to system specifications.
- Develop, in conjunction with functional users, system alternative solutions.
- Develop requirements for information systems from a project's inception to conclusion.
- Develop required specifications for simple to complex systems.
- Assist computer system analysts in preparing input and test data for a proposed system.
- Establish system information requirements using analysis of the information engineer(s) in the development of organizational - wide or large-scale information systems.
- Design architecture to include the software, hardware, and communications to support the total requirements as well as provide for present and future cross-functional requirements and interfaces.
- Includes systems, programs, groups, and Sponsor's community to promote interoperability and collaboration consistent with the DNI National Intelligence Strategy Mission and Enterprise Objectives.
- Comply with the Sponsor's Strategic Intent and Strategic Goals and Sponsor's Enterprise Architecture Standards
- Ensure systems are compatible and in compliance with the standards for open systems architectures, the Open Systems Interconnection (OSI) and International Standards Organization (ISO) reference models, and profiles of standards - such as Institute of Electrical and Electronic Engineers (IEEE) Open Systems Environment (OSE) reference model - as they apply to the implementation and specification of Information Management (IM) solution of the application platform, across the application program interface (API), and the external environment/software application.
- Evaluate analytically and systematically problems of work flows, organization, and planning and develop appropriate corrective action.

**Hardware Engineer**

Other Government and Industry IT Titles: Hardware Technician, Hardware Specialist, Equipment Engineer, Mechanical Engineer, Product Engineer, Hardware Installation Technician, Test
Manager

**Hardware Engineer Job Description**
Provides functional guidance, supervision, technical support, training, and quality assurance/control to technicians. Analyzes network and computer communications hardware characteristics and recommends equipment procurement, removals, and modifications. Adds, deletes, and modifies; as required, host, terminal, and network devices. Assists and coordinates with communications network specialists in the area of communications software. Consistent with the standards established by the Systems Architect in the "Systems Architecture" in 1.0 above, analyzes and implements communications standards and protocols according to site requirements. Reviews computer systems in terms of machine capabilities and human-machine interface. Prepares reports and studies concerning hardware. Prepares functional requirements and specifications for hardware acquisitions. Ensures that problems have been properly identified and that the solutions will satisfy the user's requirements. Ensures that the new/updated service is adequately tested.

**Hardware Engineer Tasks**
- Conduct sites surveys; assess and document current site network configuration and user requirements.
- Analyze existing requirements and prepare specifications for hardware acquisitions.
- Produce Test Plan by preparing engineering plans and site installation Technical Design Packages.
- Develop hardware installation schedules.
- Prepares drawings documenting configuration changes at each site.
- Prepare site installation and test reports.
- Configure computers, communications devices and peripheral equipment.
- Installs network hardware.
- Train site personnel in proper use of hardware.
- Build specialized interconnecting cables.

**System Analyst**

**System Analyst Job Description**
Responsible for analyzing internal and external customer needs. Identifies and determines equipment, software and process/procedural solutions to problems. Establishes system parameters and formats, and ensures hardware/software compatibility. Analyzes science, engineering, business, and all other data processing problems for application to electronic data processing systems. Analyzes user requirements, procedures, and problems to automate or improve existing systems and review computer system capabilities, workflow, and scheduling limitations. May analyze or recommend commercially available software. May supervise computer programmers.
Performs process and data modeling in support of the planning and analysis efforts using both manual and automated tools. Applies reverse engineering and re-engineering disciplines to develop strategic and planning documents. Provides group facilitation, interviewing, training, and provides additional forms of knowledge transfer. Constructs sound, logical business improvement opportunities consistent with corporate Information Management guiding principles, cost savings, and system architecture objectives. Key coordinator between multiple project teams to ensure enterprise-wide integration of reengineering efforts.
**System Analyst Tasks**
- Analyze new hardware and software to determine their need or application in the existing or proposed system.
- Advise on new techniques and estimated costs associated with new or revised programs and utilities - taking into consideration personnel, time, and hardware requirements and makes trade-off analyses.
- Review documentation, describing system specifications and operating instructions, and revise existing processes and procedures to correct deficiencies and maintain more effective data handling, conversion, input/output requirements and storage.
- Test, maintain, and monitor computer programs and systems, including coordinating the installation of computer programs and systems.
- Use object-oriented programming languages, as well as client/server applications development processes and multimedia and Internet technology.
- Confer with clients regarding the nature of the information processing or computation needs a computer program is to address.
- Coordinate and link the computer systems within an organization to increase compatibility and so information can be shared.
- Consult with management to ensure agreement on system principles.
- Expand or modify system to serve new purposes or improve workflow.
- Interview or survey workers, observe job performance or perform the job to determine what information is processed and how it is processed.
- Determine computer software or hardware needed to set up or alter system.
- Train staff and users to work with computer systems and programs.
- Analyze information processing or computation needs and plan and design computer systems, using techniques such as structured analysis, data modeling and information engineering.
- Assess the usefulness of pre-developed application packages and adapt them to a user environment.
- Define the goals of the system and devise flow charts and diagrams describing logical operational steps of programs.
- Develop, document and revise system design procedures, test procedures, and quality standards.
- Review and analyze computer printouts and performance indicators to locate code problems, and correct errors by correcting codes.
- Recommend new equipment or software packages.
- Read manuals, periodicals, and technical reports to learn how to develop programs that meet staff and user requirements.
- Supervise computer programmers or other systems analysts or serve as project leaders for particular systems projects.
- Utilize the computer in the analysis and solution of business problems such as development of integrated production and inventory control and cost analysis systems.
- Prepare cost-benefit and return-on-investment analyses to aid in decisions on system implementation.
- Specify inputs accessed by the system and plan the distribution and use of the results.

**Test Engineer**
**Test Engineer Job Description**

Apply electronic theory and related knowledge, usually under the direction of engineering staff, to design, build, repair, calibrate, and modify electrical components, circuitry, controls, and machinery for subsequent evaluation and use by engineering staff in making engineering design decisions. Develop and execute software test plans in order to identify software problems and their causes.

Responsible for ensuring that the test design and documentation support all applicable clients, Sponsor's or industry standards time lines and budgets. Responsible for ensuring that testing conclusions and recommendations are fully supported by test results, and project managers are fully informed of testing status and application deviations from documented user requirements. Prepares milestone status reports and deliveries/presentations on the system test and evaluation concept to colleagues, subordinates, and end user representatives.

**Test Engineer Tasks**

- Perform analysis of documented user requirements and directs or assists in the design of test plans in support of user requirements for software or IT systems.
- Review user application system requirements documentation
- Design, define and document unit and application test plans
- Transform test plans into test scripts and executes those scripts
- Make recommendations, if needed, on test and evaluation strategies for major systems installations.
- Estimate software-testing costs and schedule.
- Conduct software compatibility tests with programs, hardware, operating systems, or network environments.
- Create or maintain databases of known test defects:
  - Design test plans, scenarios, scripts, or procedures.
  - Design or develop automated testing tools.
- Develop or specify standards, methods, or procedures to determine product quality or release readiness.
- Develop testing programs that address areas such as database impacts, software scenarios, regression testing, negative testing, error or bug retests, or usability.
- Document software defects, using a bug tracking system, and report defects to software developers.
- Monitor bug resolution efforts and track successes.
- Document test procedures to ensure reliability and compliance with standards.
- Evaluate or recommend software for testing or bug tracking.
- Identify program deviance from standards, and suggest modifications to ensure compliance.
- Identify, analyze, and document problems with program function, output, online screen, or content.
- Install and configure recreations of software production environments to allow testing of software performance.
- Install, maintain, or use software testing programs.
- Investigate customer problems referred by technical support.
- Monitor program performance to ensure efficient and problem-free operations.
- Participate in product design reviews to provide input on functional requirements, product designs, schedules, or potential problems.
- Perform initial debugging procedures by reviewing configuration files, logs, or code pieces to determine breakdown source.
- Plan test schedules or strategies in accordance with project scope or delivery dates.
- Provide feedback and recommendations to developers on software usability and functionality.
• Test system modifications to prepare for implementation.
• Update automated test scripts to ensure currency.
• Collaborate with field staff or customers to evaluate or diagnose problems and recommend possible solutions.
• Coordinate user or third party testing.
• Conduct historical analyses of test results.
• Provide technical support during software installation or configuration.
• Review software documentation to ensure technical accuracy, compliance, or completeness, or to mitigate risks.
• Visit beta testing sites to evaluate software performance

**Communications Hardware Engineer**
Other Government and Industry IT Job Titles: Mechanical Engineer, Communications Hardware Engineer, Communications Hardware Specialist, Operations Technician, Outside Plant Locator, Outside Plant Installer, Equipment Engineer, Product Engineer, Hardware Installation Technician, Test Manager

**Communications Hardware Engineer Job Description**
Leads all aspects of outside plant (OSP) installation, maintenance, locating fiber optic cable routes, and splicing. Develops preventive maintenance and restoration procedures for OSP facilities. Splices and tests fiber optic cable in a field environment. Reads and interprets Miss Utility tickets and compares to existing outside drawings. Communicates verbally with construction subPlanet Defenses regarding proper procedures for placement of outside cable plant. Interfaces with OSP engineers to determine best course of action for cable repairs or relocates. Provides functional guidance, supervision, technical support, training, and quality assurance/control to technicians.

**Communications Hardware Engineer Tasks**
• Analyze network and computer communication hardware characteristics and recommends equipment procurement, removals, and modifications.
• Add, delete, and modify; as required, host, terminal, and network devices.
• Assist and coordinate with communications network specialists in the area of communications software.
• Analyze and implement communications standards and protocols according to site requirements.
• Review computer systems in terms of machine capabilities and human-machine interface.
• Prepare reports and studies concerning hardware. Prepare functional requirements and specifications for hardware acquisitions. Ensure that problems have been properly identified and that the solutions will satisfy the user's requirements.
• Conduct sites surveys; assess and document current site network configuration and user requirements.
• Analyze existing requirements and prepares specifications for hardware acquisitions.
• Prepare engineering plans and site installation Technical Design Packages.
• Develop hardware installation schedules.
• Prepare drawings documenting configuration changes at each site.
• Prepare site installation and test reports.
• Configure computers, communications devices and peripheral equipment.
• Install network hardware.
• Train site personnel in proper use of hardware. Build specialized interconnecting cables.

**Field Engineer**
Other Government and Industry IT Job Titles: Outside Plant Engineer, Communications Engineer, Communications Hardware Specialist, and Hardware Specialist
Field Engineer Job Description
Performs applied research, development, and design of underground outside plant (OSP) conduit infrastructure and fiber optic cabling. Manages and coordinates OSP fiber optic projects from design through as-built delivery. Supervises all aspects of outside plant installation, maintenance, restoration, and fiber locations. Ensures adherence to installation standards, restoration procedures, and sound engineering practices. Provides quality checks on the work performed by OSP technicians. Responds to the Network Services Operations Center (NSOC) to resolve outages, anomalies, and issues related to the network fiber infrastructure.

Field Engineer Tasks
• Provides design, permitting, and field decisions applicable to OSP construction projects.
• Perform survey work, schedule planning and implementation, and quality control of permit drawings, construction drawings, and as builds.
• Review inspection reports and redline changes.
• Review, analyze, and resolve field construction problems and discrepancies.
• Coordinate subPlanet Defenses, materials, inspectors, tools, and equipment to complete projects on schedule and within budget.
• Communicate verbally with construction subPlanet Defenses regarding proper procedures for placement of outside cable plant.
• Provide interpretation of plans, detail sheets, and specifications for subPlanet Defenses and inspectors.
• Prepare applications and drawings for right-of-way and construction permits.
• Perform quality control of drawings and as-builds prepared by computer-aided design (CAD) personnel.
• Make running line changes in accordance with (IAW) local regulations (e.g., city, county, state, railroads).
• Analyze Optical Time Domain Reflectometer (OTDR) traces, evaluate characteristics of fiber, and document test results.

Network Engineer
Other Government and Industry TI' Job Titles: Network Systems Analyst, Communications Network Specialist, Data Communications Analyst, Networking Systems And Distributed Systems Engineer, Communications Software Specialist, Communications Specialist, Communications Network Manager, Communications Hardware Specialist, Voice Communications Manager, Network Controller, Network Analyst, Network Engineer, Network Manager, Network Technician, Network Installation Technician, System Programmer, Systems Administrator, Systems Engineer, Systems Specialist, Telecommunications Engineer, Telecommunications Manager, Network Operations Engineer, Network Operations Manager, Open Systems Engineer, Network Engineering Officer, Technical Watch Standee

Network Engineer Job Description
Installs, configures, and supports an organization's local area network (LAN), wide area network (WAN), Sponsor's Internet Network, Intranet and Internet and other data communications systems or a segment of a network system. Maintains network hardware and software. Monitors network to ensure network availability to all system users and perform necessary maintenance to support network availability. May supervise other network support and client server specialists and plan, coordinate, and implement network security measures.
Oversees network control center. Provides support to projects that involve networks. Performs a full range of complex network designs encompassing multiple technologies within a single network. Evaluates new network technologies and makes recommendations to project managers
regarding the integration of these technologies into the existing network. Plans new configurations for integration into the network, using knowledge of the performance characteristics of the systems being added to the network and the specifications for network interfaces to insure effective integration and optimal network performance. Ensures that adequate and appropriate planning is provided for hardware and communications facilities to develop and implement methodologies for analysis, installation and support of voice communications systems. Provides support in the translation of business requirements into telecommunications (e.g., LAN, MAN, WAN, Voice and Video) requirements, designs and orders. The overarching INFOSEC and COMSEC security requirements for the Sponsor's network add to the complexity of these positions.

**Network Engineer Tasks**

- Diagnose hardware and software problems, and replace defective components. Perform data backups and disaster recovery operations.
- Maintain and administer computer networks and related computing environments, including computer hardware, systems software, applications software, and all configurations.
- Plan, coordinate, and implement network security measures in order to protect data, software, and hardware.
- Operate master consoles in order to monitor the performance of computer systems and networks, and to coordinate computer network access and use.
- Perform routine network startup and shutdown procedures, and maintain control records.
- Design, configure, and test computer hardware, networking software and operating system software.
- Prepare technical proposals for presentation to the Sponsor's engineering review boards for adding new technologies to the network.
- Perform a full range of upgrades to the existing network architecture.
- Review user requests for upgrades or additions to the network to assess impact on network performance and provide advice and guidance on the most practical technical approach to meeting user requirements.
- Perform long term O&M activities to include tier 3 troubleshooting and problem resolution.
- Utilize complex network analysis tools to identify and correct problems in the network.
- Prepare troubleshooting procedures for restoring the network to optimal performance levels.
- Provide fault management for the network and supports performance management functions.
- Respond, isolate, and resolve network troubles. Monitor alarms and alerts to identify network elements causing network degradation or failure.
- Maintain logs and records associated with reported problems or situations.
- Execute reporting functions and data input associated with network management.
- Monitor security posture of the network, and report suspected violations to designated authority.
- Coordinate with configuration management and implementation teams.
- Perform operator-level maintenance on components associated with network management systems.
- Analyze network characteristics (e.g., traffic, connect time, transmission speeds, packet sizes, and throughput) and recommends procurement, removals, and modifications to network components.
- Design and optimize network topologies and site configurations. Plan installations, transitions, and cutovers of network components and capabilities.
- Coordinate requirements with users and suppliers.
- Organize and direct network installations on site surveys.
- Assess and document current site network configuration and user requirements.
- Design and optimize network topologies.
- Create and/or maintain operating systems, communications software, data base packages,
• Modify existing software, as well as, create special-purpose software to ensure efficiency and integrity between systems and applications.
• Apply software, hardware, and standards information technology skills in the analysis, specification, development, integration, and acquisition of open systems for Information Management (IM) applications.
• Ensure these systems and applications are compliant with standards for open systems architectures, reference models, and profiles of standards - such as the IEEE Open Systems Environment (OSE) reference model - as they apply to the implementation and specification of IM solutions on the application platform, across the application program interface (API), and the external environment/software application.
• Evaluate and recommend COTS applications and methodologies that can be acquired to provide interoperable, portable, and scalable information technology solutions.
• Perform analysis and validation of reusable software and hardware components to ensure the integration of these components into interpretable IM designs.

**Network Designer**

Other Government and Industry Titles: Network engineer

**Network Designer Job Description**

Determine user requirements and design specifications for computer networks. Plan and implement network upgrades.

**Network Designer Tasks**
• Adjust network sizes to meet volume or capacity demands.
• Communicate with customers, sales staff, or marketing staff to determine customer needs.
• Coordinate network operations, maintenance, repairs, or upgrades.
• Design, build, or operate equipment configuration prototypes, including network hardware, software, servers, or server operation systems.
• Determine specific network hardware or software requirements, such as platforms, interfaces, bandwidths, or routine schemas.
• Develop and implement solutions for network problems.
• Develop conceptual, logical, or physical network designs.
• Develop procedures to track, project, or report network availability, reliability, capacity, or utilization.
• Develop or recommend network security measures, such as firewalls, network security audits, or automated security probes.
• Estimate time and materials needed to complete projects.
• Evaluate network designs to determine whether customer requirements are met efficiently and effectively.
• Monitor and analyze network performance and data input/output reports to detect problems, identify inefficient use of computer resources, or perform capacity planning.
• Participate in network technology upgrade or expansion projects, including installation of hardware and software and integration testing.
• Prepare or monitor project schedules, budgets, or cost control systems.
• Prepare detailed network specifications, including diagrams, charts, equipment configurations, and recommended technologies.
• Research and test new or modified hardware or software products to determine performance and interoperability.
• Communicate with vendors to gather information about products, to alert them to future needs, to resolve problems, or to address system maintenance issues.
• Coordinate installation of new equipment.
• Coordinate network or design activities with designers of associated networks
• Design, organize, and deliver product awareness, skills transfer, and product education sessions for staff and suppliers.
• Develop or maintain project-reposting systems.
• Develop disaster recovery plans.
• Develop network-related documentation.
• Explain design specifications to integration or test engineers.
• Develop plans or budgets for network equipment replacement.
• Prepare design presentations and proposals for staff or customers.
• Supervise engineers and other staff in the design or implementation of network solutions.
• Use network computer-aided design (CAD) software packages to optimize network designs.

**Network Systems Analyst**

Other Government and Industry Titles: Data Communications Analyst, Network Engineer, Systems Engineer, Systems Administrator, System Programmer, Telecommunications Manager, Network Technician, Systems Specialist, Network Consultant, Network Manager, Networking systems and Distributed Systems Engineer, Systems Planner.

**Network Systems Analyst Job Description**

Analyze, design, test, and evaluate network systems, such as local area networks (LAN), wide area networks (WAN), Internet, intranet, and other data communications systems. Perform network modeling, analysis, and planning. Research and recommend network and data communications hardware and software. Includes telecommunications specialists who deal with the interfacing of computer and communications equipment. May supervise computer programmers.

Network or computer systems administrators install, configure, and support an organization's LAN, WAN, network segment, or Internet functions. They maintain network hardware and software, analyze problems, and monitor the network to ensure availability to system users. Administrators also may plan, coordinate, and implement network security measures. In some organizations, computer security specialists are responsible for the organization's information security.

**Network Systems Analyst Tasks**

• Maintain needed files by adding and deleting files on the network selves and backing up files to guarantee their safety in the event of problems with the network.
• Monitor system performance and provide security measures, troubleshooting and maintenance as needed.
• Assist users to diagnose and solve data communication problems.
• Set up user accounts, regulating and monitoring file access to ensure confidentiality and proper use.
• Design and implement systems, network configurations, and network architecture, including hardware and software technology, site locations, and integration of technologies.
• Maintain the peripherals, such as printers, that are connected to the network.
• Identify areas of operation that need upgraded equipment such as modems, fiber optic cables, and telephone wires.
• Train users in use of equipment.
• Develop and write procedures for installation, use, and troubleshooting of communications hardware and software.
• Adapt and modify existing software to meet specific needs.
• Work with other engineers, systems analysts, programmers, technicians, scientists and top-level
managers in the design, testing and evaluation of systems.
- Test and evaluate hardware and software to determine efficiency, reliability, and compatibility with existing system, and make purchase recommendations.
- Read technical manuals and brochures to determine which equipment meet establishment requirements.
- Consult customers, visit workplaces or conduct surveys to determine present and future user needs.
- Visit vendors; attend conferences or training and study technical journals to keep up with changes in technology.

**Telecommunications Specialist**


**Telecommunications Specialist Job Description**

Sets-up, rearrange, or remove switching and dialing equipment used in central offices. Services or repair telephones and other communication equipment on customers’ property. May install equipment in new locations or install wiring and telephone jacks in buildings under construction. Strings and repairs telephone and television cable, including fiber optics and other equipment for transmitting messages or television programming.

Focuses on the interaction between computer and communications equipment. Designs voice, video, graphics, data communication and Internet systems. Supervises the installation of the systems, including radio transmitters and receivers, and provides maintenance and other services to clients after the systems are installed

**Telecommunications Specialist Task**

- Design, develop, test, and supervise the development, production and operation of electronic equipment such as broadcast and communications systems, and radios.
- Define requirements, including transmission capacity planning, in areas such as communications, signal processing, and control systems
- Monitor technology (VoIP) development and make appropriate recommendations to achieve efficiency
- Enable telephone service via wires and cables that connect customers' premises to central offices maintained by telecommunications companies.
- Install, repair, and maintain telephone equipment, cables and access lines, and telecommunications systems, including radios
- Assemble equipment and install wiring.
- Help customers understand the new and varied types of services offered by telecommunications providers.
- Install and maintain radio transmitting and receiving equipment, including stationary equipment mounted on transmission towers and mobile equipment, such as radio communications systems in service and emergency vehicles.
- Note differences in wire and cable colors so that work can be performed correctly.
• Test circuits and components of malfunctioning telecommunications equipment to isolate sources of malfunctions, using test meters, circuit diagrams, polarity probes, and other hand tools.
• Test repaired, newly installed, or updated equipment to ensure that it functions properly and conforms to specifications, using test equipment and observation.
• Drive crew trucks to and from work areas.
• Inspect equipment on a regular basis in order to ensure proper functioning.
• Repair or replace faulty equipment such as defective and damaged telephones, wires, switching system components, and associated equipment.
• Remove and remake connections in order to change circuit layouts, following work orders or diagrams.
• Demonstrate equipment to customers and explain how it is to be used, and respond to any inquiries or complaints.
• Analyze test readings, computer printouts, and trouble reports to determine equipment repair needs and required repair methods.
• Adjust or modify equipment to enhance equipment performance or to respond to customer requests.
• Travel to customers' premises to install, maintain, and repair audio and visual electronic reception equipment and accessories.
• Inspect and test lines and cables, recording and analyzing test results, to assess transmission characteristics and locate faults and malfunctions.
• Splice cables, using hand tools, epoxy, or mechanical equipment.
• Measure signal strength at utility poles, using electronic test equipment.
• Set up service for customers, installing, connecting, testing, and adjusting equipment.
• Place insulation over conductors, and seal splices with moisture-proof covering.
• Access specific areas to string lines and install terminal boxes, auxiliary equipment, and appliances, using bucket trucks, or by climbing poles and ladders or entering tunnels, trenches, or crawl spaces.
• String cables between structures and lines from poles, towers, or trenches and pull lines to proper tension.
• Install equipment such as amplifiers and repeaters in order to maintain the strength of communications transmissions.
• Lay underground cable directly in trenches, or string it through conduits running through trenches.
• Pull up cable by hand from large reels mounted on trucks; then pull lines through ducts by hand or with winches.
• Clean and maintain tools and test equipment.
• Explain cable service to subscribers after installation, and collect any installation fees that are due.
• Compute impedance of wires from poles to houses in order to determine additional resistance needed for reducing signals to desired levels.
• Use a variety of construction equipment to complete installations, including digger derricks, trenchers, and cable plows.
• Dig trenches for underground wires and cables.
• Dig holes for power poles, using power augers or shovels, set poles in place with cranes, and hoist poles upright, using winches.
• Fill and tamp holes, using cement, earth, and tamping devices.
• Participate in the construction and removal of telecommunication towers and associated support structures.
• Participate in the construction and removal of telecommunication towers and associated support
System Integrator

Other Government and Industry IT Titles: Network Integrator, Computer Systems Administrator, Applications Manager, Computer Systems Test Manager, Deployment Manager, and Deployment Technician, Information Technology Director, Information Technology Manager, Network Administrator, LAN Administrator, Network Engineer

System Integrator Job Description

Responsible for maintaining integrity of systems-of-systems by defining requirements architecture (consistent with the Sponsor's Enterprise Architecture (EA), (described in 1.0 above) and interfaces. Plans, implements, tests, documents, and maintains solutions to total systems or subsystems using internally created and/or commercial off-the-shelf products. Provides end-to-end project management support of the life cycle. Provides a total systems perspective including a technical understanding of relationships, dependencies and requirements of hardware and software components. Coordinates with the COTR and other team members and ensures problem solution, appropriate risk reduction, and user satisfaction. Makes recommendations, if needed, on test and evaluation strategies for major systems installations.

Analyses, designs, tests, and evaluates systems such as local area networks (LANs), wide area networks (WANs), the Internet, intranets, and other data communications systems ranging from a connection between two offices in the same building to globally distributed networks, voice mail, and e-mail systems of a multinational organization. Performs network modeling, analysis, and planning including research related products and make necessary hardware and software recommendations.

Installs, configures, and supports an organization's local area network (LAN), wide area network (WAN), and Internet system or a segment of a network system. Maintains network hardware and software. Monitors network to ensure network availability to all system users and perform necessary maintenance to support network availability. May supervise other network support and client server specialists and plan, coordinate, and implement network security measures.

Ensures that adequate and appropriate planning is provided for hardware and communications for facilities. Prepares engineering plans and site installation technical design packages. Provides coordination in the analysis, acquisition and installation of hardware and software. Manages efforts of a staff engaged in facility additions, moves or changes including analysis, telecommunications (LAN, WAN, voice, video) planning, cabling, IT requirements, etc. Performs site surveys. Assesses and documents current site network configuration and user requirements.

System Integrator Tasks

- Identify and analyze all or part of a component's existing or new peripheral, network, and telecommunications systems requirements, taking into consideration the special technology needs.
- Establish functional and technical specifications and standards, solve hardware and software interface problems, define input/output parameters, and ensure integration of the entire systems or subsystem.
- Work with other engineers, systems analysts, programmers, technicians, scientists and top-level managers in the design, testing and evaluation of systems.
- Test and evaluate hardware and software to determine efficiency, reliability, and compatibility with existing system, and make purchase recommendations.
- Provide frequent contact with customers, traceability within program documents, and the overall computing environment and architecture.
- Consult customers, visit workplaces or conduct surveys to determine present and future user needs.
• Manage and update the master schedule.
• Ensure coordination and information flow occurs between all programs and organizational managers.
• Estimate software-testing costs and schedule.
• Prepare milestone status reports and deliveries/presentations on the system test and evaluation concept to colleagues, subordinates, and end user representatives.
• Provide direction to test and evaluation support staff.
• Diagnose hardware and software problems, and replace defective components.
• Perform data backups and disaster recovery operations.
• Maintain and administer computer networks and related computing environments including computer hardware, systems software, applications software, and all configurations.
• Plan, coordinate, and implement network security measures to protect data, software, and hardware.
• Operate master consoles to monitor the performance of computer systems and networks, and to coordinate computer network access and use.
• Perform routine network startup and shutdown procedures, and maintain control records.
• Design, configure, and test computer hardware, networking software and operating system software.
• Recommend changes to improve systems and network configurations, and determine hardware or software requirements related to such changes.
• Confer with network users about how to solve existing system problems.
• Monitor network performance to determine whether adjustments need to be made, and to determine where changes will need to be made in the future.
• Train people in computer system use.
• Load computer tapes and disks, and install software and printer paper or forms.
• Gather data pertaining to customer needs, and use the information to identify, predict, interpret, and evaluate system and network requirements.
• Analyze equipment performance records to determine the need for repair or replacement.
• Maintain logs related to network functions, as well as maintenance and repair records.
• Research new technology, and implement or recommend its implementation.
• Maintain an inventory of parts for emergency repairs.
• Coordinate with vendors and with company personnel to facilitate purchase

**Software Developer**

**Software Developer Job Description**
Provides development engineering support and programming support to projects and infrastructure support activities. Designs and develops enterprise applications in a Web environment. Develops, creates, and modifies general computer applications software or specialized utility programs. Analyzes user needs and develop software solutions. Designs software or customize software for client use with the aim of optimizing operational efficiency. May analyze and design databases within an application area, working individually or coordinating database development as part of a team. May manage websites including design, develop, deploy and maintain activities as well as performs testing and quality assurance of web sites and web applications.

Converts project specifications and statements of problems and procedures to detailed logical flow charts for coding into computer language. Develops and writes computer programs to store, locate, and retrieve specific documents, data, and information. Analyzes functional business applications
and design specifications for functional activities. Develops codes, tests, and debugs new software or enhancements to existing software. Performs maintenance on existing software products and contributes knowledge of business applications. Writes programs according to specifications needed.

Provides technical support in the evaluation of prime object names, data elements, and other objects. Ensures that proposed object definitions are clear, concise, technically correct, and that they represent singular concepts. Ensures that the proposed objects are consistent with data and process models. Works with the technical staff to understand problems had with software and then resolve them. Resolves customer complaints with the software and responds to suggestions for improvements and enhancements. Develops block diagrams and logic flow charts. Prepares required documentation.

Analyzes functional business applications and design specifications for functional areas such as payroll, logistics, and contracts. Develops high level and detailed design diagrams using appropriate Computer Aided Software Engineering (CASE) tools. Translates detailed design into computer software. Tests, debugs, and refines the computer software to produce the required product. Prepares required documentation, including both program-level and user-level documentation. Enhances software to reduce operating time or improve efficiency. Provides technical direction to programmers as required to ensure program deadlines are met. Monitors and supports computer processing. Coordinates input, output, and file media. Distributes output and controls computer operation.

**Software Developer Tasks**

- Design and develop tools for the MS Windows and relevant operating system platforms.
- Design and develop tools that integrate with commercial applications.
- Design and develop database management systems, image processing, collaborative tools, data manipulation techniques, data visualization techniques, and directory services.
- Provide database architectural and design capabilities.
- Develop unit and functional test plan.
- Provide the operations and maintenance of operational systems.
- Modify existing software to correct errors, allow it to adapt to new hardware, or to improve its performance.
- Analyze user needs and software requirements to determine feasibility of design within time and cost constraints.
- Consult with customers about software system design and maintenance.
- Coordinate software system installation and monitor equipment functioning to ensure specifications are met.
- Design, develop and modify software systems, using scientific analysis and mathematical models to predict and measure outcome and consequences of design.
- Develop and direct software system testing and validation procedures, programming, and documentation.
- Confer with systems analysts, engineers, programmers and others to design system and to obtain information on project limitations and capabilities, performance requirements and interfaces.
- Correct errors by making appropriate changes and then recheck the program to ensure that the desired results are produced.
- Conduct trial runs of programs and software applications to be sure they will produce the desired information and that the instructions are correct.
- Compile and write documentation of program development and subsequent revisions, inserting comments in the coded instructions so others can understand the program.
- Write, update, and maintain computer programs or software packages to handle specific jobs, such as tracking inventory, storing or retrieving data, or controlling other equipment.
• Consult with managerial, engineering, and technical personnel to clarify program intent, identify problems, and suggest changes.
• Perform or direct revision, repair, or expansion of existing programs to increase operating efficiency or adapt to new requirements.
• Write, analyze, review, and rewrite programs, using workflow chart and diagram, and applying knowledge of computer capabilities, subject matter, and symbolic logic.
• Write or contribute to instructions or manuals to guide end users.
• Investigate whether networks, workstations, the central processing unit of the system, or peripheral equipment are responding to a program's instructions.
• Prepare detailed workflow charts and diagrams that describe input, output, and logical operation, and convert them into a series of instructions coded in a computer language.
• Consult with and assist computer operators or system analysts to define and resolve problems in running computer programs.
• Assign, coordinate, and review work and activities of programming personnel.
• Collaborate with computer manufacturers and other users to develop new programming methods.
• Train subordinates in programming and program coding.

**Software Engineer**


**Software Engineer Job Description**

Develops, creates, and modifies general computer applications software or specialized utility programs. Analyze user needs and develop software solutions. Designs software or customizes software for client use with the aim of optimizing operational efficiency. May analyze and design databases within an application area, working individually or coordinating database development as part of a team. Researches, designs, develops, and tests operating systems-level software, compilers, and network distribution software for industrial, military, communications aerospace, business, scientific, and general computing applications. Sets operational specifications and formulate and analyze software requirements. Apply principles and techniques of computer science, engineering, and mathematical analysis.

Analyzes and develops computer systems possessing a wide range of capabilities, including numerous engineering, business and records management functions. Develops plans for automated information systems from project inception to conclusion including systems requirements determination. Designs software tools and subsystems to support software reuse and domain analyses and manages their implementation. Manages software development and support using formal specifications, data flow diagrams, other accepted design techniques and Computer Aided Software Engineering (CASE) tools.

Analyzes user interfaces, maintain hardware and software performance tuning, analyze workload and computer usage, maintain interfaces with outside systems, analyze downtimes, analyze proposed system modifications, upgrades and new COTS. Defines the problem, and develops system requirements and program specifications, from which programmers prepare detailed flow charts, programs, and tests. Coordinates closely with programmers to ensure proper implementation of program and system specifications.

Develops, in conjunction with functional users, system alternative solutions.

**Software Engineer Tasks**

• Analyze user needs and software requirements to determine feasibility of design within time and cost constraints.
• Analyze information to determine, recommend, and plan computer specifications and layouts, and peripheral equipment modifications.
• Review existing programs and assist in making refinements, reducing operating time, and improve current techniques.
• Modify existing software to correct errors, allow it to adapt to new hardware, or to improve its performance.
• Confer with systems analysts, engineers, programmers and others to design system and to obtain information on project limitations and capabilities, performance requirements and interfaces.
• Obtain and evaluate information on factors such as reporting formats required, costs, and security needs to determine hardware configuration.
• Estimate software development costs and schedule.
• Consult with customers about software system design and maintenance.
• Coordinate software system installation and monitor equipment functioning to ensure specifications are met.
• Design, develop and modify software systems, using scientific analysis and mathematical models to predict and measure outcome and consequences of design.
• Develop and direct software system testing and validation procedures, programming, and documentation.
• Supervise the work of programmers, technologists and technicians and other engineering and scientific personnel.
• Consult with engineering staff to evaluate interface between hardware and software, develop specifications and performance requirements and resolve customer problems.
• Develop and direct software system testing and validation procedures.
• Consult with customers or other departments on project status, proposals and technical issues such as software system design and maintenance.
• Advise customer about, or perform maintenance of software system.
• Coordinate installation of software system.
• Monitor functioning of equipment to ensure system operates in conformance with specifications.
• Store, retrieve, and manipulate data for analysis of system capabilities and requirements.
• Confer with data processing and project managers to obtain information on limitations and capabilities for data processing projects.
• Prepare reports and correspondence concerning project specifications, activities and status.
• Evaluate factors such as reporting formats required, cost constraints, and need for security restrictions to determine hardware configuration.
• Train users to use new or modified equipment.
• Utilize micro controllers to develop control signals, implement control algorithms and measure process variables such as temperatures, pressures and positions.
• Recommend purchase of equipment to control dust, temperature, and humidity in area of system installation.
• Specify power supply requirements and configuration.

**Web Developer**
Other Industry and Government Titles: Web Administrator, Web Programmer, Applications Engineer, Software Engineer, Software Developer

**Web Developer Job Description**
Web developers are responsible for day-to-day site design and creation. Webmasters are responsible for the technical aspects of the Web site, including performance issues such as speed of access, and for approving site content.
Develops and designs web applications and web sites. Creates and specifies architectural and technical parameters. Directs website content creation, enhancement and maintenance.

**Web Developer Tasks**

- Design, build, or maintain web sites, using authoring or scripting languages, content creation tools, management tools, and digital media.
- Write, design, or edit web page content, or direct others producing content.
- Analyze user needs to determine technical requirements.
- Create web models or prototypes that include physical, inter-face, logical, or data models.
- Incorporate technical considerations into web site design plans, such as budgets, equipment, performance requirements, or legal issues including accessibility and privacy.
- Research, document, rate, or select alternatives for web architecture or technologies.
- Select programming languages, design tools, or applications.
- Develop web site maps, application models, image templates, or page templates that meet project goals, user needs, or industry standards.
- Develop system interaction or sequence diagrams.
- Provide clear, detailed descriptions of web site specifications such as product features, activities, software, communication protocols, programming languages, and operating systems software and hardware.
- Document technical factors such as server load, bandwidth, database performance, and browser and device types.
- Confer with management or development terms to prioritize needs, resolve conflicts, develop content criteria, or choose solutions.
- Evaluate code to ensure that it is valid, is properly structured, meets industry standards and is compatible with browsers, devices, or operating systems.
- Develop or validate test routines and schedules to ensure that test cases mimic external interfaces and address all browser and device types.
- Document test plans, testing procedures, or test results.
- Install and configure hypertext transfer protocol (HTTP) servers and associated operating systems.
- Identify problems uncovered by testing or customer feedback, and correct problems or refer problems to appropriate personnel for correction.
- Monitor security system performance logs to identify problems and notify security specialists when problems occur.
- Develop databases that support web applications and web sites.
- Perform web site tests according to planned schedules, or after any web site or product revisions.
- Perform or direct web site updates.
- Recommend and implement performance improvements.
- Design and implement web site security measures such as firewalls or message encryption.
- Establish appropriate server directory trees.
- Identify or maintain links to and from other web sites and check links to ensure proper functioning.
- Create searchable indices for web page content.
- Back up files from web sites to local directories for instant recovery in case of problems.
- Write supporting code for web applications or web sites.
- Register web sites with search engines to increase web site traffic.
- Develop or implement procedures for ongoing web site revision.
- Evaluate or recommend server hardware or software.
- Develop and document style guidelines for web site content.
- Communicate with network personnel or web site hosting agencies to address hardware or
software issues affecting web sites.
• Maintain understanding of current web technologies or programming practices through continuing education, reading, or participation in professional conferences, workshops, or groups.
• Collaborate with management or users to develop e-commerce strategies and to integrate these strategies with web sites.
• Respond to user email inquiries, or set up automated systems to send responses.
• Renew domain name registrations.

**Web Administrator**
Other Government and Industry Titles: Web Administrator, Web Programmer, Applications Engineer, Software Engineer, Software Developer

**Web Administrator Job Description**
Manage web environment design, deployment, development and maintenance activities. Perform testing and quality assurance of web sites and web applications.

**Web Administrator Tasks**
• Administer internet/intranet infrastructure, including components such as web, file transfer protocol (FTP), news and mail servers.
• Collaborate with web developers to create and operate internal and external web sites, or to manage projects, such as e-marketing campaigns.
• Collaborate with development teams to discuss, analyze, or resolve usability issues.
• Install or configure web server software or hardware to ensure that directory structure is well defined, logical, secure, and that files are named properly.
• Develop web site performance metrics.
• Set up or maintain monitoring tools on web servers or web sites.
• Check and analyze operating system or application log files regularly to verify proper system performance.
• Perform user testing or usage analyses to determine web sites' effectiveness or usability.
• Develop testing routines and procedures.
• Evaluate testing routines or procedures for adequacy, sufficiency, and effectiveness.
• Test issues such as system integration, performance, and system security on a regular schedule or after any major program modifications.
• Correct testing-identified problems, or recommend actions for their resolution.
• Determine sources of web page or server problems, and take action to correct such problems.
• Gather, analyze, or document user feedback to locate or resolve sources of problems.
• Track, compile, and analyze web site usage data.
• Recommend web site improvements, and develop budgets to support recommendations.
• Identify or address interoperability requirements.
• Evaluate or recommend server hardware or software.
• Develop or implement procedures for ongoing web site revision.
• Implement updates, upgrades, and patches in a timely manner to limit loss of service.
• Identify, standardize, and communicate levels of access and security.
• Implement web site security measures, such as firewalls or message encryption.
• Monitor systems for intrusions or denial of service attacks, and report security breaches to appropriate personnel.
• Identify or document backup or recovery plans.
• Back up or modify applications and related data to provide for disaster recovery.
• Test backup or recovery plans regularly and resolve any problems.
• Document application and web site changes or change procedures.
• Document installation or configuration procedures to allow maintenance and repetition.
• Test new software packages for use in web operations or other applications.
• Inform web site users of problems, problem resolutions or application changes and updates.
• Monitor web developments through continuing education, reading, or participation in professional conferences, workshops, or groups.
• Develop or document style guidelines for web site content.
• Develop and implement marketing plans for home pages, including print advertising or advertisement rotation.
• Provide training or technical assistance in web site implementation or use.
• Review or update web page content or links in a timely manner, using appropriate tools.

**Systems Administrator**

Other Government and Industry IT Titles: Systems Administrator, System Operations Manager, System Operator, Customer Support Specialist, Field Support Specialist, Network Administrator, Windows System Administrator, UNIX System Administrator, Network & Computer Systems Administrators, Director Of IT (Director Of Information Technology), IT Manager (Information Technology Manager), IT Specialist (Information Technology Specialist), LAN Administrator (Local Area Network Administrator), Network Administrator, Network Engineer, Network Manager, Network Specialist, Systems Administrator, Systems Engineer, DBA (Database Administrator), Server Administrator, Database Manager, Database Analyst, Database Coordinator, Database Programmer, Programmer Analyst, Systems Manager, Database Management Specialist, Database Manager, Operations Manager, Data Standardization Specialist, Systems Management Administrator, Systems Management Specialist, Capacity Manager, Capacity Specialist, Mainframe Operations Specialist, Data Engineer.

**Systems Administrator Job Description**

The systems administration encompasses server administration and database management administration. The server administrator's responsibilities include: implementation of baseline changes and respond to change requests; perform technical evaluations, analysis, and troubleshooting for all supported servers; build servers by providing technical configuration, setup, installation services, hardware and coordination of application projects; and operate and maintain servers.

The database manager works with software and determines ways to organize and store data. Identify user requirements, set up computer databases, and test and coordinate modifications to the computer database systems. Ensures the performance of the system, understands the platform on which the database runs, and adds new users to the system. Plans and coordinates security measures - data integrity, backup systems, and database security. Provides technical assistance to computer system users. Answers questions or resolve computer problems for clients in person, via telephone or from remote location. May provide assistance concerning the use of computer hardware and software, including printing, installation, word-processing, electronic mail, and operating systems. Provides technical expertise in the use of Database Management System (DBMS). Evaluates and recommends available DBMS products to support validated user requirements. Defines file organization, indexing methods, and security procedures for specific user applications. Manages the development of data base projects. Plans and budgets staff and data base resources. When necessary, reallocates resources to maximize benefits.

The database manager is also responsible for capacity planning. Provides support for implementation, troubleshooting and maintenance of IT systems. Manages IT system infrastructure and any processes related to these systems. Provides support to IT systems including: day-to-day operations, monitoring and problem resolution for all of the client problems. Provides second level problem identification, diagnosis and resolution of problems. Provides support for the dispatch system and hardware problems and remain involved in the resolution process. Provides support for the escalation and communication of status to Sponsor's
management and internal customers. Coordinates changes to computer databases, test and implement the database applying knowledge of database management systems. Plans, coordinates, and implements security measures to safeguard computer databases. Responsible for operations related to systems management software. Installs and maintains software monitors and conducts advanced analysis of output and performance.

**Systems Administrator Tasks**

- Server Administrator executes tasks in the following areas: change request, trouble ticket, routine operation and maintenance, and server build.
- Change Request
- Implement baseline changes under tech lead oversight
- Respond to assigned change requests that are submitted by "internal" and "external" customers.
- A attend TEMs to discuss and agree upon MOAs - ensure MOA is within scope of server team's work
- Support customer in the development of a dedicated server build report as well as an internal build report
- Create and/or update the Asset Management record - responsible for integrity of asset management record
- Ensure build report (procedure) is feasible, clear, and concise.
- Trouble Ticket
- Provide operational pager duty support
- Perform technical evaluations, analysis, and troubleshooting for all “supported” servers in response to Help Desk Tickets-which includes but not limited the following activities: Server failures, full system outage.
- Operation and Maintenance
- Perform server checklist
- Maintain server rooms
- Restore file and data information
- Perform operating system software updates/upgrades
- Create request for service support (SRS) from internal/external service providers
- Monitor/support tape backup
- Coordinate server installation
- Transition servers
- Assess server loads and work with tech lead on developing tuning recommendations
- Request hardware replacements
- Submit Build Reports for routine deliveries
- Server Build
  - Build servers: Provide technical configuration, setup, installation services, hardware and coordination for application projects
  - Provide remote access to servers
  - Establish server baseline
  - Assist in server maintenance and special projects, during extended work hours
  - Communicate outage/degradation of server to management
  - Understand and implement established technical and workflow procedures
- Database Administrator executes the following tasks:
- Perform sewer and storage capacity planning for the most complex and critical systems.
- Recommend and implement process and tool improvements to improve the efficiency and effectiveness of the organization's change management and configuration management processes and systems.
- Plan for transition of the development and/or production environment to new technology.
• Recommend and plan server recapitalization. Perform server performance tuning.
• Baselines and forecasts server performance data and tunes sewer hardware and software configurations.
• Utilize system software to monitor the performance of system files; manages system data to maintain performance efficiencies.
• Study system requirements to determine proper server installation methods and procedures. May provide 24x7 operational support.
• Provide technical support in the evaluation of prime object names, data elements, and other objects.
• Evaluate proposed objects and their attributes.
• Ensure that proposed object definitions are clear, concise, technically correct, and that they represent singular concepts.
• Answer users’ inquiries regarding computer software and hardware operation to resolve problems.
• Enter commands and observe system functioning to verify correct operations and detect errors.
• Install and perform minor repairs to hardware, software, and peripheral equipment, following design or installation specifications.
• Oversee the daily performance of computer systems.
• Set up equipment for employee use, performing or ensuring proper installation of cable, operating systems, and appropriate software.
• Maintain record of daily data communication transactions, problems and remedial action taken, and installation activities.
• Read trade magazines and technical manuals, or attend conferences and seminars to maintain knowledge of hardware and software.
• Confer with staff, users, and management to establish requirements for new systems or modifications.
• Conduct computer diagnostics to investigate and resolve problems and to provide technical assistance and support.
• Create and maintain monitor definitions and rules based upon requirements from Service Level Agreements (SLAs).
• Monitor and conduct advanced analysis of output and performance of management of systems according to prescribed standards.
• Plan and test capacity requirements.
• Ensure that services are provided with sufficient capacity to meet the business requirements.
• Develop training materials and procedures, or train users in the proper use of hardware or software.
• Refer major hardware or software problems or defective products to vendors or technicians for service.
• Prepare evaluations of software or hardware, and recommend improvements or upgrades.
• Supervise and coordinate workers engaged in problem solving, monitoring, and installing data communication equipment and software.
• Inspect equipment and read order sheets to prepare for delivery to users.
• Modify and customize commercial programs for internal needs.
• Conduct office automation feasibility studies, including workflow analysis, space design, or cost comparison analysis.

**Training Specialist**
Other Government and Industry IT Titles: Training Course Designer, Training Course Developer, IT Technician, Training Support Staff, Technical Editor, Audio-Visual Specialist, Multi-Media
Specialist, Satellite Trainer, Satellite Technician, Technical Watch Stander, Training Coordinator

**Training Specialist Job Description**

Plans and coordinates the training and documentation for a new/changed service. Conducts the research necessary to develop and revise training courses and prepares appropriate training catalogs for both technical and non-technical personnel in IT. Trains personnel by conducting formal classroom courses, workshops, seminars and/or computer based/computer aided training.

**Training Specialist Tasks**

- Identify training and documentation requirements.
- Produce training and documentation plan.
- Prepare all instructor materials (course outline, background material, and training aids).
- Prepare all student materials (course manuals, workbooks, handouts, completion certificates, and course critique forms).
- Instruct personnel by conducting formal classroom courses, workshops, and seminars.
- Provide multi-media services to include video and audio recording, television production, computer graphics integration and maintenance of an audiovisual library operation in support of customers.
- Included in the multi-media presentations are representations of actual events, dialogue, narration, sound effects, music and animation. Use a personal computer and a variety of software packages for graphics, animation, PC based editing, interactive video and related state-of-the-art technology applicable to a wide variety of projects.

**Program Manager**

Other Government and Industry IT Titles: Data Processing Manager, Director Of Application Development, Director Of Data Operations, Director Of IS (Director Of Information Systems), IT Director (Information Technology Director), IT Manager (Information Technology Manager), ITS Director (Information Technology Systems Director), MIS Director (Management Information Systems Director), MIS Manager (Management Information Systems Manager), Technical Services Manager; Project Manager; Project Leader, Program Management Consultant; Service Delivery Manager, Service Support Manager, Incident Coordinator

**Program Manager Job Description**

Serves as Planet Defense's Contract Manager, and is Planet Defense's authorized interface with the Sponsor Contracting Officer (CO), the Contracting Officer's Technical Representative (COTR), Sponsor management personnel and customer Sponsor's representatives. Helps determine both technical and business goals in consultation with top management and make detailed plans for the accomplishment of these goals. Responsible for formulating and enforcing work standards, assigning Planet Defense schedules, reviewing work discrepancies, supervising Planet Defense personnel and communicating policies, purposes, and goals of the organization to subordinates. Shall be responsible for the overall contract.

Responsible for the personnel and technical management of all tasks. Insure that the full range of corporate resources is available and made available to perform the required tasks. Provide Quality Control Plan for all relevant requirements. Provide to the COTR frequent periodic reports on the status of Planet Defense staffing. Provide management oversight of all contract personnel and ensure high-quality and acceptable task completion and deliverables from contract personnel in compliance with the SOW.

Responsible for the delivery of services to the customers according to SLA.

Plans, directs, and coordinates activities in computer-related activities including electronic data processing, information systems, systems analysis, and computer programming. Performs day-to-day management of the program, and develop long-term and strategic objectives to ensure that end
user requirements will be satisfied in future years of the contract. Performs horizontal integration planning, and interface with other functional areas. Ensures technical solutions and schedules are implemented in a timely manner. Provides supervision, training, and direction to staff, Single point of contact for non-routine to moderately complex installation projects for communication networks. Accountable for meeting contractual performance criteria and due dates during service delivery, and successful overall project completion. Coordinates activities in support of program managers and teams that support the provisioning, design, installation, maintenance, and billing of services. Tracks and monitors service orders though completion and turn-up. Prepares deliverables (e.g., status reports to Sponsor, order information, open issues). Works in a team environment.

**Program Manager Tasks**

- Ensure that Planet Defense tasks are completed within the deadlines, tasking guidance from the Sponsor is clear and unambiguous, contract personnel are qualified to perform the tasks, and potential personnel problems are pre-empted.
- Consult and coordinate with the COTR and the appropriate Task Manager for problem resolution, task scheduling, new resource requirements, training needs, and task clarification.
- Establish and implement streamlined processes and procedures enabling Planet Defense to rapidly respond to surge requirements for increased contract personnel. Assure SLA requirements are met.
- Plan Consult with users, management, vendors, and technicians to assess computing needs and system requirements.
- Direct daily operations of department by: analyzing workflow, establishing priorities, developing standards and setting deadlines.
- Assign and review the work of systems analysts, programmers, and other computer-related workers.
- Stay abreast of advances in technology.
- Develop computer information resources, providing for data security and control, strategic computing, and disaster recovery.
- Review and approve all systems charts and programs prior to their implementation.
- Direct the work of systems analysts, computer programmers, support specialists, and other computer-related workers.
- Plan and coordinate activities such as installation and upgrading of hardware and software, programming and systems design, development of computer networks, and implementation of Internet and intranet sites. They are increasingly involved with the upkeep, maintenance, and security of networks.
- Analyze the computer and information needs of their organizations from an operational and strategic perspective and determine immediate and long-range personnel and equipment requirements.

**Security Specialist**


**Security Specialist Job Description**

Provides security oversight and direction related to the program to the satisfaction of the Sponsor's security group and contracting activity. Analyzes, defines, and establishes security policies and procedures. Prepares and enforces security policy and procedures, and classification guidelines.
Plans, coordinates, and implements security measures for information systems to regulate access to computer data files and prevent unauthorized modification, destruction, or disclosure of information.

**Security Specialist Tasks**
- Conduct program security briefings, and develop facility accreditation packages and Automated Information System (AIS) accreditation plans.
- Process personnel security investigation packets, and maintain files on each cleared individual.
- Conduct the following security activities: education classes, briefing and debriefing interviews, and infraction and violation investigations.
- Coordinate site visits with the Sponsor, ensure compliance with site access requirements, and maintain up-to-date access lists.
- Ensure the proper control, dissemination, dispatch, receipt, and destruction of classified materials.
- Conduct routine inspections to ensure the adequacy of physical security, and correct deficiencies in construction, alarms, locks, and other security devices.
- Ensure electronic and electromechanical devices, which process classified information, meet (or are modified to meet) Sponsor's standards to control compromising emanations.
- Oversee all aspects of security within the Secure Compartmented Information Facility (SCIF).
- Train users and promote security awareness to ensure system security and to improve server and network efficiency.
- Develop plans to safeguard computer files against accidental or unauthorized modification, destruction, or disclosure and to meet emergency data processing needs.
- Confer with users to discuss issues such as computer data access needs, security violations, and programming changes.
- Monitor current reports of computer viruses to determine when to update virus protection systems.
- Modify computer security files to incorporate new software, correct errors, or change individual access status.
- Coordinate implementation of computer system plan with establishment personnel and outside vendors.
- Monitor use of data files and regulate access to safeguard information in computer files.
- Perform risk assessments and execute tests of data processing system to ensure functioning of data processing activities and security measures.
- Encrypt data transmissions and erect firewalls to conceal confidential information as it is being transmitted and to keep out tainted digital transfers.
- Document computer security and emergency measures policies, procedures, and tests.
- Review violations of computer security procedures and discuss procedures with violators to ensure violations are not repeated.

**Project Integrator**
Other Government and Industry IT Title: Project Integrator, Program Management Consultant, Project Coordinator, Project Administration Facilitator

**Project Integrator Job Description**
Supports the Sponsor's Program Management Office personnel in their day-to-day management of the program, including coordinating and maintaining the program and project plans, schedules, and arranging and participating in meetings. Performs horizontal integration planning and interfaces with the Sponsor's customers. Responsible for communicating policies, practices, procedures and technical and business goals of the organization. Participates in program meetings.
including preparing and distributing meeting minutes and action items; tracks and monitors action items for successful completion.

**Project Integrator Tasks**

- Assist Sponsor's PMO in assessing, documenting, and tracking program new requirements and follow-on technical exchange meetings (TEMS).
- Support the Sponsor's PM in resource leveling planning and analysis.
- Plan and coordinate program management process activities such as Program Reviews and Control Gate Reviews including the scheduling of meetings and preparation of briefings/presentations.
- Coordinate project schedules, including participation in meetings; documentation and distribution of minutes and action items; and tracing action items for their successful completion.
- Assist in the preparation of management plans and reports.
- Support tasks requiring the collecting, compiling, evaluating and publishing of information and statistical data included in documents, records, forms, reports, plans, policies and regulations.
- Maintain correspondence suspense files, records, files for reports, operating procedures, internal memorandums, and composes correspondence.
- Provide support such as technical writing, technical editing of word processing and other computer-based documents, integration of various sources into a cohesive product which may be delivered as computer-based magnetic media, preparation of graphical and narrative presentation material.

Designs and develops solutions to complex applications problems, system administration issues, or network concerns. Performs systems management and integration functions. Analyzes science, engineering, business, and all other data processing problems for application to electronic data processing systems. Analyzes user requirements, procedures, and problems to automate or improve existing systems and review computer system capabilities, workflow, and scheduling limitations. May analyze or recommend commercially available software.

Incorporates engineering strategies for introducing new technology into the Sponsor's infrastructure related business processes, namely, Collection, Analysis, Production and Dissemination. Develops future technology and architectural advancements to support CIO architectural strategy, technology migration, and integration and evolution.

Applies knowledge of enterprise IT needs to design improved processes, generate valid requirements, and ensures these are consistent with the Sponsor's CIO enterprise technical architecture (ETA) and Federal Enterprise Architecture (FEA). Acts as an advisor and proposes changes to the ETA based on analysis of requirements and new technology. Works with appropriate parties to resolve discrepancies between proposed IT systems and enterprise quality and security standards. Provides technical and administrative direction for personnel performing software development tasks, makes recommendations, if needed, for approval of major systems
installations. Designs and develops computer software possessing a wide range of capabilities, including numerous engineering, business, and records management functions.

### PLANET DEFENSE LLC LABOR CATEGORIES AND LABOR RATES

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<th>LABOR CATEGORY</th>
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