SPECIAL ITEM NUMBER 54151S - INFORMATION TECHNOLOGY (IT) PROFESSIONAL SERVICES
SPECIAL ITEM NUMBER 54151HEAL – HEALTH INFORMATION TECHNOLOGY SERVICES
SPECIAL ITEM NUMBER 518210C – CLOUD & CLOUD RELATED IT PROFESSIONAL SERVICES
SPECIAL ITEM NUMBER 54151 – SOFTWARE MAINTENANCE SERVICES
SPECIAL ITEM NUMBER 511210 – SOFTWARE LICENSES
SPECIAL ITEM NUMBER OLM - ORDER LEVEL MATERIALS

Note 1: All non-professional labor categories must be incidental to and used solely to support hardware, software, and/or professional services, and cannot be purchased separately.

Note 2: Offerors and Agencies are advised that Information Technology SINs are not to be used as a means to procure services that properly fall under the Brooks Act. These services include but are not limited to, architectural, engineering, mapping, cartographic production, remote sensing, geographic information systems, and related services. FAR 36.6 distinguishes between mapping services of an A/E nature and mapping services that are not connected nor incidental to the traditionally accepted A/E Services.

Note 3: This solicitation is not intended to solicit for the reselling of IT Professional Services, except for the provision of implementation, maintenance, integration, or training services in direct support of a product. Under such circumstances, the services must be a performance by the publisher or manufacturer or one of their authorized agents.

Innosoft Corporation
7127 Ambassador Rd, Suite 100, Windsor Mill, MD, 21244
(410) 344-2800
www.innosoft.com

Contract Number: 47QTCA18D00J4

Period Covered by Contract: August 9, 2018 – August 8, 2023

General Services Administration
Federal Acquisition Service

Pricelist current through Modification #PS-0008, dated July 6, 2022.

Products and ordering information in this Authorized Multiple Award Schedule Pricelist are also available on the GSA Advantage! System (http://www.gsaadvantage.gov).
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1. INFORMATION FOR ORDERING ACTIVITIES
APPLICABLE TO ALL SPECIAL ITEM NUMBERS

SPECIAL NOTICE TO AGENCIES: Small Business Participation

SBA strongly supports the participation of small business concerns in the Federal Acquisition Service. To enhance Small Business Participation SBA policy allows agencies to include in their procurement base and goals, the dollar value of orders expected to be placed against the Multiple Award Schedules, and to report accomplishments against these goals.

For orders exceeding the micropurchase threshold, FAR 8.404 requires agencies to consider the catalogs/pricelists of at least three schedule contractors or consider reasonably available information by using the GSA Advantage!™ on-line shopping service (www.gsaadvantage.gov). The catalogs/pricelists, GSA Advantage!™ and the Federal Acquisition Service Home Page (www.gsa.gov/fas) contain information on a broad array of products and services offered by small business concerns.

This information should be used as a tool to assist ordering activities in meeting or exceeding established small business goals. It should also be used as a tool to assist in including small, small disadvantaged, and women-owned small businesses among those considered when selecting pricelists for a best value determination.

For orders exceeding the micropurchase threshold, customers are to give preference to small business concerns when two or more items at the same delivered price will satisfy their requirement.

1. GEOGRAPHIC SCOPE OF CONTRACT:

*Domestic delivery* is delivery within the 48 contiguous states, Alaska, Hawaii, Puerto Rico, Washington, DC, and U.S. Territories. Domestic delivery also includes a port or consolidation point, within the aforementioned areas, for orders received from overseas activities.

*Overseas delivery* is delivery to points outside of the 48 contiguous states, Washington, DC, Alaska, Hawaii, Puerto Rico, and U.S. Territories.

Offerors are requested to check one of the following boxes:

- [ ] The Geographic Scope of Contract will be domestic and overseas delivery.
- [ ] The Geographic Scope of Contract will be overseas delivery only.
- [X] The Geographic Scope of Contract will be domestic delivery only.

For Special Item Number 132-53 Wireless Services ONLY, if awarded, list the limited geographic coverage area:

__________________________________________________________________________________________

2. CONTRACTOR'S ORDERING ADDRESS AND PAYMENT INFORMATION:

Innosoft Corporation
7127 Ambassador Rd, Suite 100, Windsor Mill, MD, 21244

Contractor must accept the credit card for payments equal to or less than the micro-purchase for oral or written orders under this contract. The Contractor and the ordering agency may agree to use the credit card for dollar amounts over the micro-purchase threshold (See GSAR 552.232-79 Payment by Credit Card). In addition, bank account information for wire transfer payments will be shown on the invoice.

The following telephone number(s) can be used by ordering activities to obtain technical and/or ordering assistance:

573-230-1625

3. LIABILITY FOR INJURY OR DAMAGE
The Contractor shall not be liable for any injury to ordering activity personnel or damage to ordering activity property arising from the use of equipment maintained by the Contractor, unless such injury or damage is due to the fault or negligence of the Contractor.

4. STATISTICAL DATA FOR GOVERNMENT ORDERING OFFICE COMPLETION OF STANDARD FORM 279:

Block 9:  G. Order/Modification Under Federal Schedule Contract
Block 16:  Data Universal Numbering System (DUNS) Number: **084807770**
Block 30:  Type of Contractor: **Small Disadvantaged Business**
   
   A. Small Disadvantaged Business

Block 31:  Woman-Owned Small Business - **No**
Block 37:  Contractor's Taxpayer Identification Number (TIN): **43-1922780**
Block 40:  Veteran Owned Small Business (VOSB): **No**

4a. CAGE Code: **47U67**
4b. Contractor has registered with the Central Contractor Registration Database.

5. FOB DESTINATION

6. DELIVERY SCHEDULE

a. TIME OF DELIVERY: The Contractor shall deliver to destination within the number of calendar days after receipt of order (ARO), as set forth below:

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<td><strong>30</strong> Days</td>
</tr>
<tr>
<td>518210C</td>
<td><strong>30</strong> Days</td>
</tr>
</tbody>
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**Expedited:** TBD at Task Order Level

b. URGENT REQUIREMENTS: When the Federal Supply Schedule contract delivery period does not meet the bona fide urgent delivery requirements of an ordering activity, ordering activities are encouraged, if time permits, to contact the Contractor for the purpose of obtaining accelerated delivery. The Contractor shall reply to the inquiry within 3 workdays after receipt. (Telephonic replies shall be confirmed by the Contractor in writing.) If the Contractor offers an accelerated delivery time acceptable to the ordering activity, any order(s) placed pursuant to the agreed upon accelerated delivery time frame shall be delivered within this shorter delivery time and in accordance with all other terms and conditions of the contract.

7. DISCOUNTS: Prices shown are NET Prices; Basic Discounts have been deducted.

a. Prompt Payment: **0** % - **30** days from receipt of invoice or date of acceptance, whichever is later.

b. Quantity: **None**

c. Dollar Volume: **None**
8. **TRADE AGREEMENTS ACT OF 1979, as amended:**

All items are U.S. made end products, designated country end products, Caribbean Basin country end products, Canadian end products, or Mexican end products as defined in the Trade Agreements Act of 1979, as amended.

9. **STATEMENT CONCERNING AVAILABILITY OF EXPORT PACKING:**

10. **Small Requirements:** The minimum dollar of orders to be issued is **$100**.

11. **MAXIMUM ORDER (All dollar amounts are exclusive of any discount for prompt payment.)**

   a. The Maximum Order for the following Special Item Numbers (SINs) is $500,000:

   Special Item Number 54151S - Information Technology Professional Services
   Special Item Number 54151HEAL - Health Information Technology Services
   Special Item Number 518210C - Cloud and Cloud-Related IT Professional Services

12. **ORDERING PROCEDURES FOR FEDERAL SUPPLY SCHEDULE CONTRACTS**

   Ordering activities shall use the ordering procedures of Federal Acquisition Regulation (FAR) 8.405 when placing an order or establishing a BPA for supplies or services. These procedures apply to all schedules.

   a. FAR 8.405-1 Ordering procedures for supplies, and services not requiring a statement of work.
   b. FAR 8.405-2 Ordering procedures for services requiring a statement of work.

13. **FEDERAL INFORMATION TECHNOLOGY/TELECOMMUNICATION STANDARDS REQUIREMENTS:** ordering activities acquiring products from this Schedule must comply with the provisions of the Federal Standards Program, as appropriate (reference: NIST Federal Standards Index). Inquiries to determine whether or not specific products listed herein comply with Federal Information Processing Standards (FIPS) or Federal Telecommunication Standards (FED-STDS), which are cited by ordering activities, shall be responded to promptly by the Contractor.

13.1 **FEDERAL INFORMATION PROCESSING STANDARDS PUBLICATIONS (FIPS PUBS):** Information Technology products under this Schedule that do not conform to Federal Information Processing Standards (FIPS) should not be acquired unless a waiver has been granted in accordance with the applicable "FIPS Publication." Federal Information Processing Standards Publications (FIPS PUBS) are issued by the U.S. Department of Commerce, National Institute of Standards and Technology (NIST), pursuant to National Security Act. Information concerning their availability and applicability should be obtained from the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, Virginia 22161. FIPS PUBS include voluntary standards when these are adopted for Federal use. Individual orders for FIPS PUBS should be referred to the NTIS Sales Office, and orders for subscription service should be referred to the NTIS Subscription Officer, both at the above address, or telephone number (703) 487-4650.
13.2 **FEDERAL TELECOMMUNICATION STANDARDS (FED-STDs):** Telecommunication products under this Schedule that do not conform to Federal Telecommunication Standards (FED-STDs) should not be acquired unless a waiver has been granted in accordance with the applicable "FED-STD." Federal Telecommunication Standards are issued by the U.S. Department of Commerce, National Institute of Standards and Technology (NIST), pursuant to National Security Act. Ordering information and information concerning the availability of FED-STDs should be obtained from the GSA, Federal Acquisition Service, Specification Section, 470 East L'Enfant Plaza, Suite 8100, SW, Washington, DC 20407, telephone number (202)619-8925. Please include a self-addressed mailing label when requesting information by mail. Information concerning their applicability can be obtained by writing or calling the U.S. Department of Commerce, National Institute of Standards and Technology, Gaithersburg, MD 20899, telephone number (301)975-2833.

14. **CONTRACTOR TASKS / SPECIAL REQUIREMENTS (C-FSS-370) (NOV 2003)**

(a) Security Clearances: The Contractor may be required to obtain/possess varying levels of security clearances in the performance of orders issued under this contract. All costs associated with obtaining/possessing such security clearances should be factored into the price offered under the Multiple Award Schedule.

(b) Travel: The Contractor may be required to travel in performance of orders issued under this contract. Allowable travel and per diem charges are governed by Pub. L. 99-234 and FAR Part 31, and are reimbursable by the ordering agency or can be priced as a fixed price item on orders placed under the Multiple Award Schedule. Travel in performance of a task order will only be reimbursable to the extent authorized by the ordering agency. The Industrial Funding Fee does NOT apply to travel and per diem charges.

(c) Certifications, Licenses and Accreditations: As a commercial practice, the Contractor may be required to obtain/possess any variety of certifications, licenses and accreditations for specific FSC/service code classifications offered. All costs associated with obtaining/possessing such certifications, licenses and accreditations should be factored into the price offered under the Multiple Award Schedule program.

(d) Insurance: As a commercial practice, the Contractor may be required to obtain/possess insurance coverage for specific FSC/service code classifications offered. All costs associated with obtaining/possessing such insurance should be factored into the price offered under the Multiple Award Schedule program.

(e) Personnel: The Contractor may be required to provide key personnel, resumes or skill category descriptions in the performance of orders issued under this contract. Ordering activities may require agency approval of additions or replacements to key personnel.

(f) Organizational Conflicts of Interest: Where there may be an organizational conflict of interest as determined by the ordering agency, the Contractor’s participation in such order may be restricted in accordance with FAR Part 9.5.

(g) Documentation/Standards: The Contractor may be requested to provide products or services in accordance with rules, regulations, OMB orders, standards and documentation as specified by the agency’s order.

(h) Data/Deliverable Requirements: Any required data/deliverables at the ordering level will be as specified or negotiated in the agency’s order.

(i) Government-Furnished Property: As specified by the agency’s order, the Government may provide property, equipment, materials or resources as necessary.

(j) Availability of Funds: Many Government agencies’ operating funds are appropriated for a specific fiscal year. Funds may not be presently available for any orders placed under the contract or any option year.
The Government’s obligation on orders placed under this contract is contingent upon the availability of appropriated funds from which payment for ordering purposes can be made. No legal liability on the part of the Government for any payment may arise until funds are available to the ordering Contracting Officer.

(k) Overtime: For professional services, the labor rates in the Schedule should not vary by virtue of the Contractor having worked overtime. For services applicable to the Service Contract Act (as identified in the Schedule), the labor rates in the Schedule will vary as governed by labor laws (usually assessed a time and a half of the labor rate).

15. CONTRACT ADMINISTRATION FOR ORDERING ACTIVITIES

Any ordering activity, with respect to any one or more delivery orders placed by it under this contract, may exercise the same rights of termination as might the GSA Contracting Officer under provisions of FAR 52.212-4, paragraphs (l) Termination for the ordering activity’s convenience, and (m) Termination for Cause (See 52.212-4)

16. GSA ADVANTAGE!

GSA Advantage! is an on-line, interactive electronic information and ordering system that provides on-line access to vendors' schedule prices with ordering information. GSA Advantage! will allow the user to perform various searches across all contracts including, but not limited to:

1. Manufacturer;
2. Manufacturer's Part Number; and
3. Product categories.

Agencies can browse GSA Advantage! by accessing the Internet World Wide Web utilizing a browser (ex.: NetScape). The Internet address is http://www.gsaadvantage.gov

17. PURCHASE OF OPEN MARKET ITEMS

NOTE: Open Market Items are also known as incidental items, noncontract items, non-Schedule items, and items not on a Federal Supply Schedule contract. Ordering Activities procuring open market items must follow FAR 8.402(f).

For administrative convenience, an ordering activity contracting officer may add items not on the Federal Supply Multiple Award Schedule (MAS) -- referred to as open market items -- to a Federal Supply Schedule blanket purchase agreement (BPA) or an individual task or delivery order, only if:

1. All applicable acquisition regulations pertaining to the purchase of the items not on the Federal Supply Schedule have been followed (e.g., publicizing (Part 5), competition requirements (Part 6), acquisition of commercial items (Part 12), contracting methods (Parts 13, 14, and 15), and small business programs (Part 19));
2. The ordering activity contracting officer has determined the price for the items not on the Federal Supply Schedule is fair and reasonable;
3. The items are clearly labeled on the order as items not on the Federal Supply Schedule; and
4. All clauses applicable to items not on the Federal Supply Schedule are included in the order.

18. CONTRACTOR COMMITMENTS, WARRANTIES AND REPRESENTATIONS

a. For the purpose of this contract, commitments, warranties and representations include, in addition to those agreed to for the entire schedule contract:

1. Time of delivery/installation quotations for individual orders;
(2) Technical representations and/or warranties of products concerning performance, total system performance and/or configuration, physical, design and/or functional characteristics and capabilities of a product/equipment/service/software package submitted in response to requirements which result in orders under this schedule contract.

(3) Any representations and/or warranties concerning the products made in any literature, description, drawings and/or specifications furnished by the Contractor.

b. The above is not intended to encompass items not currently covered by the GSA Schedule contract.

c. The maintenance/repair service provided is the standard commercial terms and conditions for the type of products and/or services awarded.

19. OVERSEAS ACTIVITIES

The terms and conditions of this contract shall apply to all orders for installation, maintenance and repair of equipment in areas listed in the pricelist outside the 48 contiguous states and the District of Columbia, except as indicated below:

Upon request of the Contractor, the ordering activity may provide the Contractor with logistics support, as available, in accordance with all applicable ordering activity regulations. Such ordering activity support will be provided on a reimbursable basis, and will only be provided to the Contractor's technical personnel whose services are exclusively required for the fulfillment of the terms and conditions of this contract.

20. BLANKET PURCHASE AGREEMENTS (BPAs)

The use of BPAs under any schedule contract to fill repetitive needs for supplies or services is allowable. BPAs may be established with one or more schedule contractors. The number of BPAs to be established is within the discretion of the ordering activity establishing the BPA and should be based on a strategy that is expected to maximize the effectiveness of the BPA(s). Ordering activities shall follow FAR 8.405-3 when creating and implementing BPA(s).

21. CONTRACTOR TEAM ARRANGEMENTS

Contractors participating in contractor team arrangements must abide by all terms and conditions of their respective contracts. This includes compliance with Clauses 552.238-74, Industrial Funding Fee and Sales Reporting, i.e., each contractor (team member) must report sales and remit the IFF for all products and services provided under its individual contract.

22. INSTALLATION, DEINSTALLATION, REINSTALLATION

The Davis-Bacon Act (40 U.S.C. 276a-276a-7) provides that contracts in excess of $2,000 to which the United States or the District of Columbia is a party for construction, alteration, or repair (including painting and decorating) of public buildings or public works with the United States, shall contain a clause that no laborer or mechanic employed directly upon the site of the work shall receive less than the prevailing wage rates as determined by the Secretary of Labor. The requirements of the Davis-Bacon Act do not apply if the construction work is incidental to the furnishing of supplies, equipment, or services. For example, the requirements do not apply to simple installation or alteration of a public building or public work that is incidental to furnishing supplies or equipment under a supply contract. However, if the construction, alteration or repair is segregable and exceeds $2,000, then the requirements of the Davis-Bacon Act applies.
The ordering activity issuing the task order against this contract will be responsible for proper administration and enforcement of the Federal labor standards covered by the Davis-Bacon Act. The proper Davis-Bacon wage determination will be issued by the ordering activity at the time a request for quotations is made for applicable construction classified installation, deinstallation, and reinstallation services under SIN 132-8 or 132-9.

23. SECTION 508 COMPLIANCE.

I certify that in accordance with 508 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794d), FAR 39.2, and the Architectural and Transportation Barriers Compliance Board Electronic and Information Technology (EIT) Accessibility Standards (36 CFR 1194) General Services Administration (GSA), that all IT hardware/software/services are 508 compliant:

Yes ___ X ___
No _______

The offeror is required to submit with its offer a designated area on its website that outlines the Voluntary Product Accessibility Template (VPAT) or equivalent qualification, which ultimately becomes the Government Product Accessibility Template (GPAT). Section 508 compliance information on the supplies and services in this contract are available at the following website address (URL): ___________

The EIT standard can be found at: www.Section508.gov/.

24. PRIME CONTRACTOR ORDERING FROM FEDERAL SUPPLY SCHEDULES.

Prime Contractors (on cost reimbursement contracts) placing orders under Federal Supply Schedules, on behalf of an ordering activity, shall follow the terms of the applicable schedule and authorization and include with each order—

(a) A copy of the authorization from the ordering activity with whom the contractor has the prime contract

(unless a copy was previously furnished to the Federal Supply Schedule contractor); and

(b) The following statement:

This order is placed under written authorization from _______ dated _______. In the event of any inconsistency between the terms and conditions of this order and those of your Federal Supply Schedule contract, the latter will govern.

25. INSURANCE—WORK ON A GOVERNMENT INSTALLATION (JAN 1997)(FAR 52.228-5)

(a) The Contractor shall, at its own expense, provide and maintain during the entire performance of this contract, at least the kinds and minimum amounts of insurance required in the Schedule or elsewhere in the contract.

(b) Before commencing work under this contract, the Contractor shall notify the Contracting Officer in writing that the required insurance has been obtained. The policies evidencing required insurance shall contain an endorsement to the effect that any cancellation or any material change adversely affecting the Government's interest shall not be effective—

(1) For such period as the laws of the State in which this contract is to be performed prescribe; or

(2) Until 30 days after the insurer or the Contractor gives written notice to the Contracting Officer, whichever period is longer.

(c) The Contractor shall insert the substance of this clause, including this paragraph (c), in subcontracts under this contract that require work on a Government installation and shall require subcontractors to provide and maintain the insurance required in the Schedule or elsewhere in the contract.
Contractor shall maintain a copy of all subcontractors' proofs of required insurance, and shall make copies available to the Contracting Officer upon request.

26. SOFTWARE INTEROPERABILITY.

Offerors are encouraged to identify within their software items any component interfaces that support open standard interoperability. An item’s interface may be identified as interoperable on the basis of participation in a Government agency-sponsored program or in an independent organization program. Interfaces may be identified by reference to an interface registered in the component registry located at http://www.core.gov.

27. ADVANCE PAYMENTS

A payment under this contract to provide a service or deliver an article for the United States Government may not be more than the value of the service already provided or the article already delivered. Advance or pre-payment is not authorized or allowed under this contract. (31 U.S.C. 3324)
2. TERMS AND CONDITIONS APPLICABLE TO IT (INFORMATION TECHNOLOGY)

PROFESSIONAL SERVICES (SPECIAL ITEM NUMBER 54151S, 54151HEAL, 518210C)

**NOTE: All non-professional labor categories must be incidental to, and used solely to support professional services, and cannot be purchased separately.**

1. SCOPE
   
   a. The prices, terms and conditions stated under Special Item Number 54151S Information Technology Professional Services apply exclusively to IT/IAM Professional Services within the scope of the Multiple Award Schedule.
   
   b. The Contractor shall provide services at the Contractor’s facility and/or at the ordering activity location, as agreed to by the Contractor and the ordering activity.

2. PERFORMANCE INCENTIVES 1-FSS-60 Performance Incentives (April 2000)
   
   a. Performance incentives may be agreed upon between the Contractor and the ordering activity on individual fixed price orders or Blanket Purchase Agreements under this contract.
   
   b. The ordering activity must establish a maximum performance incentive price for these services and/or total solutions on individual orders or Blanket Purchase Agreements.
   
   c. Incentives should be designed to relate results achieved by the contractor to specified targets. To the maximum extent practicable, ordering activities shall consider establishing incentives where performance is critical to the ordering activity’s mission and incentives are likely to motivate the contractor. Incentives shall be based on objectively measurable tasks.

3. ORDER
   
   a. Agencies may use written orders, EDI orders, blanket purchase agreements, individual purchase orders, or task orders for ordering services under this contract. Blanket Purchase Agreements shall not extend beyond the end of the contract period; all services and delivery shall be made and the contract terms and conditions shall continue in effect until the completion of the order. Orders for tasks which extend beyond the fiscal year for which funds are available shall include FAR 52.232-19 (Deviation – May 2003) Availability of Funds for the Next Fiscal Year. The purchase order shall specify the availability of funds and the period for which funds are available.
   
   b. All task orders are subject to the terms and conditions of the contract. In the event of conflict between a task order and the contract, the contract will take precedence.

4. PERFORMANCE OF SERVICES
   
   a. The Contractor shall commence performance of services on the date agreed to by the Contractor and the ordering activity.
   
   b. The Contractor agrees to render services only during normal working hours, unless otherwise agreed to by the Contractor and the ordering activity.
   
   c. The ordering activity should include the criteria for satisfactory completion for each task in the Statement of Work or Delivery Order. Services shall be completed in a good and workmanlike manner.
   
   d. Any Contractor travel required in the performance of IT/IAM Services must comply with the Federal Travel Regulation or Joint Travel Regulations, as applicable, in effect on the date(s) the travel is
performed. Established Federal Government per diem rates will apply to all Contractor travel. Contractors cannot use GSA city pair contracts.

5. **STOP-WORK ORDER (FAR 52.242-15) (AUG 1989)**

(a) The Contracting Officer may, at any time, by written order to the Contractor, require the Contractor to stop all, or any part, of the work called for by this contract for a period of 90 days after the order is delivered to the Contractor, and for any further period to which the parties may agree. The order shall be specifically identified as a stop-work order issued under this clause. Upon receipt of the order, the Contractor shall immediately comply with its terms and take all reasonable steps to minimize the incurrence of costs allocable to the work covered by the order during the period of work stoppage. Within a period of 90 days after a stop-work is delivered to the Contractor, or within any extension of that period to which the parties shall have agreed, the Contracting Officer shall either:

1. Cancel the stop-work order; or
2. Terminate the work covered by the order as provided in the Default, or the Termination for Convenience of the Government, clause of this contract.

(b) If a stop-work order issued under this clause is canceled or the period of the order or any extension thereof expires, the Contractor shall resume work. The Contracting Officer shall make an equitable adjustment in the delivery schedule or contract price, or both, and the contract shall be modified, in writing, accordingly, if:

1. The stop-work order results in an increase in the time required for, or in the Contractor's cost properly allocable to, the performance of any part of this contract; and
2. The Contractor asserts its right to the adjustment within 30 days after the end of the period of work stoppage; provided, that, if the Contracting Officer decides the facts justify the action, the Contracting Officer may receive and act upon the claim submitted at any time before final payment under this contract.

(c) If a stop-work order is not canceled and the work covered by the order is terminated for the convenience of the Government, the Contracting Officer shall allow reasonable costs resulting from the stop-work order in arriving at the termination settlement.

(d) If a stop-work order is not canceled and the work covered by the order is terminated for default, the Contracting Officer shall allow, by equitable adjustment or otherwise, reasonable costs resulting from the stop-work order.

6. **INSPECTION OF SERVICES**


7. **RESPONSIBILITIES OF THE CONTRACTOR**

The Contractor shall comply with all laws, ordinances, and regulations (Federal, State, City, or otherwise) covering work of this character. If the end product of a task order is software, then FAR 52.227-14 (Dec 2007) Rights in Data – General, may apply.

8. **RESPONSIBILITIES OF THE ORDERING ACTIVITY**
Subject to security regulations, the ordering activity shall permit Contractor access to all facilities necessary to perform the requisite IT/IAM Professional Services.

9. INDEPENDENT CONTRACTOR

All IT/IAM Professional Services performed by the Contractor under the terms of this contract shall be as an independent Contractor, and not as an agent or employee of the ordering activity.

10. ORGANIZATIONAL CONFLICTS OF INTEREST

a. Definitions.

“Contractor” means the person, firm, unincorporated association, joint venture, partnership, or corporation that is a party to this contract.

“Contractor and its affiliates” and “Contractor or its affiliates” refers to the Contractor, its chief executives, directors, officers, subsidiaries, affiliates, subcontractors at any tier, and consultants and any joint venture involving the Contractor, any entity into or with which the Contractor subsequently merges or affiliates, or any other successor or assignee of the Contractor.

An “Organizational conflict of interest” exists when the nature of the work to be performed under a proposed ordering activity contract, without some restriction on ordering activities by the Contractor and its affiliates, may either (i) result in an unfair competitive advantage to the Contractor or its affiliates or (ii) impair the Contractor’s or its affiliates’ objectivity in performing contract work.

b. To avoid an organizational or financial conflict of interest and to avoid prejudicing the best interests of the ordering activity, ordering activities may place restrictions on the Contractors, its affiliates, chief executives, directors, subsidiaries and subcontractors at any tier when placing orders against schedule contracts. Such restrictions shall be consistent with FAR 9.505 and shall be designed to avoid, neutralize, or mitigate organizational conflicts of interest that might otherwise exist in situations related to individual orders placed against the schedule contract. Examples of situations, which may require restrictions, are provided at FAR 9.508.

11. INVOICES

The Contractor, upon completion of the work ordered, shall submit invoices for IT/IAM Professional services. Progress payments may be authorized by the ordering activity on individual orders if appropriate. Progress payments shall be based upon completion of defined milestones or interim products. Invoices shall be submitted monthly for recurring services performed during the preceding month.

12. PAYMENTS

For firm-fixed price orders the ordering activity shall pay the Contractor, upon submission of proper invoices or vouchers, the prices stipulated in this contract for service rendered and accepted. Progress payments shall be made only when authorized by the order. For time-and-materials orders, the Payments under Time-and-Materials and Labor-Hour Contracts at FAR 52.212-4 (MAR 2009) (ALTERNATE I – OCT 2008) (DEVIATION I – FEB 2007) applies to time-and-materials orders placed under this contract. For labor-hour orders, the Payment under Time-and-Materials and Labor-Hour Contracts at FAR 52.212-4 (MAR 2009) (ALTERNATE I – OCT 2008) (DEVIATION I – FEB 2007) applies to labor-hour orders placed under this contract. 52.216-31(Feb 2007) Time-and-Materials/Labor-Hour Proposal Requirements—Commercial Item Acquisition As prescribed in 16.601(e)(3), insert the following provision:

(a) The Government contemplates award of a Time-and-Materials or Labor-Hour type of contract resulting from this solicitation.
(b) The offeror must specify fixed hourly rates in its offer that include wages, overhead, general and administrative expenses, and profit. The offeror must specify whether the fixed hourly rate for each labor category applies to labor performed by—

(1) The offeror;

(2) Subcontractors; and/or

(3) Divisions, subsidiaries, or affiliates of the offeror under a common control.

13. RESUMES

Resumes shall be provided to the GSA Contracting Officer or the user ordering activity upon request.

14. INCIDENTAL SUPPORT COSTS

Incidental support costs are available outside the scope of this contract. The costs will be negotiated separately with the ordering activity in accordance with the guidelines set forth in the FAR.

15. APPROVAL OF SUBCONTRACTS

The ordering activity may require that the Contractor receive, from the ordering activity's Contracting Officer, written consent before placing any subcontract for furnishing any of the work called for in a task order.

16. DESCRIPTION OF IT/IAM PROFESSIONAL SERVICES AND PRICING

a. The Contractor shall provide a description of each type of IT/IAM Service offered under Special Item Numbers 54151S IT/IAM Professional Services should be presented in the same manner as the Contractor sells to its commercial and other ordering activity customers. If the Contractor is proposing hourly rates, a description of all corresponding commercial job titles (labor categories) for those individuals who will perform the service should be provided.

b. Pricing for all IT/IAM Professional Services shall be in accordance with the Contractor's customary commercial practices; e.g., hourly rates, monthly rates, term rates, and/or fixed prices, minimum general experience and minimum education.

The following is an example of the manner in which the description of a commercial job title should be presented:

EXAMPLE: Commercial Job Title: System Engineer

Minimum/General Experience: Three (3) years of technical experience which applies to systems analysis and design techniques for complex computer systems. Requires competence in all phases of systems analysis techniques, concepts and methods; also requires knowledge of available hardware, system software, input/output devices, structure and management practices.

Functional Responsibility: Guides users in formulating requirements, advises alternative approaches, conducts feasibility studies.

Minimum Education: Bachelor’s Degree in Computer Science
3. TERMS AND CONDITIONS APPLICABLE TO HEALTH IT SERVICES
(SPECIAL ITEM NUMBER 54151HEAL)

Vendor suitability for offering services through the Health Information Technology Services SIN must be in accordance with the following laws and standards when applicable to the specific task orders, including but not limited to:

- Health Information Technology for Economic and Clinical Health Act of 2009 (HITECH)
- The Health Insurance Portability and Accountability Act of 1996 (HIPAA)
- National Institute of Standards and Technology (NIST) Federal Information Processing Standards (FIPS) and Special Publications
- Federal Information Security Management Act (FISMA) of 2002

1. SCOPE

   a. The labor categories, prices, terms and conditions stated under Special Item Number 54151HEAL Health Information Technology Services apply exclusively to Health IT Services within the scope of this Information Technology Schedule.

   b. This SIN is limited to Health IT Services only. Software and hardware products are out of scope. Hardware and software can be acquired through different Special Item Numbers.

   c. This SIN provides ordering activities with access to Health IT services.

   d. Health IT Services provided under this SIN shall comply with all Healthcare certifications and industry standards as applicable at the task order level.

   e. The Contractor shall provide services at the Contractor’s facility and/or at the ordering activity location, as agreed to by the Contractor and the ordering activity.

2. ORDER

   a. Agencies may use written orders, Electronic Data Interchange (EDI) orders, Blanket Purchase Agreements, individual purchase orders, or task orders for ordering services under this contract. Blanket Purchase Agreements shall not extend beyond the end of the contract period; all services and delivery shall be made and the contract terms and conditions shall continue in effect until the completion of the order. Orders for tasks which extend beyond the fiscal year for which funds are available shall include FAR 52.232-19 (Deviation – May 2003) Availability of Funds for the Next Fiscal Year. The purchase order shall specify the availability of funds and the period for which funds are available.

   b. All task orders are subject to the terms and conditions of the contract. In the event of conflict between a task order and the contract, the contract will take precedence.

3. PERFORMANCE OF SERVICES

   a. The Contractor shall commence performance of services on the date agreed to by the Contractor and the ordering activity. All Contracts will be fully funded.
b. The Contractor agrees to render services only during normal working hours, unless otherwise agreed to by the Contractor and the ordering activity.

c. The ordering activity should include the criteria for satisfactory completion for each task in the Statement of Work or Delivery Order. Services shall be completed in a good and workmanlike manner.

d. Any Contractor travel required in the performance of Health IT Services must comply with the Federal Travel Regulation or Joint Travel Regulations, as applicable, in effect on the date(s) the travel is performed. Established Federal Government per diem rates will apply to all Contractor travel. Contractors cannot use GSA city pair contracts. All travel will be agreed upon with the client prior to the Contractor’s travel.

4. INSPECTION OF SERVICES


5. RESPONSIBILITIES OF THE CONTRACTOR

The Contractor shall comply with all laws, ordinances, and regulations (Federal, State, City, or otherwise) covering work of this character. If the end product of a task order is software, then FAR 52.227-14 (Dec 2007) Rights in Data—General, may apply.

6. RESPONSIBILITIES OF THE ORDERING ACTIVITY

Subject to security regulations, the ordering activity shall permit Contractor access to all facilities necessary to perform the requisite Health IT Services.

7. INDEPENDENT CONTRACTOR

All Health IT Services performed by the Contractor under the terms of this contract shall be as an independent Contractor, and not as an agent or employee of the ordering activity.

8. ORGANIZATIONAL CONFLICTS OF INTEREST

a. Definitions.

“Contractor” means the person, firm, unincorporated association, joint venture, partnership, or corporation that is a party to this contract. “Contractor and its affiliates” and “Contractor or its affiliates” refers to the Contractor, its chief executives, directors, officers, subsidiaries, affiliates, subcontractors at any tier, and consultants and any joint venture involving the Contractor, any entity into or with which the Contractor subsequently merges or affiliates, or any other successor or assignee of the Contractor. An “Organizational conflict of interest” exists when the nature of the work to be performed under a proposed ordering activity contract, without some restriction on ordering activities by the Contractor and its affiliates, may either (i) result in an unfair competitive advantage to the Contractor or its affiliates or (ii) impair the Contractor’s or its affiliates’ objectivity in performing contract work.

b. To avoid an organizational or financial conflict of interest and to avoid prejudicing the best interests of the ordering activity, ordering activities may place restrictions on the Contractors, its affiliates, chief executives, directors, subsidiaries and subcontractors at any tier when placing orders against schedule contracts. Such
restrictions shall be consistent with FAR 9.505 and shall be designed to avoid, neutralize, or mitigate organizational conflicts of interest that might otherwise exist in situations related to individual orders placed against the schedule contract. Examples of situations, which may require restrictions, are provided at FAR 9.508.

9. INVOICES

The Contractor, upon completion of the work ordered, shall submit invoices for Health IT Professional services. Progress payments may be authorized by the ordering activity on individual orders if appropriate. Progress payments shall be based upon completion of defined milestones or interim products. Invoices shall be submitted monthly for recurring services performed during the preceding month.

10. RESUMES

Resumes shall be provided to the GSA Contracting Officer or the user ordering activity upon request.

11. INCIDENTAL SUPPORT COSTS

Incidental support costs are not considered part of the scope of this contract. The costs will be negotiated separately with the ordering activity in accordance with the guidelines set forth in the FAR.

12. APPROVAL OF SUBCONTRACTS

The ordering activity may require that the Contractor receive, from the ordering activity's Contracting Officer, written consent before placing any subcontract for furnishing any of the work called for in a task order.

13. DESCRIPTION OF HEALTH IT SERVICES AND PRICING

a. The Contractor shall provide a description of each type of Health IT Service offered under Special Item Numbers 54151HEAL Health IT Services and it should be presented in the same manner as the Contractor sells to its commercial and other ordering activity customers. If the Contractor is proposing hourly rates, a description of all corresponding commercial job titles (labor categories) for those individuals who will perform the service should be provided.

b. Pricing for all Health IT Services shall be in accordance with the Contractor’s customary commercial practices; e.g., hourly rates, monthly rates, term rates, and/or fixed prices, minimum general experience and minimum education.
4. TERMS AND CONDITIONS APPLICABLE TO CLOUD & CLOUD RELATED TECHNOLOGY (IT) SERVICES
(SPECIAL ITEM NUMBER 518210C)

1. SCOPE

The prices, terms and conditions stated under Special Item Number (SIN) 518210C Cloud Computing Services (i.e. IaaS, etc.) and Cloud-Related Professional Services apply exclusively to Cloud Computing Services (i.e. IaaS, etc.) and Cloud-Related Professional Services within the scope of this Information Technology Schedule.

This SIN provides ordering activities with access to Cloud (i.e. SaaS, etc.) technical services that run in cloud environments and meet the NIST Definition of Cloud Computing Essential Characteristics. Cloud Services [(i.e. SaaS, etc.)] relating to or impinging on cloud that do not meet all NIST essential characteristics should be listed in other SINs. (For example: Software subscription services or Software as a Service offerings that do not meet the essential “measured service” requirement may meet the definition of “Term Licenses” under SIN 132-32. See the Measured Service requirement in Table 2, below.)

The scope of this SIN is limited to cloud capabilities provided entirely as a “pay as you go” service and cloud-related IT professional services. Hardware, software and other artifacts acquired to supporting the physical construction of a private or other cloud are out of scope for this SIN. Currently, an Ordering Activity can procure the hardware and software needed to build private on premise cloud functionality, through combining different services on other IT Schedule 70 SINs.

Sub-categories in scope for this SIN are the three NIST Service Models: Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS). Offerors may optionally select a single sub-category that best fits a proposed cloud service offering. Only one sub-category may be selected per each proposed cloud service offering. Offerors may elect to submit multiple cloud service offerings, each with its own single sub-category. The selection of one of three sub-categories does not prevent Offerors from competing for orders under the other two sub-categories.

See service model guidance for advice on sub-category selection.

Sub-category selection within this SIN is optional for any individual cloud service offering, and new cloud computing service (i.e. IaaS, etc.) technologies that do not align with the aforementioned three sub-categories may be included without a sub-category selection so long as they comply with the essential characteristics of cloud computing as outlined by NIST.

See Table 1 for a representation of the scope and sub-categories.
<table>
<thead>
<tr>
<th>SIN Description</th>
<th>Sub-Categories*</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Commercially available cloud computing services</td>
<td></td>
</tr>
<tr>
<td>● Meets the National Institute for Standards and Technology (NIST) definition of Cloud Computing essential characteristics</td>
<td></td>
</tr>
<tr>
<td>● Open to all deployment models (private, public, community or hybrid), vendors specify deployment models</td>
<td></td>
</tr>
</tbody>
</table>

1. **Software as a Service (SaaS):** Consumer uses provider’s applications on cloud infrastructure. Does not manage/control platform or infrastructure. Limited application level configuration may be available.

2. **Platform as a Service (PaaS):** Consumer deploys applications onto cloud platform service using provider-supplied tools. Has control over deployed applications and some limited platform configuration but does not manage the platform or infrastructure.

3. **Infrastructure as a Service (IaaS):** Consumer provisions computing resources. Has control over OS, storage, platform, deployed applications and some limited infrastructure configuration, but does not manage the infrastructure.

* Offerors may optionally select the single sub-category that best fits each cloud service offering, per Service Model Guidance, or select no sub-category if the offering does not fit an existing NIST service model.

2. **DESCRIPTION OF CLOUD COMPUTING SERVICES (i.e. IaaS, etc.) AND PRICING**

   a. Service Description Requirements for Listing Contractors

   The description requirements below are in addition to the overall Schedule 70 evaluation criteria described in SCP-FSS-001-N Instructions Applicable to New Offerors (Alternate I – MAR 2016) or SCP-FSS-001-S Instructions Applicable to Successful FSS Program Contractors, as applicable, SCP-FSS-004 and other relevant publications.

   Refer to overall Schedule 70 requirements for timelines related to description and other schedule updates, including but not limited to clauses 552.238-81 – section E and clause I-FSS-600.

   Table 2 summarizes the additional Contractor-provided description requirements for services proposed under the Cloud Computing Services (i.e IaaS, etc.). All mandatory description requirements must be complete, and adequate according to evaluation criteria.

   In addition there is one “Optional” reporting descriptions which exists to provide convenient service selection by relevant criteria. Where provided, optional description requirements must be complete and adequate according to evaluation criteria:

   (1) The NIST Service Model provides sub-categories for the Cloud SIN and is strongly encouraged, but not required. The Service Model based sub-categories provide this SIN with a structure to assist ordering activities in locating and comparing services of interest. Contractors may optionally select the single service model most closely corresponding to the specific service offering.

   (2) If a sub-category is selected it will be evaluated with respect to the NIST Service Model definitions and guidelines in “Guidance for Contractors".
<table>
<thead>
<tr>
<th>#</th>
<th>Description Requirement</th>
<th>Reporting Type</th>
<th>Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Provide a brief written description of how the proposed cloud computing services (i.e. IaaS, etc.) satisfies each individual essential NIST Characteristic</td>
<td>Mandatory</td>
<td>The cloud service must be capable of satisfying each of the five NIST essential Characteristics as outlined in NIST Special Publication 800-145. See ‘GUIDANCE FOR CONTRACTORS: NIST Essential Characteristics’ below in this document for detailed overall direction, as well as guidance on inheriting essential characteristics. The NIST “Measured Service” characteristic requires a minimal “pay as you go” unit of measurement appropriate for the service. In the case of SaaS, the appropriate maximum measured increment of service shall be no more than 30 days per user, or some other equivalent discrete measurement that provides the government with the advantage of frequent (approximately every 30 days) “pay as you go” metering cycles. SaaS products, where consumption is only measured on an annual basis, may better fit under “Term Software License” SIN 132-32. Likewise, offers of any combinations of IaaS, PaaS or any other cloud product services in a bundle or other fashion that do not meet the frequency requirements of approximately 30-day measurement and billing cycles, will not be accepted as complying with the NIST Measured Service characteristic.</td>
</tr>
<tr>
<td>2</td>
<td>Select NIST deployment models for the cloud computing service proposed.</td>
<td>Mandatory</td>
<td>Contractors must select at least one NIST deployment model as outlined in NIST Special Publication 800-145 describing how the proposed cloud computing service is deployed. Select multiple deployment models if the service is offered in more than one deployment model. See ‘GUIDANCE FOR CONTRACTORS: NIST Deployment Model’ below in this document for detailed direction on how to best categorize a service for the NIST deployment models.</td>
</tr>
<tr>
<td>3</td>
<td>Optionally select the most appropriate NIST service model that will be the designated sub-category, or may select no sub-category.</td>
<td>Optional</td>
<td>Contractor may select a single NIST Service model to sub-categorize the service as outlined in NIST Special Publication 800-145. Sub-category selection is optional but recommended. See ‘GUIDANCE FOR CONTRACTORS: NIST Service Model’ below in this document for detailed direction on how to best categorize a service for the NIST IaaS, PaaS, and SaaS service models.</td>
</tr>
</tbody>
</table>

a. Pricing of Cloud Computing Services

All current pricing requirements for Schedule 70, including provision SCP-FSS-001-N (Section III Price Proposal), SCP-FSS-001-S, SCP-FSS-004 (Section III Price Proposal), and clause I-FSS-600 Contract Price Lists, apply. At the current time there is no provision for reducing or eliminating standard price list posting requirements to accommodate rapid cloud price fluctuations.
In addition to standard pricing requirements, all pricing models must have the core capability to meet the NIST Essential Cloud Characteristics, particularly with respect to on-demand self-service, while allowing alternate variations at the task order level at agency discretion, pursuant to the guidance on NIST Essential Characteristics.

3. **RESPONSIBILITIES OF THE CONTRACTOR**

The Contractor shall comply with all laws, ordinances, and regulations (Federal, State, City, or otherwise) covering work of this character.

a. **Acceptance Testing**
   Any required Acceptance Test Plans and Procedures shall be negotiated by the Ordering Activity at task order level. The Contractor shall perform acceptance testing of the systems for Ordering Activity approval in accordance with the approved test procedures.

b. **Training**
   If training is provided commercially the Contractor shall provide normal commercial installation, operation, maintenance, and engineering interface training on the system. Contractor is responsible for indicating if there are separate training charges.

c. **Information Assurance/Security Requirements**
   The contractor shall meet information assurance/security requirements in accordance with the Ordering Activity requirements at the Task Order level.

d. **Related Professional Services**
   The Contractor is responsible for working with the Ordering Activity to identify related professional services and any other services available on other SINs that may be associated with deploying a complete cloud service (i.e. IaaS, etc.) solution. Any additional substantial and ongoing IT professional services related to the offering such as assessing, preparing, refactoring, migrating, DevOps, developing new cloud based applications and managing/governing a cloud implementation may be offered per the guidelines below.

e. **Performance of Cloud Computing Services (i.e. IaaS, etc.)**
   The Contractor shall respond to Ordering Activity requirements at the Task Order level with proposed capabilities to Ordering Activity performance specifications or indicate that only standard specifications are offered. In all cases the Contractor shall clearly indicate standard service levels, performance and scale capabilities.
   The Contractor shall provide appropriate cloud computing services (i.e. IaaS, etc.) on the date and to the extent and scope agreed to by the Contractor and the Ordering Activity.

f. **Reporting**
   The Contractor shall respond to Ordering Activity requirements and specify general reporting capabilities available for the Ordering Activity to verify performance, cost and availability.
   In accordance with commercial practices, the Contractor may furnish the Ordering Activity/user with a monthly summary Ordering Activity report.

4. **RESPONSIBILITIES OF THE ORDERING ACTIVITY**

The Ordering Activity is responsible for indicating the cloud computing services requirements unique to the Ordering Activity. Additional requirements should not contradict existing SIN or IT Schedule 70 Terms and Conditions. Ordering Activities should include (as applicable) Terms & Conditions to address Pricing, Security, Data Ownership, Geographic Restrictions, Privacy, SLAs, etc.
Cloud services typically operate under a shared responsibility model, with some responsibilities assigned to the Cloud Service Provider (CSP), some assigned to the Ordering Activity, and others shared between the two. The distribution of responsibilities will vary between providers and across service models. Ordering activities should engage with CSPs to fully understand and evaluate the shared responsibility model proposed. Federal Risk and Authorization Management Program (FedRAMP) documentation will be helpful regarding the security aspects of shared responsibilities, but operational aspects may require additional discussion with the provider.

a. Ordering Activity Information Assurance/Security Requirements Guidance

(1) The Ordering Activity is responsible for ensuring to the maximum extent practicable that each requirement issued is in compliance with the Federal Information Security Management Act (FISMA) as applicable.

(2) The Ordering Activity shall assign a required impact level for confidentiality, integrity and availability (CIA) prior to issuing the initial statement of work. The Contractor must be capable of meeting at least the minimum security requirements assigned against a low-impact information system in each CIA assessment area (per FIPS 200) and must detail the FISMA capabilities of the system in each of CIA assessment area.

(3) Agency level FISMA certification, accreditation, and evaluation activities are the responsibility of the Ordering Activity. The Ordering Activity reserves the right to independently evaluate, audit, and verify the FISMA compliance for any proposed or awarded Cloud Computing Services.

(4) The Ordering Activity has final responsibility for assessing the FedRAMP status of the service, complying with and making a risk-based decision to grant an Authorization to Operate (ATO) for the cloud computing service, and continuous monitoring. A memorandum issued by the Office of Management and Budget (OMB) on Dec 8, 2011 outlines the responsibilities of Executive departments and agencies in the context of FedRAMP compliance.

(5) Ordering activities are responsible for determining any additional information assurance and security related requirements based on the nature of the application and relevant mandates.


b. Deployment Model

If a particular deployment model (Private, Public, Community, or Hybrid) is desired, Ordering Activities are responsible for identifying the desired model(s). Alternately, Ordering Activities could identify requirements and assess Contractor responses to determine the most appropriate deployment model(s).

c. Delivery Schedule

The Ordering Activity shall specify the delivery schedule as part of the initial requirement. The Delivery Schedule options are found in Information for Ordering Activities Applicable to All Special Item Numbers.

d. Interoperability
Ordering Activities are responsible for identifying interoperability requirements. Ordering Activities should clearly delineate requirements for API implementation and standards conformance.

e. Performance of Cloud Computing Services
   The Ordering Activity should clearly indicate any custom minimum service levels, performance and scale requirements as part of the initial requirement.

f. Reporting
   The Ordering Activity should clearly indicate any cost, performance or availability reporting as part of the initial requirement.

g. Privacy
   The Ordering Activity should specify the privacy characteristics of their service and engage with the Contractor to determine if the cloud service is capable of meeting Ordering Activity requirements. For example, a requirement could be requiring assurance that the service is capable of safeguarding Personally Identifiable Information (PII), in accordance with NIST SP 800-122\textsuperscript{4} and OMB memos M-06-16\textsuperscript{5} and M-07-16\textsuperscript{6}. An Ordering Activity will determine what data elements constitute PII according to OMB Policy, NIST Guidance and Ordering Activity policy.

\begin{itemize}
\item \textsuperscript{4} NIST SP 800-122, “Guide to Protecting the Confidentiality of Personally Identifiable Information (PII)”
\item \textsuperscript{5} OMB memo M-06-16: Protection of Sensitive Agency Information
   \url{http://www.whitehouse.gov/sites/default/files/omb/memoranda/fy2006/m06-16.pdf}
\item \textsuperscript{6} OMB Memo M-07-16: Safeguarding Against and Responding to the Breach of Personally Identifiable Information
   \url{http://www.whitehouse.gov/sites/default/files/omb/memoranda/fy2007/m07-16.pdf}
\end{itemize}

h. Accessibility
   The Ordering Activity should specify the accessibility characteristics of their service and engage with the Contractor to determine the cloud service is capable of meeting Ordering Activity requirements. For example, a requirement could require assurance that the service is capable of providing accessibility based on Section 508 of the Rehabilitation Act of 1973 (29 U.S.C. 794d).

i. Geographic Requirements
   Ordering activities are responsible for specifying any geographic requirements and engaging with the Contractor to determine that the cloud services offered have the capabilities to meet geographic requirements for all anticipated task orders. Common geographic concerns could include whether service data, processes and related artifacts can be confined on request to the United States and its territories, or the continental United States (CONUS).

j. Data Ownership and Retrieval and Intellectual Property
   Intellectual property rights are not typically transferred in a cloud model. In general, CSPs retain ownership of the Intellectual Property (IP) underlying their services and the customer retains ownership of its intellectual property. The CSP gives the customer a license to use the cloud services (i.e. IaaS, etc.) for the duration of the contract without transferring rights. The government retains ownership of the IP and data they bring to the customized use of the service as spelled out in the FAR and related materials. General considerations of data ownership and retrieval are covered under the terms of Schedule 70 and the FAR and other laws, ordinances, and regulations (Federal, State, City, or otherwise). Because of considerations arising from cloud shared responsibility models, ordering activities should engage with the Contractor to develop more cloud-specific understandings of the boundaries between data owned by the government and that owned by the cloud service provider, and the specific terms of data retrieval.
In all cases, the Ordering Activity should enter into an agreement with a clear and enforceable understanding of the boundaries between government and cloud service provider data, and the form, format and mode of delivery for each kind of data belonging to the government.

The Ordering Activity should expect that the Contractor shall transfer data to the government at the government's request at any time, and in all cases when the service or order is terminated for any reason, by means, in formats and within a scope clearly understood at the initiation of the service. Example cases that might require clarification include status and mode of delivery for:

- Configuration information created by the government and affecting the government’s use of the cloud provider’s service.
- Virtual machine configurations created by the government but operating on the cloud provider’s service.
- Profile, configuration and other metadata used to configure SaaS application services or PaaS platform services.

The key is to determine in advance the ownership of classes of data and the means by which Government owned data can be returned to the Government.

k. Service Location Distribution

The Ordering Activity should determine requirements for continuity of operations and performance and engage with the Contractor to ensure that cloud services have adequate service location distribution to meet anticipated requirements. Typical concerns include ensuring that:

Physical locations underlying the cloud are numerous enough to provide continuity of operations and geographically separate enough to avoid an anticipated single point of failure within the scope of anticipated emergency events.

1) Service endpoints for the cloud are able to meet anticipated performance requirements in terms of geographic proximity to service requestors.

Note that cloud providers may address concerns in the form of minimum distance between service locations, general regions where service locations are available, etc.

5. GUIDANCE FOR CONTRACTORS

This section offers guidance for interpreting the Contractor Description Requirements in Table 2, including the NIST essential cloud characteristics, service models and deployment models. This section is not a list of requirements.

Contractor-specific definitions of cloud computing characteristics and models or significant variances from the NIST essential characteristics or models are discouraged and will not be considered in the scope of this SIN or accepted in response to Factors for Evaluation. The only applicable cloud characteristics, service model/subcategories and deployment models for this SIN will be drawn from the NIST 800-145 special publication. Services qualifying for listing as cloud computing services (i.e. IaaS, etc.) under this SIN must substantially satisfy the essential characteristics of cloud computing as documented in the NIST Definition of Cloud Computing SP 800-145.

Contractors must select deployment models corresponding to each way the service can be deployed. Multiple deployment model designations for a single cloud service are permitted but at least one deployment model must be selected.

In addition, contractors submitting Cloud services (i.e. IaaS, etc.) for listing under this SIN are encouraged to select a sub-category for each Cloud service (i.e. IaaS, etc.) proposed under this SIN with respect to a
single principal NIST cloud service model that most aptly characterizes the service. Cloud Service model (i.e. IaaS, etc.) categorization is optional.


Both Cloud service model (i.e. IaaS, etc.) and deployment model (i.e. public, etc.) designations must accord with NIST definitions. Guidance is offered in this document on making the most appropriate selection

a. NIST Essential Characteristics

**General Guidance:** NIST’s essential cloud characteristics provide a consistent metric for whether a service is eligible for inclusion in this SIN. It is understood that due to legislative, funding and other constraints that government entities cannot always leverage a cloud service to the extent that all NIST essential characteristics are commercially available. For the purposes of the Cloud SIN, meeting the NIST essential characteristics is determined by whether each essential capability of the commercial service is available for the service, whether or not the Ordering Activity actually requests or implements the capability. The guidance in Table 3 offers examples of how services might or might not be included based on the essential characteristics, and how the Contractor should interpret the characteristics in light of current government contracting processes.

**Table 3: Guidance on Meeting NIST Essential Characteristics**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Capability</th>
<th>Guidance</th>
</tr>
</thead>
</table>
| On-demand self-service | Ordering activities can directly provision services without requiring Contractor intervention.  
|                      | This characteristic is typically implemented via a service console or programming interface for provisioning | Government procurement guidance varies on how to implement on-demand provisioning at this time.  
Ordering activities may approach on-demand in a variety of ways, including "not-to-exceed" limits, or imposing monthly or other appropriate payment cycles on what are essentially on-demand services.  
Services under this SIN must be capable of true on-demand self-service, and ordering activities and Contractors must negotiate how they implement on-demand capabilities in practice at the task order level:  
Ordering activities must specify their procurement approach and requirements for on-demand service.  
Contractors must propose how they intend to meet the approach.  
Contractors must certify that on-demand self-service is technically available for their service should procurement guidance become available. |
| Broad Network Access | Ordering activities are able to access services over standard agency networks  
|                      | Service can be accessed and provisioned using standard devices such as browsers, tablets and mobile phones | Broad network access must be available without significant qualification and in relation to the deployment model and security domain of the service  
Contractors must specify any ancillary activities, services or equipment required to access cloud services or integrate cloud with other cloud or non-cloud networks and services. For example, a private cloud might require an Ordering Activity to purchase or provide a dedicated router, etc. which is acceptable but should be indicated by the Contractor. |
| Resource Pooling     | Pooling distinguishes cloud services from simple offsite hosting.  
|                      | Ordering activities draw resources from a common pool                       | The cloud service must draw from a pool of resources and provide an automated means for the Ordering Activity to dynamically allocate them.  
Manual allocation, e.g. manual operations at a physical server farm where Contractor staff |
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Capability</th>
<th>Guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>maintained by the Contractor</td>
<td>configure servers in response to Ordering Activity requests, does not meet this requirement</td>
</tr>
<tr>
<td></td>
<td>● Resources may have general characteristics such as regional location</td>
<td>● Similar concerns apply to software and platform models; automated provisioning from a pool is required</td>
</tr>
<tr>
<td></td>
<td>● Ordering activities may request dedicated physical hardware, software or platform resources to access a private cloud deployment service. However the provisioned cloud resources must be drawn from a common pool and automatically allocated on request.</td>
<td></td>
</tr>
<tr>
<td>Rapid Elasticity</td>
<td>● Rapid provisioning and de-provisioning commensurate with demand</td>
<td>● Rapid elasticity is a specific demand-driven case of self-service</td>
</tr>
<tr>
<td></td>
<td>● ‘Rapid’ should be understood as measured in minutes and hours, not days or weeks.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Elastic capabilities by manual request, e.g. via a console operation or programming interface code, are required.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Automated elasticity which is driven dynamically by system load, etc. is optional. Contractors must specify whether automated demand-driven elasticity is available and the general mechanisms that drive the capability.</td>
<td></td>
</tr>
<tr>
<td>Measured Service</td>
<td>● Measured service should be understood as a reporting requirement that enables an Ordering Activity to control their use in cooperation with self service</td>
<td>● Procurement guidance for on-demand self-service applies to measured service as well, i.e. rapid elasticity must be technically available but ordering activities and Contractors may manually designate other contractual arrangements.</td>
</tr>
<tr>
<td></td>
<td>● Regardless of specific contractual arrangements, reporting must indicate actual usage, be continuously available to the Ordering Activity, and provide meaningful metrics appropriate to the service measured</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Contractors must specify that measured service is available and the general sort of metrics and mechanisms available</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● The goal of the Measured Service requirement is to ensure Ordering Activities realize the full benefit of “pay as you go” consumption models. Consumption measurements that are not discrete enough or frequent enough (greater than 30 days), will not fulfill this NIST essential characteristic and will not be eligible for inclusion in this SIN.</td>
<td></td>
</tr>
</tbody>
</table>

### Inheriting Essential Characteristic

Cloud Services (i.e. IaaS, etc.) may depend on other cloud services, and cloud service models such as PaaS and SaaS are able to inherit essential characteristics from other cloud services that support them. For example a PaaS platform service can inherit the broad network access made available by the IaaS service it runs on, and in such a situation would be fully compliant with the broad network access essential characteristic. Cloud Services (i.e. IaaS, etc.) inheriting essential characteristics must make the inherited characteristic fully available at their level of delivery to claim the relevant characteristic by inheritance.

Inheriting characteristics does not require the inheriting provider to directly bundle or integrate the inherited service, but it does require a reasonable measure of support and identification. For example, the Ordering Activity may acquire an IaaS service from “Provider A” and a PaaS service from “Provider B”. The PaaS service may inherit broad network access from “Provider A” but must identify and support the inherited service as an acceptable IaaS provider.
Assessing Broad Network Access

Typically broad network access for public deployment models implies high bandwidth access from the public internet for authorized users. In a private cloud deployment internet access might be considered broad access, as might be access through a dedicated shared high bandwidth network connection from the Ordering Activity, in accord with the private nature of the deployment model.

Resource Pooling and Private Cloud

All cloud resource pools are finite, and only give the appearance of infinite resources when sufficiently large, as is sometimes the case with a public cloud. The resource pool supporting a private cloud is typically smaller with more visible limits. A finite pool of resources purchased as a private cloud service qualifies as resource pooling so long as the resources within the pool can be dynamically allocated to the ultimate users of the resource, even though the pool itself appears finite to the Ordering Activity that procures access to the pool as a source of dynamic service allocation.

b. NIST Service Model

The Contractor may optionally document the service model of cloud computing (e.g. IaaS, PaaS, SaaS, or a combination thereof) that most closely describes their offering, using the definitions in The NIST Definition of Cloud Computing SP 800-145. The following guidance is offered for the proper selection of service models.

NIST’s service models provide this SIN with a set of consistent sub-categories to assist ordering activities in locating and comparing Cloud services (i.e. IaaS, etc.) of interest. Service model is primarily concerned with the nature of the service offered and the staff and activities most likely to interact with the service. Contractors should select a single service model most closely corresponding to their proposed service based on the guidance below. It is understood that cloud services can technically incorporate multiple service models and the intent is to provide the single best categorization of the service.

Contractors should take care to select the NIST service model most closely corresponding to each service offered. Contractors should not invent, proliferate or select multiple cloud service model sub-categories to distinguish their offerings, because ad-hoc categorization prevents consumers from comparing similar offerings. Instead vendors should make full use of the existing NIST categories to the fullest extent possible.

For example, in this SIN an offering commercially marketed by a Contractor as “Storage as a Service” would be properly characterized as Infrastructure as a Service (IaaS), storage being a subset of infrastructure. Services commercially marketed as “LAMP as a Service” or “Database as a Service” would be properly characterized under this SIN as Platform as a Service (PaaS), as they deliver two kinds of platform services. Services commercially marketed as “Travel Facilitation as a Service” or “Email as a Service” would be properly characterized as species of Software as a Service (SaaS) for this SIN.

However, Contractors can and should include appropriate descriptions (include commercial marketing terms) of the service in the full descriptions of the service’s capabilities.

When choosing between equally plausible service model sub-categories, Contractors should consider several factors:

(1) Visibility to the Ordering Activity. Service model sub-categories in this SIN exist to help Ordering Activities match their requirements with service characteristics. Contractors should select the most intuitive and appropriate service model from the point of view of an Ordering Activity.

(2) Primary Focus of the Cloud Service (i.e. IaaS, etc.). Services may offer a mix of capabilities that span service models in the strict technical sense. For example, a service may offer both IaaS capabilities for processing and storage, along with some PaaS capabilities for application deployment, or SaaS
capabilities for specific applications. In a service mix situation the Contractor should select the service model that is their primary focus. Alternatively contractors may choose to submit multiple service offerings for the SIN, each optionally and separately subcategorized.

(3) Ordering Activity Role. Contractors should consider the operational role of the Ordering Activity’s primary actual consumer or operator of the service. For example services most often consumed by system managers are likely to fit best as IaaS; services most often consumed by application deployers or developers as PaaS, and services most often consumed by business users as SaaS.

(4) Lowest Level of Configurability. Contractors can consider IaaS, PaaS and SaaS as an ascending hierarchy of complexity, and select the model with the lowest level of available Ordering Activity interaction. As an example, virtual machines are an IaaS service often bundled with a range of operating systems, which are PaaS services. The Ordering Activity usually has access to configure the lower level IaaS service, and the overall service should be considered IaaS. In cases where the Ordering Activity cannot configure the speed, memory, network configuration, or any other aspect of the IaaS component, consider categorizing as a PaaS service.

Cloud management and cloud broker services should be categorized based on their own characteristics and not those of the other cloud services that are their targets. Management and broker services typically fit the SaaS service model, regardless of whether the services they manage are SaaS, PaaS or IaaS. Use Table 3 to determine which service model is appropriate for the cloud management or cloud broker services, or, alternately choose not to select a service model for the service.

The guidance in Table 4 offers examples of how services might be properly mapped to NIST service models and how a Contractor should interpret the service model sub-categories.

### Table 4: Guidance on Mapping to NIST Service Models

<table>
<thead>
<tr>
<th>Service</th>
<th>Guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infrastructure as a Service (IaaS)</td>
<td>Select an IaaS model for service based equivalents of hardware appliances such as virtual machines, storage devices, routers and other physical devices.</td>
</tr>
<tr>
<td></td>
<td>● IaaS services are typically consumed by system or device managers who would configure physical hardware in a non-cloud setting</td>
</tr>
<tr>
<td></td>
<td>● The principal customer interaction with an IaaS service is provisioning then configuration, equivalent to procuring and then configuring a physical device.</td>
</tr>
<tr>
<td></td>
<td>Examples of IaaS services include virtual machines, object storage, disk block storage, network routers and firewalls, software defined networks.</td>
</tr>
<tr>
<td></td>
<td>Gray areas include services that emulate or act as dedicated appliances and are directly used by applications, such as search appliances, security appliances, etc. To the extent that these services or their emulated devices provide direct capability to an application they might be better classified as Platform services (PaaS). To the extent that they resemble raw hardware and are consumed by other platform services they are better classified as IaaS.</td>
</tr>
<tr>
<td>Platform as a Service (PaaS)</td>
<td>Select a PaaS model for service based equivalents of complete or partial software platforms. For the purposes of this classification, consider a platform as a set of software services capable of deploying all or part of an application.</td>
</tr>
<tr>
<td></td>
<td>● A complete platform can deploy an entire application. Complete platforms can be proprietary or open source</td>
</tr>
<tr>
<td></td>
<td>● Partial platforms can deploy a component of an application which combined with other components make up the entire deployment</td>
</tr>
<tr>
<td></td>
<td>● PaaS services are typically consumed by application deployment staff whose responsibility is to take a completed agency application and cause it to run on the designated complete or partial platform service</td>
</tr>
<tr>
<td></td>
<td>● The principal customer interaction with a PaaS service is deployment,</td>
</tr>
</tbody>
</table>
equivalent to deploying an application or portion of an application on a software platform service.

- A limited range of configuration options for the platform service may be available.

Examples of complete PaaS services include:
- A Linux/Apache/MySQL/PHP (LAMP) platform ready to deploy a customer PHP application,
- A Windows .Net platform ready to deploy a .Net application,
- A custom complete platform ready to develop and deploy an customer application in a proprietary language
- A multiple capability platform ready to deploy an arbitrary customer application on a range of underlying software services.

The essential characteristic of a complete PaaS is defined by the customer’s ability to deploy a complete custom application directly on the platform.

PaaS includes partial services as well as complete platform services. Illustrative examples of individual platform enablers or components include:

- A database service ready to deploy a customer’s tables, views and procedures,
- A queuing service ready to deploy a customer’s message definitions
- A security service ready to deploy a customer’s constraints and target applications for continuous monitoring

The essential characteristic of an individual PaaS component is the customer’s ability to deploy their unique structures and/or data onto the component for a partial platform function. Note that both the partial and complete PaaS examples all have two things in common:

- They are software services, which offer significant core functionality out of the box
- They must be configured with customer data and structures to deliver results

As noted in IaaS, operating systems represent a gray area in that OS is definitely a platform service, but is typically bundled with IaaS infrastructure. If your service provides an OS but allows for interaction with infrastructure, please sub-categorize it as IaaS. If your service “hides” underlying infrastructure, consider it as PaaS.

Select a SaaS model for service based equivalents of software applications.

- SaaS services are typically consumed by business or subject-matter staff who would interact directly with the application in a non-cloud setting
- The principal customer interaction with a SaaS service is actual operation and consumption of the application services the SaaS service provides.

Some minor configuration may be available, but the scope of the configuration is limited to the scope and then the permissions of the configuring user. For example an agency manager might be able to configure some aspects of the application for their agency but not all agencies. An agency user might be able to configure some aspects for themselves but not everyone in their agency.

Typically only the Contractor would be permitted to configure aspects of the software for all users.

Examples of SaaS services include email systems, business systems of all sorts such as travel systems, inventory systems, etc., wiki’s, websites or content management systems,
management applications that allow a customer to manage other cloud or non-cloud services, and in general any system where customers interact directly for a business purpose.

Gray areas include services that customers use to configure other cloud services, such as cloud management software, cloud brokers, etc. In general these sorts of systems should be considered SaaS, per guidance in this document.

a. Deployment Model

Deployment models (e.g. private, public, community, or hybrid) are not restricted at the SIN level and any specifications for a deployment model are the responsibility of the Ordering Activity.

Multiple deployment model selection is permitted, but at least one model must be selected. The guidance in Table 4 offers examples of how services might be properly mapped to NIST deployment models and how the Contractor should interpret the deployment model characteristics. Contractors should take care to select the range of NIST deployment models most closely corresponding to each service offered.

Note that the scope of this SIN does not include hardware or software components used to construct a cloud, only cloud capabilities delivered as a service, as noted in the Scope section.

<table>
<thead>
<tr>
<th>Deployment Model</th>
<th>Guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Cloud</td>
<td>The service is provided exclusively for the benefit of a definable organization and its components; access from outside the organization is prohibited. The actual services may be provided by third parties, and may be physically located as required, but access is strictly defined by membership in the owning organization.</td>
</tr>
<tr>
<td>Public Cloud</td>
<td>The service is provided for general public use and can be accessed by any entity or organization willing to contract for it.</td>
</tr>
<tr>
<td>Community Cloud</td>
<td>The service is provided for the exclusive use of a community with a definable shared boundary such as a mission or interest. As with private cloud, the service may be in any suitable location and administered by a community member or a third party.</td>
</tr>
<tr>
<td>Hybrid Cloud</td>
<td>The service is composed of one or more of the other models. Typically hybrid models include some aspect of transition between the models that make them up, for example a private and public cloud might be designed as a hybrid cloud where events like increased load permit certain specified services in the private cloud to run in a public cloud for extra capacity, e.g. bursting.</td>
</tr>
</tbody>
</table>
5. INFORMATION PERTAINING TO CLOUD RELATED IT PROFESSIONAL SERVICES

NOTE: Offerors may offer Cloud Services (i.e. IaaS, etc.) exclusively; it is not a requirement to also offer Cloud Related IT Professional Services. Similarly, offerors of Cloud Related IT Professional Services are not required to also offer Cloud Services (i.e. IaaS, etc.). Offerors who have capabilities in both Cloud Services (i.e. IaaS, etc.) and Cloud Related IT Professional Services may offer both, under this SIN.

NOTE: ****Labor categories under Special Item Number 132-51 “Information Technology Professional Services may remain under SIN 132-51, unless they are specific to the Cloud Computing Products and IT Professional Services 518210C. Labor specific to Cloud Computing should be positioned by Contractors under SIN 518210C in order for Contractors to have the opportunity to bid on requests for quotes that are generated exclusively under the Cloud SIN. Offerors may offer Cloud IT Professional Services exclusively; it is not a requirement to also offer Cloud Services (i.e IaaS).

c. SCOPE OF 518210C Cloud Related IT Professional Services

(1) The labor categories, prices, terms and conditions stated under Special Item Numbers 518210C Cloud Services and Related IT Professional Services apply exclusively to this SIN within the scope of this Information Technology Schedule. It is anticipated that the relevant IT Professional Services for this SIN (518210C) are related to the following: assessing cloud solutions, preparing for cloud solutions, refactoring legacy solutions for cloud migration, migrating legacy or other systems to cloud solutions, DevOps, developing new cloud based applications and providing management/governance for cloud solutions. Contractors may propose other types of relevant professional services as long as they are specifically designed to work within and/or support the types of cloud product services described in SIN 518210C.

(2) Cloud Related IT Professional Services provided under this SIN shall comply with all certifications and industry standards as applicable pertaining to the type of services as specified by ordering agency.

(3) The Contractor shall provide Cloud Related IT Professional Services at the Contractor’s facility and/or at the ordering activity location, as agreed to by the Contractor and the ordering activity.

d. ORDER

(1) Agencies may use written orders, Electronic Data Interchange (EDI) orders, Blanket Purchase Agreements, individual purchase orders, or task orders for ordering services under this contract. Blanket Purchase Agreements shall not extend beyond the end of the contract period; all services and delivery shall be made and the contract terms and conditions shall continue in effect until the completion of the order. Orders for tasks which extend beyond the fiscal year for which funds are available shall include FAR 52.232-19 (Deviation – May 2003) Availability of Funds for the Next Fiscal Year. The order shall specify the availability of funds and the period for which funds are available.

(2) All task orders are subject to the terms and conditions of the contract. In the event of conflict between a task order and the contract, the contract will take precedence.

e. PERFORMANCE OF SERVICES

(1) The Contractor shall commence performance of Cloud Related IT Professional Services on the date agreed to by the Contractor and the ordering activity.

(2) The Contractor agrees to render Cloud Related IT Professional Services during normal working hours, unless otherwise agreed to by the Contractor and the ordering activity.
The ordering activity should include the criteria for satisfactory completion for each task in the Statement of Work or Delivery Order. Cloud Related IT Professional Services shall be completed in a good and workmanlike manner.

Any Contractor travel required in the performance of Cloud Related IT Professional Services must comply with the Federal Travel Regulation or Joint Travel Regulations, as applicable, in effect on the date(s) the travel is performed. Established Federal Government per diem rates will apply to all Contractor travel. Contractors cannot use GSA city pair contracts. All travel will be agreed upon with the client prior to the Contractor’s travel.

f. INSPECTION OF SERVICES

g. RESPONSIBILITIES OF THE CONTRACTOR
The Contractor shall comply with all laws, ordinances, and regulations (Federal, State, City, or otherwise) covering work of this character. If the end product of a task order is software, then FAR 52.227-14 (MAY 2014) Rights in Data – General, may apply.

The Contractor shall comply with contract clause (52.204-21) to the Federal Acquisition Regulation (FAR) for the basic safeguarding of contractor information systems that process, store, or transmit Federal data received by the contract in performance of the contract. This includes contract documents and all information generated in the performance of the contract.

h. RESPONSIBILITIES OF THE ORDERING ACTIVITY
Subject to the ordering activity’s security regulations, the ordering activity shall permit Contractor access to all facilities necessary to perform the requisite Cloud Computing IT Professional Services.

i. INDEPENDENT CONTRACTOR
All Cloud Computing IT Professional Services performed by the Contractor under the terms of this contract shall be as an independent Contractor, and not as an agent or employee of the ordering activity.

j. ORGANIZATIONAL CONFLICTS OF INTEREST
(1) Definitions.
“Contractor” means the person, firm, unincorporated association, joint venture, partnership, or corporation that is a party to this contract.

“Contractor and its affiliates” and “Contractor or its affiliates” refers to the Contractor, its chief executives, directors, officers, subsidiaries, affiliates, subcontractors at any tier, and consultants and any joint venture involving the Contractor, any entity into or with which the Contractor subsequently merges or affiliates, or any other successor or assignee of the Contractor.
An “Organizational conflict of interest” exists when the nature of the work to be performed under a proposed ordering activity contract, without some restriction on ordering activities by the Contractor and its affiliates, may either (i) result in an unfair competitive advantage to the Contractor or its affiliates or (ii) impair the Contractor’s or its affiliates’ objectivity in performing contract work.

To avoid an organizational or financial conflict of interest and to avoid prejudicing the best interests of the ordering activity, ordering activities may place restrictions on the Contractors, its affiliates, chief executives, directors, subsidiaries and subcontractors at any tier when placing orders against schedule contracts. Such restrictions shall be consistent with FAR 9.505 and shall be designed to avoid, neutralize, or mitigate organizational conflicts of interest that might otherwise exist in situations related to individual orders placed against the schedule contract. Examples of situations, which may require restrictions, are provided at FAR 9.508.

k. INVOICES
The Contractor, upon completion of the work ordered, shall submit invoices for Cloud Computing IT Professional Services. Progress payments may be authorized by the ordering activity on individual orders if appropriate. Progress payments shall be based upon completion of defined milestones or interim products. Invoices shall be submitted monthly for recurring IT professional services performed during the preceding month.

l. PAYMENTS
The ordering activity shall pay the Contractor upon submission of proper invoices or vouchers, the prices stipulated in this contract for service rendered and accepted. Progress payments shall be made only when authorized by the order. Payments shall be made in accordance with:

For orders that are NOT time-and-materials/labor hours (fixed price applicable).


For orders that are time-and-materials/labor hours.


- FAR 52.216-31 (Feb 2007) Time-and Materials/Labor-Hour Proposal Requirements—Commercial Item Acquisition. As prescribed in 16.601(f)(3), insert the following provision:

1. The Government contemplates award of a Time-and-Materials or Labor-Hour type of contract resulting from this solicitation.

2. The offeror must specify fixed hourly rates in its offer that include wages, overhead, general and administrative expenses, and profit. The offeror must specify whether the fixed hourly rate for each labor category applies to labor performed by-
   i. The offeror;
   ii. Subcontractors; and/or
   iii. Divisions, subsidiaries, or affiliates of the offeror under a common control.]

m. RESUMES
Resumes shall be provided to the GSA Contracting Officer or the user ordering activity upon request.
n. APPROVAL OF SUBCONTRACTS
   The ordering activity may require that the Contractor receive, from the ordering activity's Contracting
   Officer, written consent before placing any subcontract for furnishing any of the work called for in a
   task order.

o. DESCRIPTION OF CLOUD COMPUTING LABOR HOURS AND PRICING
   (1) The Contractor shall provide a description of each type of Cloud Computing Professional
       Service offered under Special Item Numbers 518210C and it should be presented in the same
       manner as the Contractor sells to its commercial and other ordering activity customers. If
       the Contractor is proposing hourly rates, a description of all corresponding commercial job
       titles (labor categories) for those individuals who will perform the service should be provided.

   (2) Pricing for all Cloud Computing IT Professional Services shall be in accordance with the
       Contractor’s customary commercial practices; e.g., hourly rates, minimum general experience and minimum education.

   The following is an example of the manner in which the description of a commercial job title
   should be presented (see SCP FSS 004).

EXAMPLE

Commercial Job Title: Senior Cloud Subject Matter Expert

Description: Provides highest-level cloud computing domain expertise to large scale and complex
projects as a client resource. Leads teams and client interaction from workflow design to cloud
solution deliverables.

Professionals involved in this specialty perform the following tasks:
   • Provides in-depth knowledge and expertise from cloud computing and business domains
   • Develops and improves technical and business requirements documentation and specifications
   • Reviews client requirements during on-boarding and other project phases
   • Presents alternatives to client based designs based on impact to cost, performance and outcomes
   • Incorporates enterprise architecture designs from business unit services strategies
   • Provides advisory services to the service provider, cross functional teams, and clients

Knowledge, Skills and Abilities: Documented track record of successful client engagements in large
public sector enterprise environments. 10+ years experience with SOAP, JSON, J2EE, SML, REST,
OAUth, SAML, and OpenID. 4+ years experience with AD, LDAP, ODBC, SSO, CAC/PIV, STS,
SSL, IEP, 3DES, 2-Factor, and STIG. Proficient with SDLC, AWS, and Oracle. Ability to thrive in a
dynamic public sector environment.

Minimum Experience: 10 Years

Minimum Education Requirements: an MS degree in computer science or equivalent.

Highly Desirable: Deep knowledge of Microsoft Azure and Amazon Web Services core service offerings
<table>
<thead>
<tr>
<th>SIN</th>
<th>LABOR CATEGORY</th>
<th>Year 1 GSA PRICE WITH IFF</th>
<th>Year 2 GSA PRICE WITH IFF</th>
<th>Year 3 GSA PRICE WITH IFF</th>
<th>Year 4 GSA PRICE WITH IFF</th>
<th>Year 5 GSA PRICE WITH IFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>54151S</td>
<td>Database Administrator</td>
<td>$127.71</td>
<td>$131.54</td>
<td>$135.49</td>
<td>$139.55</td>
<td>$143.74</td>
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<tr>
<td>54151S</td>
<td>Data Modeler / Architect</td>
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<td>54151S</td>
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<td>54151S</td>
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<td>$75.89</td>
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7. LABOR CATEGORY DESCRIPTIONS

Database Administrator

*Minimum/General Experience:* Four (4) years of experience performing moderately complex database engineering assignments involving the modification and/or development of enterprise database systems. Experience in developing database systems or subsystems architecture, requirements, and design documents. Performs database algorithm development, design, coding, and documentation of systems.

*Functional Responsibility:* Performs database algorithm development, design, coding, and documentation of systems. Understands and has implemented database technology. Evaluates subcontractor software activities, and ensures compliance with software engineering standards.

*Minimum Education:* Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Data Modeler / Architect

*Minimum/General Experience:* Five (5) years of experience in the design, development, build, analysis, evaluation and installation of database management systems. Experience to include database modeling and design, relational database architecture, metadata and repository creation and configuration management.

*Functional Responsibility:* The analysis and design of complex data solutions while applying data architecture principles. This includes logical and physical data modelling based on data requirements using relational data modeling practices. Uses data mapping, data mining and data transformational analysis tools to design and develop databases. Determines data storage and optimum storage requirements. Prepares system requirements, source analysis and process analyses and design throughout the database implementation.

*Minimum Education:* Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Database Manager

*Minimum/General Experience:* Five (5) years of experience in maintaining the health, functionality and availability of production - mission critical systems. Experience performing Oracle/Sybase/db2 administration including dumps & loads, user account maintenance, device management, manage tables, constraints and indexes.

*Functional Responsibility:* Responsible for the reliability and availability of large, scalable databases with heavy transaction and batch activities. Maintain existing environment, perform upgrades and the monitoring and resolution technical problems.

*Minimum Education:* Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Software Test Engineer I

*Minimum/General Experience:* Three (3) years of experience performing software integration and troubleshooting of multiple applications complex enterprise environments. Experience to include executing tests to validate the requirements and functionality per the project specifications as detailed in the test procedures. Relies on instructions and pre-established guidelines to perform the functions of the job. Works under immediate supervision.
Functional Responsibility: Supports the development and generation of system test plans to validate system requirements and functionality as documented in the system specifications. May support the development of test scenarios and generating test procedures to properly and rigorously test the system requirements and functionality. Also responsible for identifying, analyzing, and documenting any defects discovered during testing.

Minimum Education: Associates degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Software Test Engineer II

Minimum/General Experience: Four (4) years of experience performing software integration and troubleshooting of multiple applications in complex enterprise environments. Experience to include executing tests to validate the requirements and functionality per the project specifications as detailed in the test procedures. Relies on limited experience and judgment to plan and accomplish goals. Works under general supervision.

Functional Responsibility: Supports the development and generation of system test plans to validate system requirements and functionality as documented in the system specifications. May support the development of test scenarios and generating test procedures to properly and rigorously test the system requirements and functionality. Also responsible for identifying, analyzing, and documenting any defects discovered during testing.

Minimum Education: Associates degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Software Test Engineer III

Minimum/General Experience: Six (6) years of experience in one or more testing scenarios: Functional Testing, Performance and Stress Testing, End-to-end testing with other systems and organizations, Acceptance and Regression Testing. Relies on years of experience and significant judgment to plan and accomplish goals.

Functional Responsibility: Evaluates, recommends, and implements automated test tools and strategies. Develops, maintains and upgrades automated test scripts and architectures for application products. May write, implement, and report status for system test cases for testing. Analyzes test cases and provides regular progress reports. Provide mentoring and leadership to junior staff.

Minimum Education: Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline

Testing Engineer I

Minimum/General Experience: Five (5) years of experience in testing, formulating, and analyzing complex Information Systems designs to determine specific component elements.

Functional Responsibility: Construct alternative systems integration methods, and/or testing methods for assigned system components. Responsible for defined aspects of the test planning and execution for the systems across all projects/production defects. May be the first point of escalation for any production defects level questions, concerns or decisions.

Minimum Education: Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.
Testing Engineer II

*Minimum/General Experience:* Six (6) years of experience in testing, formulating, and analyzing complex Information Systems designs to determine specific component elements.

*Functional Responsibility:* Construct alternative systems integration methods, and/or testing methods for assigned system components. Responsible for defined aspects of the test planning and execution for the systems across all projects/production defects. May be the first point of escalation for any production defects level questions, concerns or decisions.

*Minimum Education:* Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Project Manager I

*Minimum/General Experience:* Three (3) years of progressive technical or managerial experience in information resources management. At least two (2) year of experience within the last three (3) years occupying a project manager position in the IT or information resources management field.

*Functional Responsibility:* Provide on-time delivery of client staff utilization, financial and other status reports as defined by the contract. Oversee and provide technical and managerial direction to contract support staff for contract monitoring and system development activities. Help recruit and allocate contract resources on contract to be consistent with workload, funding; ensure that all work performed is in compliance with all standards. Act as point of contact for support staff and the client.

*Minimum Education:* Associates degree in a technical discipline.

Security Systems Engineer I

*Minimum/General Experience:* Three (3) years of experience in the computer field and must have demonstrated ability to design, develop, install, implement, and maintain Identity and Access Management security information systems for enterprise data processing applications. Relies on instructions and pre-established guidelines to perform the functions of the job. Works under immediate supervision.

*Functional Responsibility:* The Security Systems Engineer develops and integrates user’s requirements into programmer tasks, designs and develops programs and databases, integrates existing software systems, tests the system, develops and presents training materials for Federal HSPD-12 and/or related programs.

*Minimum Education:* Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline

Security Systems Engineer II

*Minimum/General Experience:* Five (5) years of experience in the computer security field and must have demonstrated ability to design, develop, install, implement, and maintain Identity and Access Management security information systems for enterprise data processing applications. Relies on experience and exercises judgment to plan and accomplish goals. Works under limited supervision.

*Functional Responsibility:* Evaluates COTS tools, user environments, and makes recommendations involving Identity and Access Management solutions. Develops and integrates user’s requirements into programmer tasks, designs and develops programs and databases, integrates existing software systems, tests the system, develops and presents training materials for Federal HSPD-12 and/or related programs.
**Security Systems Engineer III**

**Minimum/General Experience:** Seven (7) years of broad experience in information security concepts, Federal and commercial information security policies and system architecture concepts. Experience in Information Security tools in a large, complex, multi-platform environment. Demonstrated experience coordinating multiple projects and tasks in line with Agency goals and objectives. Relies on experience and knowledge to self-direct and work independently. Develop, mentor and motivate junior staff.

**Functional Responsibility:** Leads design efforts for security and related portions of new applications along with application development areas; supports EIAM tools; supports troubleshooting application issues related to EIAM tools; manages vendor relationships for EIAM or related tools. Manages identity provisioning systems for access to various systems; provision IDs; implements policies for managing access, roles, permissions etc. to various systems including windows servers, sharepoint sites, and midrange unix servers. Support new initiatives related to HIPAA and other Federal mandates.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Network Engineer II**

**Minimum/General Experience:** Four (4) years of experience in the installation, monitoring, maintenance, support and optimization of network hardware. Support of system roll-outs, upgrades and systems performance management activities. Experience collaborating on project teams in the planning and development of effective network solutions. Leads projects of moderate technical difficulty and possesses competency to resolve complex systems issues.

**Functional Responsibility:** Monitor network or analyze systems to identify, recommend, design and implement improvements to network processes. Remains current on new technologies and may research new solutions. Assist/support network security operations and contribute to metrics and management reporting. Plans and coordinates installation/maintenance activities with clients, development staff, other infrastructure teams and vendors where applicable.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Application Developer I**

**Minimum/General Experience:** Two (2) years of experience in developing efficient application data processing systems. Experience working on and delivering large-scale distributed systems in an Agile and/or waterfall manner, with application of Test Driven Development and continuous integration knowledge. Experience in a multi-OS environment, including Unix, Linux, Microsoft Windows, involving application development and analysis.

**Functional Responsibility:** Responsible to create, test and code/programs applications software for enterprise systems. Under supervision, work in teams to identify methods and concepts in response to client needs. Responsibilities will directly support creating, testing, debugging, and maintaining / implementing the source code that makes up the application or program. May also be responsible for designing the prototype application, indicate program unit structure, and coordinate application plans with the development team or client.
**Minimum Education**: Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

### Application Developer II

**Minimum/General Experience**: Three (3) years of experience in developing efficient application data processing systems. Experience working on and delivering large-scale distributed systems in an Agile and/or waterfall manner, with application of Test Driven Development and continuous integration knowledge. Experience in a multi-OS environment, including Unix, Linux, Microsoft Windows, involving application development and analysis.

**Functional Responsibility**: Responsible to create, test and code/programs applications software for enterprise systems. Under general supervision, work in teams to identify methods and concepts in response to client needs. Responsibilities will directly support creating, testing, debugging, and maintaining/implimenting the source code that makes up the application or program. May also be responsible for designing the prototype application, indicate program unit structure, and coordinate application plans with the development team or client.

**Minimum Education**: Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

### Application Developer III

**Minimum/General Experience**: Four (4) years of experience in developing efficient application data processing systems. Experience working on and delivering large-scale distributed systems in an Agile and/or waterfall manner, with application of Test Driven Development and continuous integration knowledge. Experience in a multi-OS environment, including Unix, Linux, Microsoft Windows, involving application development and analysis.

**Functional Responsibility**: Responsible to create, test and code/programs applications software for enterprise systems. Under limited supervision, work in teams to identify methods and concepts in response to client needs. Responsibilities will directly support creating, testing, debugging, and maintaining/implimenting the source code that makes up the application or program. May also be responsible for designing the prototype application, indicate program unit structure, and coordinate application plans with the development team or client.

**Minimum Education**: Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

### Application Architect

**Minimum/General Experience**: Four (4) year experience defining/articulating an architectural vision, conceptualizing architectural approaches, developing and validating the architecture and high level solution design against business requirements, and guiding and mentoring development teams on methodologies, processes and best practices.

**Functional Responsibility**: Responsible to that the structure and behavior and interaction of enterprise applications and their functions are scalable, reliable and manageable consistent with client requirements. With limited supervision, the Architect is responsible for defining and maintaining best practices for application engineering, component re-use, architecture design and technical standards, while maintaining an awareness of new/emerging technologies and their potential application to existing client business requirements.

**Minimum Education**: Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.
Application Release Manager I

**Minimum/General Experience:** Four (4) years of experience in the end-to-end Release Management lifecycle which includes scheduling, coordinating and the management of releases across the enterprise for multiple applications. The releases can be inclusive of application updates, operating system patches, security improvements, and/or hardware upgrades.

**Functional Responsibility:** Under general supervision, define, implement and managing release processes for the progression of code in the development, test, and production environments. Collaboratively work with all participants in software development projects to define calendar/schedules, risks readiness reviews, and project metrics to ensure successful projects.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Application Release Manager II

**Minimum/General Experience:** Six (6) years of experience in the end-to-end Release Management lifecycle which includes scheduling, coordinating and the management of releases across the enterprise for multiple applications. The releases can be inclusive of application updates, operating system patches, security improvements, and/or hardware upgrades. Experience includes consequential support of Enterprise Change and Configuration Boards.

**Functional Responsibility:** Under limited supervision, define, implement and managing release processes for the progression of code in the development, test, and production environments. Collaboratively work with all participants in software development projects to define calendar/schedules, risks readiness reviews, and project metrics to ensure successful projects.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Business Analyst

**Minimum/General Experience:** One (1) year experience in development of functional and business requirements, problem identification, analysis and resolution methodologies.

**Functional Responsibility:** Responsible to support planning, analysis, and design of business systems. With team members, analyze and document business processes, manage change requests, document operational procedures and issues.

**Minimum Education:** Associates degree in a technical discipline.

Business Analyst II

**Minimum/General Experience:** Two (2) years of experience in development of functional and business requirements, problem identification, analysis and resolution methodologies.

**Functional Responsibility:** Responsible to support planning, analysis, and design of business systems. With team members, analyze and document business processes, manage change requests, document operational procedures and issues.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline
Business Analyst III

**Minimum/General Experience:** Three (3) years of experience in development of functional and business requirements, problem identification, analysis and resolution methodologies.

**Functional Responsibility:** Responsible to support planning, analysis, and design of business systems. With team members, analyze and document business processes, manage change requests, document operational procedures and issues.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Tech Writer II

**Minimum/General Experience:** Four (4) years of demonstrated topic-based authoring experience of technical manuals and or technical documentation of a moderate complexity. Able to work effectively across teams and organizations. Previous experience using RoboHelp, Framemaker, AuthorIT, or other documentation systems as may be required.

**Functional Responsibility:** Responsible to conduct technical research to translates technical information for technical and non-technical users in web and hardcopy formats. Edits and/or reformats copy and ensures documentation is in compliance with corporate standards and follows established guidelines for the organization, design and delivery of work products. May also maintain a repository / library.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Technical Architect

**Minimum/General Experience:** Four (4) years of experience leading or supporting teams which produce technical specifications for custom development and systems integration requirements.

**Functional Responsibility:** Responsible for the overall technical design and build of the custom elements of the solution. Produce detailed technical designs to meet the solution design specifications and requirements that comply with applicable Federal security, accessibility, and other standards. May complete/oversee the custom development projects and associated quality assurance efforts.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Systems Administrator I

**Minimum/General Experience:** Four (4) years of experience provisioning, configuring, installing, and the successful operation, and maintenance of IT systems hardware, network resources and/or software and related infrastructure.

**Functional Responsibility:** Responsibilities may include regular system and/or security monitoring, verifying the integrity and availability of all IT or network resources, key processes. The Systems Administrator may review system and application logs, and perform/verify completion of scheduled jobs (e.g. backups). May create, change, and delete user accounts per request and provide Tier II support, investigate and troubleshoot issues.
**Minimum Education**: Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Project Manager II**

**Minimum/General Experience**: Five (5) years of progressive technical or managerial experience in information resources management. At least four (4) years of experience within the last three (3) years occupying a project manager position in the IT or information resources management field.

**Functional Responsibility**: Provide on-time delivery of client staff utilization, financial and other status reports as defined by the contract. Oversee and provide technical and managerial direction to contract support staff for contract monitoring and complex system development activities involving multiple technologies. Help recruit and allocate contract resources on contract to be consistent with workload, funding; ensure that all work performed is in compliance with all industry and Federal standards. Act as point of contact for support staff and the client.

**Minimum Education**: Bachelor’s degree in a technical discipline.

**Systems Scientist II**

**Minimum/General Experience**: Minimum of six (6) years’ experience, of which four years must be specialized. Specialized experience may include the following: lifecycle IT engineering project development from inception to deployment, demonstrated ability to provide strategic and tactical technical guidance and direction in multiple tasks across several functional areas and including the use of different technologies. Expertise in applying diverse database, information, telecommunications or related engineering technologies to develop and deploy integrated systems. Conducts complex technical investigations through advanced research techniques, analysis or development phases of engineering projects. Skilled in managing and control of funds and resources, demonstrated ability in managing complex multi-task contracts. General experience required includes: increasing responsibilities in information systems design and management.

**Functional Responsibility**: Responsible for the technical aspects of a program or project. Provides effective management of assigned resources. Operates within client guidance, contractual limitations, and Company/Client business and policy directives. Serves as technical focal point of contact with client on program activities. If performing project management roles, performs those duties and ensures that all required resources including manpower, production standards, computer time, and facilities are available for program implementation. Acting as the program manager, manages program consisting of multiple projects including project identification, design, development and delivery. May also lead or support in contract negotiations. Provides technical advice to program managers, project leads and client to resolve complex technical issues.

**Minimum Education**: Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Software Scientist II**

**Minimum/General Experience**: Minimum of six (6) years’ experience, of which four years must be specialized in developing enterprise application data processing systems. Experience developing coding, testing and delivering large-scale distributed systems in an Agile and/or waterfall methodologies, with application of Test Driven Development and continuous integration knowledge. Specialized in-depth experience in security software, financial or business systems, physical or network monitoring, cloud delivery models or COTS product implementations. Experience in a multi-OS environment, including Unix, Linux, Microsoft Windows, involving application development and analysis.

**Functional Responsibility**: Responsible to create, test and code/programs applications software for enterprise systems. Under limited supervision, work in teams to identify methods and concepts in response to client needs. Responsibilities will directly support creating, testing, debugging, and maintaining / implementing the source code that makes up the application or program. May also be responsible for designing the prototype application, and coordinate application plans with the development team or client.
**Minimum Education**: Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

### Business Analyst IV

**Minimum/General Experience**: Minimum five (5) years’ experience in applications, database and systems development activities. At least five (5) years’ experience in development of functional and business requirements, problem identification, analysis and resolution methodologies.

**Functional Responsibility**: Responsible to support planning, analysis, and design of business systems. With team technical members, develop, analyze and document business processes, systems requirements, manage change requests, document operational procedures and issues.

**Minimum Education**: Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

### Quality Specialist I

**Minimum/General Experience**: Must have at least four (4) years’ experience of which two years must be specialized. Specialized experience includes Configuration Management, IV&V, software testing and integration, software metrics and their application to software quality assessment. General experience includes increasing responsibilities in quality assurance, quality control, validation and verification.

**Functional Responsibility**: Assists in the evaluation of software, systems and associated documentation. Participates in formal and informal reviews to determine quality; presents IV&V results and troubleshoots technical problems; makes recommendations to improve overall quality.

**Minimum Education**: Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related discipline.

### Graphics Designer I

**Minimum/General Experience**: Requires at least five (5) years’ directly related experience in graphics design. Knowledge of the associated graphics design software applications. Demonstrated knowledge in the principles, methods, and techniques used in the preparation of graphics materials.

**Functional Responsibility**: Performs diverse graphics/illustration activities to produce brochures, briefings, displays, and other materials; involved in all aspects of graphics/illustration projects from conceptualization and development to final presentation; may act as a technical consultant on matters of design, composition and methods of presenting technical data; uses a broad range of graphics production software and equipment; exercises creative judgment and originality by translating needs into graphics capabilities; may participate in website design.

**Minimum Education**: Associates Degree or certificate from a recognized technical institution.

### Training Specialist I

**Minimum/General Experience**: Five (5) years of business and/or technical course development and stand-up instruction experience in the classroom or webinar format.

**Functional Responsibility**: Develops and provides lesson plans, course outlines, and classroom materials to support presentations and/or instruction on business and technical subject matter. Provides stand-up course instruction as well as develops supporting curriculum materials.

**Minimum Education**: Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related discipline
Application Engineer I

Minimum/General Experience: Four (4) years of experience in developing efficient application data processing systems. Experience working on and delivering large-scale distributed systems in an Agile and/or waterfall manner, with application of Test Driven Development and continuous integration knowledge.

Functional Responsibility: Directs and participates in the development of modernized software applications in general IT or cybersecurity environments. Development experience with Internet developer and applicator tools including emerging technology. Performs the development and/or programming, and implementation of information processing systems and applications that use current operating systems, programming languages, and applications development tools, computer systems, multi-programming technology, database management techniques, and data communications protocol. Can work independently in support of a joint applications development effort. Responsible for writing application software, data manipulation, databases programming, testing and implementation, technical and user documentation, software conversions.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Application Engineer II

Minimum/General Experience: Six (6) years of experience in developing efficient application data processing systems. Experience working on and delivering large-scale distributed systems in an Agile and/or waterfall manner, with application of Test Driven Development and continuous integration knowledge. Experience in a multi-OS environment, including Unix, Linux, Microsoft Windows, involving application development and analysis

Functional Responsibility: Directs and participates in the development of modernized software applications in general IT or cybersecurity environments. Development experience with Internet developer and applicator tools including emerging technology. Performs the development and/or programming, and implementation of information processing systems and applications that use current operating systems, programming languages, and applications development tools, computer systems, multi-programming technology, database management techniques, and data communications protocol. Can work independently in support of a joint applications development effort. Responsible for writing application software, data manipulation, databases programming, testing and implementation, technical and user documentation, software conversions. Possesses expertise in a variety of software, hardware, and network engineering concepts, practices, procedures, tools, programming languages, technologies, and operating systems related to IT. Possesses strong knowledge of database concepts. Relies on extensive experience and judgment to plan and accomplish goals.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Application Programmer

Minimum/General Experience: At least four (4) years of experience developing web applications using web frameworks consuming RESTful/SOAP API's. Experience in service Oriented Architecture/Service integration with Web Services, EJB, REST and security integration and proficiency of scripting languages

Functional Responsibility: Write codes for programs used in computers and other electronic devices. Create software applications by writing error-free, maintainable, and scalable code. Test, evaluate, modify, and improve applications to make them easy for usage. Interact with clients to find out their needs, preparing outlines for application programming and training manuals, specify technical specifications for new projects, and training application users. Analyzes business or scientific problems for resolution through electronic data processing. Gathers information from users, defines work problems, and, if feasible, designs a system of computer programs and procedures to resolve the problems. Develops complete specifications or enable Computer Programmers to prepare required programs; analyzes subject-matter operations to be automated; specifies number and types of records, files, and documents to be used and outputs to be produced; prepares work diagrams and data flow charts; coordinates tests of the system and participates in trial runs of new and revised systems; and recommends computer
equipment changes to obtain more effective operations. Provides development services for moderately complex applications using standard approaches or less complex systems using new approaches. Works on a segment of a complex data processing scheme or broad system.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**BI/ETL Developer**

**Minimum/General Experience:** Must have a strong background in software engineering principles and techniques. Must have a minimum of 3 years of experience in BI and Data Warehouse.

**Functional Responsibility:** Analyzing product, market, and share trends to build warehouse data. Translating business needs into technical specifications. Developing reporting systems that provide accessible information for decision making. Using warehouse data to generate reports to support business decision making and business performance monitoring. Maintaining data analytics platforms. Evaluating and improving existing BI systems. Conducting troubleshooting on BI models. Generating and delivering quality reports to customers and performing quality assurance checks on reports.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Business Analyst/ Tester**

**Minimum/General Experience:** Three (3) years of experience as an analyst/tester on software projects in supporting requirement analysis, application test script development and execution. Two (2) years of experience in mapping the business and technical requirements into test cases and generate test scripts. Practical experience in using relational database and generating SQL scripts is required.

**Functional Responsibility:** Assembles, prepares, and analyzes data for studies, statistical models, evaluations, system requirements, and other needs. Uses technical discretion within defined practices and policies in selecting methods and techniques for determining approaches or obtaining solutions. Provides technical advice and operating assistance in interpreting results. Provides input or may prepare technical reports based on the expert interpretation of analyzed data. Knowledge in manual or automation testing.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Computer Programmer**

**Minimum/General Experience:** Atleast four (4) years of software development experience.

**Functional Responsibility:** Performs routine programming assignments that require knowledge of established programming procedures and data processing requirements, and works according to clear-cut and complete specifications. The data are refined, and the format of the final product is very similar to that of the input, or is well defined when significantly different, i.e., there are few, if any, problems with interrelating varied records and outputs. The Computer Programmer maintains and modifies routine programs, makes approved changes by amending program flow charts, developing detailed processing logic, and coding changes, tests and documents modifications and writes operator instructions, may write routine new programs using prescribed specifications

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Computer Systems Analyst I**

**Minimum/General Experience:** Four (4) years of specialized experience in the analysis and design of business applications on complex, large-scale systems, including three years experience in data base management concepts.
**Functional Responsibility:** Works independently or under only general direction on complex application problems involving all phases of systems analysis to provide resolutions. Assists in evaluating and determining Client requirements. Provides technical and administrative direction for personnel performing software development tasks, including the review of work products for correctness, adherence to the design concept and to user standards, and for progress in accordance with schedules. Coordinates with the Project Manager to ensure problem solution and user satisfaction. Makes recommendations, if needed, for approval of major systems installations. Prepares milestone status reports and deliveries/presentations on the system concept to colleagues, subordinates, and end user representatives. Provides technical direction to lower level systems analysts.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

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**Configuration Engineer**

**Minimum/General Experience:** At least five (5) years of experience managing diverse DevOps workloads, across infrastructure, administration, deployment, development support and monitoring

**Functional Responsibility:** Has experience and be able to develop, document, and implement detailed plans for ensuring configuration control for IT programs, projects, and tasks. When issues arise, is able to identify and implement solutions. Maintain thorough records and documentation to ensure accurate product builds, part ordering and product and/or software updates.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

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**Data Analyst/ Tester**

**Minimum/General Experience:** Five (5) years of experience as an analyst/tester on software projects in supporting requirement analysis, application test script development and execution. Five (5) years of experience in mapping the business and technical requirements into test cases and generate test scripts.

**Functional Responsibility:** Develops requirements for information systems for software projects. Develops required specifications for simple to moderately complex systems. Must be able to design and prepare all needed test data. Reviews test results and evaluates for conformance to design. Candidate should be able to develop and document test cases, testing plans and procedures. Knowledge in manual or automation testing. Familiarize with databases.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

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**Data Architect**

**Minimum/General Experience:** At least ten (10) years of experience in architecting solutions with expertise in planning, designing, building, and implementing IT application modernization / implementation effort. Must have a strong background in software engineering principles and techniques.

**Functional Responsibility:** Responsible for performing moderate to high-level design of enterprise application systems. Establishes the basis structure of the system, defines essential core design features and elements that provide the framework. Works with systems users in the identification and resolution of user problems and concerns for complex projects. Performs cost-benefit analyses to determine whether requirements are best met by manual, software, or hardware functions. Generates a set of acceptance test requirements for complex systems.

Designs and builds relational or NoSQL databases. Develops strategies for data acquisitions, archive recovery, and implementation of a database. Works in a data warehouse environment, which includes data design, database architecture, metadata and repository creation. Translates business needs into long-term architecture solutions. Defines, designs, and builds dimensional databases. Perform database administration tasks. Develops data warehousing blueprints, evaluating hardware and software platforms, and integrating systems. Evaluates reusability of current data for additional analyses. Reviews object and data models and the metadata.
Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Data Engineer

Minimum/General Experience: At least eight (8) years of experience in developing cloud based multi user application with expertise in designing, building, testing and implementing IT application. Must have a strong background in software engineering principles and techniques.

Functional Responsibility: Provides design recommendations based on long-term IT organization strategy. Develops enterprise level application and custom integration solutions including major enhancements and interfaces, functions and features. Uses a variety of platforms to provide automated systems applications to customers. Provides expertise regarding the integration of applications across the business. Determines specifications, then plans, designs, and develops the most complex and business critical software solutions, utilizing appropriate software engineering processes – either individually or in concert with a project team. Will assist in the most difficult support problems. Develops programming and development standards and procedures as well as programming architectures for code reuse. Has in-depth knowledge of state-of-the art programming languages and object-oriented approach in designing, coding, testing and debugging programs. Understands and consistently applies the attributes and processes of current application development methodologies. Researches and maintains knowledge in emerging technologies and possible application to the business.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Data Modeler

Minimum/General Experience: At least six (6) year of experience with data modeling and design. Must have a strong background in software engineering principles and techniques. Extensive experience with Relational Database systems and data modeling.

Functional Responsibility: Engages in translating business requirements into conceptual, logical, and physical data models. Designs and implements scalable data models for a large enterprise application Interviews end users and other key stakeholders to understand all the data architecture global and non-functional requirements and designs the data models and databases accordingly. Participates as an active team member to design, maintain, and optimize database driven applications. Evaluates new data sources for adherence to the organization's quality standards and ease of integration.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Data Scientist

Minimum/General Experience: At least four (4) years of experience in Service Oriented Architecture/Service integration with Web Services, REST and security integration. At least three (3) years of experience in big data environments. At least two (2) years of experience in working, defining, maintaining architectural frameworks, patterns & data structures.

Functional Responsibility: Perform data analysis and modeling, trend analysis, and product impact analysis. Identify trends and relationships within the data. Perform testing to confirm data reliability and validity. Design surveys, questionnaires, experiments, and opinion polls and other data collection methods. Present the data analysis findings in written reports, tables, charts, and graphs, as required. Experienced with non-relational databases.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Database Management Specialist
Minimum/General Experience: At least eight (8) years of experience in administering multi user environment with expertise in planning, designing, building, and implementing complex database systems.

Functional Responsibility: Provides expertise and guidance in the use of database management systems. Designs, implements, and maintains databases with respect to access methods and time, device allocation, validation checks, file organization, indexing methods, protection and security, documentation, guidelines, and statistical methods. Establishes procedures for operations of the database and database management systems. Collects data elements and prepares database specifications. Develops, maintains, and controls the data dictionary. May include experience with database systems such as MS SQL Server, DB2, Sybase, Oracle, and Informix. May function as team leader and provide direction to less experienced database programmers/analysts.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Information Engineer

Minimum/General Experience: At least six (6) years of experience in developing multi user applications with expertise in designing, building, testing and implementing IT application. Must have a strong background in software engineering principles and techniques

Functional Responsibility: Applies an enterprise-wide set of disciplines for the planning, analysis, design, and construction of information systems on an enterprise-wide basis or across a major sector of the enterprise. Develops analytical and computational techniques and methodology for problem solutions. Performs enterprise wide strategic systems planning, business information planning, business, and analysis. Performs process and data modeling in support of the planning and analysis efforts using both manual and automated tools. Applies reverse engineering and reengineering disciplines to develop migration and planning documents. Provides technical guidance in software engineering techniques and automated support tools.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Infrastructure Engineer

Minimum/General Experience: At least ten (10) years of working experience with Linux and Windows operating systems as well as networking. At least five (5) years of experience designing, configuring, installing, and managing infrastructure in large and small environments.

Functional Responsibility: Provide leadership for all design, implementation, and maintenance activities related to IT infrastructure. Create, optimize, and continuously evaluate security monitoring content and define and update dashboards, reports and alerts. Design and create new detection techniques and improve existing ones. Identify gaps in existing security capabilities. Recommend and assist in technology evaluations and implementations to close the gaps. Plan and lead large security projects and initiatives. Work with all areas of information services, business units, and other partners on enterprise scale projects and initiatives. Responsible for the management, advanced configuration, monitoring, and log analysis of network infrastructure.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Integration Developer

Minimum/General Experience: At least seven (7) years of experience in designing and developing applications, knowledge of Data Mapping, Exception Handling, and integration of sources in an enterprise environment. Must have knowledge in designing and developing Source-to-Target mappings using ETL programming languages and tools.

Functional Responsibility: Responsible for the development and integration of IT Systems and Subsystems. Provides support in the creation of strategies and plans for integration of multiple IT Systems and subsystems into
an operational unit, ensuring full functional and performance capabilities are retained. When required, introduces new hardware or software into a new or existing environment while minimizing disruption and mitigating risks.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Middleware Engineer

Minimum/General Experience: At least six (6) years of experience in developing software applications focusing on middleware integration or support

Functional Responsibility: Analyze and develop technology solutions based on customer requirements. Build and implement middleware products to meet business demands. Work with Developers and Architects in developing middleware configurations based on requirements. Identify and apply innovative technologies to update existing middleware. Create and maintain documentation for middleware installations, changes and upgrades. Train Junior Engineers on middleware updates and new installations. Coordinate with vendors and support team on problem resolution, design issues and upgrades. Perform troubleshooting, incident response, and patching in a timely manner. Troubleshoot and resolve technical problems in timely and accurate manner to improve application performance and functionality. Develop and implement strategies for migration, consolidation and upgrade of middleware components. Evaluate system architecture and make recommendations as required. Develop and implement standard processes for installation, maintenance and enhancement of middleware applications.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Network Engineer

Minimum/General Experience: At least eight (8) years of experience in network management and operations. Experience working with Software Firewall Appliances, network architecture and design of wide distributed networks and operations.

Functional Responsibility: The Network Engineer plans, supports and evaluates complex existing network systems and make recommendations for resources required to maintain and/or expand service levels. This resource will provide highly skilled technical assistance in network planning, engineering and architecture. Also provides and develops technical standards and interface applications; identifies and evaluates new products; provide solutions for network problems. Interfaces with internal/external customers and vendors to determine system needs. Plans and incorporates how new network resources and applications will exist on the network. Provide monthly metrics for network availability and bandwidth usage as well as other metrics as requested. Responsible for network capacity planning. Use network management tools to discover, map and maintain the network. Responsible for network equipment OS and version upgrades. Responsible for conducting research of new technologies and implementation strategies. Monitor and maintain network interfaces to ensure its highest level of performance and makes modifications and enhancements as needed. Responsible for documenting procedures and keeping network diagrams and related material up to date. Handle escalated user problems, questions, and request on network issues. Work with other groups within IS to resolve network related issues as needed. Leads and directs work of other Network Engineers.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Operations Analyst I

Minimum/General Experience: Minimum of two (2) years’ experience in the role of operations analyst

Functional Responsibility: Analyses IT application operations and maintains/monitor the production schedule. Analyses production related problems and co-ordinates with application teams to resolve the issues. Notify operations management team of any schedule delays. Ensures computer system resources are used effectively.
Prepares reports by collecting, analyzing, and summarizing information. Recommend and update policies and procedures to improve performance. Provide solutions to application teams to resolve operational issues.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Operations Analyst II**

**Minimum/General Experience:** Minimum of four (4) years experience in the role of operations analyst

**Functional Responsibility:** Analyses IT application operations and maintains/monitor the production schedule. Analyses production related problems and co-ordinates with application teams to resolve the issues. Notify operations management team of any schedule delays. Ensures computer system resources are used effectively. Prepares reports by collecting, analyzing, and summarizing information. Recommend and update policies and procedures to improve performance. Provide solutions to application teams to resolve operational issues.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Penetration Tester**

**Minimum/General Experience:** At least six (6) years of application/network security testing experience.

**Functional Responsibility:** Responsible for detecting threats and vulnerabilities in target systems, networks, and applications by conducting systems, network and web penetration testing. Identifies flaws and weaknesses in the systems than can be exploited to cause business risk, and provides crucial insights into the most pressing issues, suggesting how to prioritize security resources. Can solve more complex problems with minimal supervision.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**IT Product Specialist**

**Minimum/General Experience:** At least six (6) years of experience designing, building, and implementing software products in IT application environment. Must have a strong background in software engineering principles and techniques.

**Functional Responsibility:** Providing professional support services and/or the integration of their respective software products. Implement the products based on best practices. Obtain customer feedback and suggest appropriate product revisions/upgrades. Coordinate with application team on usage and integration of the product. Assist in new product introduction and release activities. Coordinates with product vendor and recommend product enhancements and updates. Address product related issues in a timely fashion to ensure customer satisfaction.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Program Manager**

**Minimum/General Experience:** Eight (8) years of experience in developing software applications. Experience working on and delivering large-scale distributed systems in an Agile and/or waterfall manner.

**Functional Responsibility:** Responsible for managing the program team and daily operations of program development and helping to ensure client comfort and feasibility with designed solution. Other experience includes communication with client and program managers and management of multiple programs across various industry lines. Manages overall project activities and is the primary point of contact with client executives. Also helps in testing, debugging and refining computer software time to time. Enhances software to reduce operating time or improve efficiency.
Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Release Engineer

Minimum/General Experience: At least four (4) years of experience managing diverse operations workloads, across infrastructure, administration, deployment, development support and monitoring.

Functional Responsibility: The Release Manager is responsible for the Release Management lifecycle for IT programs which includes scheduling, coordinating and the management of releases across the enterprise for multiple applications across various Portfolios. The releases can be inclusive of application updates, operating system patches, security improvements, hardware upgrades, Projects and Programs. Where necessary you'll provides tools and services to help product management and project teams manage and deploy releases into production. The position is responsible for implementing and managing release processes for the progression of code in the development, test, and production environments. The Release Manager Job function works collaboratively with all participants in software development projects and is supportive of developers and testers as they set up their build dev./test environments. This position also works with IT management to improve the software engineering processes and practices associated with continuously building, deploying, and updating software and environments.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

IT Security Analyst

Minimum/General Experience: A minimum of three (3) years of experience in analyzing and defining security requirements for large and mission critical IT applications. A minimum of two (2) years performing day-to-day security operations functions including administration, troubleshooting, and resolution of various security components.

Functional Responsibility: Gathers and interprets data and perform technical analysis of security operations. Assess procedures necessary to ensure the safety of information, systems assets and to protect systems from intentional or inadvertent access or destruction. Interfaces with user community to conduct accurate evaluation of the level of security required and implements procedures to accommodate them. Analyses security plans for employing enterprise-wide security architecture. Provides security engineering support for application development (including system security certifications and project evaluations). This may include the development, design and implementation of firewalls, and evaluation, review and test of security code. Experience working in different security architectures and platforms in an integrated environment.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Software Developer

Minimum/General Experience: At least six (6) years in designing and developing software applications. Experience with code reviews, frameworks and enterprise architecture

Functional Responsibility: Under general direction, participates as high-level technical expert in design development, coding, testing, and debugging new software or significant enhancements to existing software. Works with technical staff to understand problems with software and develops specifications to re-solve them. Resolves customer complaints and responds to suggestions for improvements and enhance-ments. Participates in the development of software user manuals. May act as team leader on less complex projects. Assists in training less-experienced software development staff.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.
Subject Matter Expert

**Minimum/General Experience:** Eight (8) years of experience in specific functional area

**Functional Responsibility:** Provides advanced technical knowledge and expertise for analysis of highly specialized applications and operational environment, high-level functional systems analysis, design, integration, documentation, training, and implementation advice on complex problems which would require expert level knowledge of the subject matter for effective implementation. Recognized in the professional community as an "expert" in the technical/domain specific knowledge areas being addressed. Advise clients on the impact of new legislation or new technologies and confers with client executive management using line of business expertise to define the client's strategic information technology business goals and advises in the reengineering of business processes to meet these goals. Assist client in developing strategic plans and concepts. Demonstrate exceptional oral and written communication skills.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Systems Administrator II

**Minimum/General Experience:** Five (5) years of experience provisioning, configuring, installing, and the successful operation, and maintenance of IT systems hardware, network resources and/or software and related infrastructure.

**Functional Responsibility:** Provides technical support for implementation, administration, troubleshooting and maintenance of IT systems. Manages IT system infrastructure and 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 remains involved in the resolution process. Provides support for the escalation and communication of status to agency management and internal customers. Experience in one or more systems and architectures and associated hardware: mainframe, mini, or client/server based. Experience in systems or network oversight preferred.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Systems Architect

**Minimum/General Experience:** Two (4) year experience defining / articulating an architectural vision, conceptualizing architectural approaches, developing and validating the architecture and high level solution design against business requirements, and guiding and mentoring development teams on methodologies, processes and best practices.

**Functional Responsibility:** Leads the analysis, assessment and formulation large-scale software system architecture. Provides leadership and guidance in software architecture, system designs, implementation planning, and software lifecycle strategies. Provide guidance in leveraging the best available technology to derive software systems. Manages complex software development programs by utilizing the latest technology in configuration management, software reusability, data flow control, and resource management. Oversees and validates systems testing in order to ensure intended software functionality, performance and operations requirements are met. Estimates software development costs and schedule. Responsible for establishing system architecture requirements using analysis of the engineers in the development of enterprise-wide or large-scale information systems. Designs architecture to include the software, hardware, and communications to support the total requirements as well as provide for cross-functional requirements and interfaces. Ensures systems are compatible and in compliance with the standards for systems architecture. Evaluates problems of workflow, organization, and planning, and develops appropriate corrective action.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.
Systems Engineer

Minimum/General Experience: A minimum of eight (8) years of experience in System administration and development experience. At least file (4) years of experience working with design and implementation of systems and applications.

Functional Responsibility: Participates in all phases of computer operating/hardware systems engineering, including design, analysis, and modeling at a highly technical level; analyzes complex computer soft-ware/hardware requirements to provide integration and implementation support within an IT systems and/or cybersecurity environment; performs operating/hardware systems engineering, including full life cycle design and development; analyzes and documents users’ functional and data requirements; develops site survey instruments to gather detailed user requirements and business process analysis data; conducts functional user interviews to document functional, system, customization, and data requirements and data sources; formulates system concepts and architecture, specifies requirements, and develops implementation approaches; determines data requirements for internal processes and external interfaces; develops new systems or tailors commercial products to meet user requirements; directs and coordinates all activities necessary to complete a major engineering project or several small projects to specification and on schedule; may serve as task or project lead, exercising leadership in either a technical role training other hardware engineers and implementing and enforcing established standards and technologies, or in a project coordination role leading tasks and assuming responsibility for the design, development, test and delivery of a software system or application.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Technical Writer

Minimum/General Experience: At least 3 years of demonstrated topic-based authoring experience of technical manuals and or technical documentation of a moderate complexity in software applications. Demonstrated skills in producing high quality technical documentation

Functional Responsibility: Responsible for writing system manuals, user guides and other technical materials and gathering & researching information to use in IT technical documentation. Possesses strong organization skills and the ability to observe technical processes and relay the information in a concise and effective way through documentation.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Tester

Minimum/General Experience: Four (4) years of experience in software testing and development of automation scripts. Experience in Quality Assurance (QA) related functions.

Functional Responsibility: Expected to design test plans, scenarios, scripts, or procedures. Will develop or specify standards, methods, or procedures to determine product quality or release readiness. May develop testing programs that address areas such as database impacts, software scenarios, regression testing, negative testing, error or bug retests, or usability. Will Document software defects, using a bug tracking system, and report defects to software developers. Document test procedures to ensure replicability and compliance with standards. Is expected to Identify program deviation from standards and suggest modifications to ensure compliance.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Testing Specialist
Minimum/General Experience: Five (5) years of experience as tester on software projects in supporting requirement analysis, application test script development and execution. Two (2) years of experience in mapping the business and technical requirements into test cases and generate test scripts.

Functional Responsibility: Interacts with other engineering groups to define, document, analyze, perform, and interpret tests for software products, systems, components, or modifications. Identifies functional problems and suggests resolutions. Assists in the definition of internal quality control standards and the maintenance of reliability programs. Analyzes test cases and provides regular progress reports. Knowledge of automation testing tools.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Web Designer

Minimum/General Experience: Five (5) years of experience in designing and developing web applications, mobile applications and cross-browser compatible responsive front-end interfaces. Ability to create wireframes and prototypes using latest UI/UX products

Functional Responsibility: Designs and builds Web pages using a variety of graphics software applications, techniques, and tools within an IT systems and/or cybersecurity environment; designs and develops user interface features, site animation, and special-effects elements; designs the Website to support the customer’s strategies and goals relative to external communications; contributes to the Web design group’s efforts to specify, improve, and implement the look, feel, and function of online projects; interfaces directly with customers, users, graphic artists, and Web software developers.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Web Developer I

Minimum/General Experience: At least four (4) years of Software development experience. Strong experience with full stack development, including understanding UI frameworks and back end architecture interactions

Functional Responsibility: Designs and builds user interfaces for web sites using a variety of graphics software applications, techniques, and tools. Interface design includes animation and special-effects elements. Ensures that the "look and feel" supports the organization’s strategies and goals and facilitates user interaction with the system. Performs website design and creation.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Web Developer II

Minimum/General Experience: At least six (6) years of Software development experience. Strong experience with full stack development, including understanding UI frameworks and back end architecture interactions

Functional Responsibility: Designs and builds user interfaces for web sites using a variety of graphics software applications, techniques, and tools. Interface design includes animation and special-effects elements. Ensures that the "look and feel" supports the organization’s strategies and goals and facilitates user interaction with the system. Performs website design and creation. Plans, designs, develops, tests, edits, maintains, and documents look and flow of websites. Requires strong knowledge of programming techniques and computer internet systems and must perform with minor assistance. Performs a variety of tasks. A certain degree of creativity and latitude is required. May lead or direct others.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Additional Notes:
**Education and Experience:** To add flexibility and to assist in aligning resources proposed for future requirements, education equivalences are provided in the Table below.

It is anticipated that all experience and education will be in a technical field directly related to the labor category being proposed and all diplomas, GED certificates, and degrees will be from accredited institutions.

<table>
<thead>
<tr>
<th>Education &amp; Experience Levels</th>
<th>Equivalent Education and Experience</th>
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<tbody>
<tr>
<td>Education and Experience</td>
<td>Acquired Degree</td>
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<tr>
<td>Associate’s Degree or higher</td>
<td>High School/GED</td>
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<td>and 2 years</td>
<td>4 years</td>
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<tr>
<td>Bachelor’s Degree or higher</td>
<td>High School/GED</td>
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<td>and 5 years</td>
<td>9 years</td>
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<td></td>
<td>Master</td>
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<td></td>
<td>Doctorate</td>
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<tr>
<td>Master’s Degree or higher</td>
<td>High School/GED</td>
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<tr>
<td>and 6 years</td>
<td>Associate</td>
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<tr>
<td></td>
<td>Bachelor</td>
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<td></td>
<td>Doctorate</td>
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</table>

**SIN 54151HEAL Labor Category Descriptions**

**Health Database Administrator**

*Minimum/General Experience:* Four (4) years of experience performing moderately complex database engineering assignments involving the modification and/or development of enterprise database systems in a health-related context. Experience in developing database systems or subsystems architecture, requirements, and design documents. Performs database algorithm development, design, coding, and documentation of systems.

*Functional Responsibility:* Performs database algorithm development, design, coding, and documentation of health IT systems. Understands and has implemented database technology. Evaluates subcontractor software activities, and ensures compliance with software engineering standards.

*Minimum Education:* Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Data Modeler / Architect – Health IT**
Minimum/General Experience: Five (5) years of experience in the design, development, build, analysis, evaluation and installation of database management systems. Experience to include database modeling and design, relational database architecture, metadata and repository creation and configuration management.

Functional Responsibility: The analysis and design of complex data solutions while applying data architecture principles to systems supporting health. This includes logical and physical data modelling based on data requirements using relational data modeling practices. Uses data mapping, data mining and data transformational analysis tools to design and develop databases in a health context. Determines data storage and optimum storage requirements. Prepares system requirements, source analysis and process analyses and design throughout the database implementation.

Minimum Education: Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Health Database Manager

Minimum/General Experience: Five (5) years of experience in maintaining the health, functionality and availability of production - mission critical systems. Experience performing Oracle/Sybase/db2/SQL Server administration including dumps & loads, user account maintenance, device management, manage tables, constraints and indexes.

Functional Responsibility: Responsible for the reliability and availability of large, scalable databases with heavy transaction and batch activities in a Health IT context. Maintain existing environment, perform upgrades and the monitoring and resolution technical problems.

Minimum Education: Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Health Software Test Engineer I

Minimum/General Experience: Three (3) years of experience performing software integration and troubleshooting of multiple applications complex enterprise environments. Experience to include executing tests to validate the requirements and functionality per the project specifications as detailed in the test procedures. Relies on instructions and pre-established guidelines to perform the functions of the job. Works under immediate supervision.

Functional Responsibility: Supports the development and generation of system test plans to validate Health IT system requirements and functionality as documented in the system specifications. May support the development of test scenarios and generating test procedures to test the system requirements and functionality properly and rigorously. Also responsible for identifying, analyzing, and documenting any defects discovered during testing.

Minimum Education: Associates degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Health Software Test Engineer II

Minimum/General Experience: Four (4) years of experience performing software integration and troubleshooting of multiple applications in complex enterprise environments. Experience to include executing tests to validate the requirements and functionality per the project specifications as detailed in the test procedures. Relies on limited experience and judgment to plan and accomplish goals. Works under general supervision.

Functional Responsibility: Supports the development and generation of system test plans to validate Health IT system requirements and functionality as documented in the system specifications. Supports the development of test
scenarios and generating test procedures to test the system requirements and functionality properly and rigorously. Also responsible for identifying, analyzing, and documenting any defects discovered during testing.

*Minimum Education:* Associates degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Health Software Test Engineer III**

Minimum/General Experience: Six (6) years of experience in one or more testing scenarios: Functional Testing, Performance and Stress Testing, End-to-end testing with other systems and organizations, Acceptance and Regression Testing. Relies on years of experience and significant judgment to plan and accomplish goals.

Functional Responsibility: Evaluates, recommends, and implements automated test tools and strategies. Develops, maintains and upgrades automated test scripts and architectures for Health IT products. Writes, implements, and reports status for system test cases for testing. Analyzes test cases and provides regular progress reports. Provide mentoring and leadership to junior staff.

*Minimum Education:* Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline

**Testing Engineer I – Health IT**

*Minimum/General Experience:* Five (5) years of experience in testing, formulating, and analyzing complex Information Systems designs to determine specific component elements.

*Functional Responsibility:* Construct alternative systems integration methods, and/or testing methods for assigned Health IT system components. Contributes to defined aspects of the test planning and execution for the systems across all projects/production defects. May be the first point of escalation for any production defects level questions, concerns or decisions.

*Minimum Education:* Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Testing Engineer II – Health IT**

*Minimum/General Experience:* Six (6) years of experience in testing, formulating, and analyzing complex Information Systems designs to determine specific component elements.

*Functional Responsibility:* Construct alternative systems integration methods, and/or testing methods for assigned Health IT system components. Responsible for defined aspects of the test planning and execution for the systems across all projects/production defects. First point of escalation for any production defects level questions, concerns or decisions.

*Minimum Education:* Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Health Project Manager I**
**Minimum/General Experience:** Three (3) years of progressive technical or managerial experience in information resources management. At least two (2) years of experience within the last three (3) years occupying a project manager position in the IT or information resources management field.

**Functional Responsibility:** Provide on-time delivery of client staff utilization, financial and other status reports as defined by the contract for Health Information Technology Projects. Oversee and provide technical and managerial direction to contract support staff for contract monitoring and system development activities. Help recruit and allocate contract resources on contract to be consistent with workload, funding; ensure that all work performed is in compliance with all standards. Act as point of contact for support staff and the client.

**Minimum Education:** Associates degree in a technical discipline.

### Health Security Systems Engineer I

**Minimum/General Experience:** Three (3) years of experience in the computer field and must have demonstrated ability to design, develop, install, implement, and maintain Identity and Access Management security information systems for data processing applications. Relies on instructions and pre-established guidelines to perform the functions of the job. Works under immediate supervision.

**Functional Responsibility:** The Health Security Systems Engineer develops and integrates user’s requirements into programmer tasks, designs and develops programs and databases, integrates existing software systems, tests the system, develops and presents training materials for Federal HSPD-12 and/or related programs.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline

### Health Security Systems Engineer II

**Minimum/General Experience:** Five (5) years of experience in the computer security field and must have demonstrated ability to design, develop, install, implement, and maintain Identity and Access Management security information systems for enterprise data processing applications. Relies on experience and exercises judgment to plan and accomplish goals. Works under limited supervision.

**Functional Responsibility:** Evaluates COTS tools, user environments, and makes recommendations involving Identity and Access Management solutions in a Health IT context. Develops and integrates user’s requirements into programmer tasks, designs and develops programs and databases, integrates existing software systems, tests the system, develops and presents training materials for Federal HSPD-12 and/or related programs.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

### Health Security Systems Engineer III

**Minimum/General Experience:** Seven (7) years of broad experience in information security concepts, Federal and commercial information security policies and system architecture concepts. Experience in Information Security tools in a large, complex, multi-platform environment. Demonstrated experience coordinating multiple projects and tasks in line with Agency goals and objectives. Relies on experience and knowledge to self-direct and work independently. Develop, mentor and motivate junior staff.

**Functional Responsibility:** Leads design efforts for security and related portions of new Health IT applications along with application development areas; supports Identity and Access Management (IAM) tools; supports troubleshooting application issues related to IAM tools; manages vendor relationships for IAM or related tools.
Manages identity provisioning systems for access to various systems; provision IDs; implements policies for managing access, roles, permissions etc. to various systems including windows servers, sharepoint sites, and midrange unix servers. Support new initiatives related to HIPAA and other Federal mandates.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Health Network Engineer II**

**Minimum/General Experience:** Four (4) years of experience in the installation, monitoring, maintenance, support and optimization of network hardware. Support of system roll-outs, upgrades and systems performance management activities. Experience collaborating on project teams in the planning and development of effective network solutions. Leads projects of moderate technical difficulty and possesses competency to resolve complex systems issues.

**Functional Responsibility:** Monitor network or analyze systems to identify, recommend, design and implement improvements to network processes in a Health IT context. Remains current on new technologies and may research new solutions to support clinical or health-supporting functions. Assist/support network security operations and contribute to metrics and management reporting. Plans and coordinates installation/maintenance activities with clients, development staff, other infrastructure teams and vendors where applicable.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Health Application Developer I**

**Minimum/General Experience:** Two (2) years of experience in developing efficient application data processing systems. Experience working on and delivering large-scale distributed systems in an Agile and/or waterfall manner, with application of Test Driven Development and continuous integration knowledge. Experience in a multi-OS environment, including Unix, Linux, Microsoft Windows, involving application development and analysis.

**Functional Responsibility:** Responsible to create, test and code/programs applications software for health clinical, research, or beneficiary systems. Under supervision, work in teams to identify methods and concepts in response to client needs. Contributes to creating, testing, debugging, and maintaining / implementing the source code that makes up the health application or program. May also be responsible for designing the prototype application, indicate program unit structure, and coordinate application plans with the development team or client.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Health Application Developer II**

**Minimum/General Experience:** Three (3) years of experience in developing efficient application data processing systems. Experience working on and delivering large-scale distributed systems in an Agile and/or waterfall manner, with application of Test Driven Development and continuous integration knowledge. Experience in a multi-OS environment, including Unix, Linux, Microsoft Windows, involving application development and analysis.

**Functional Responsibility:** Responsible to create, test and code/programs applications software for health clinical, research, or beneficiary systems. Under general supervision, work in teams to identify methods and concepts in response to client needs. Responsibilities will directly support creating, testing, debugging, and maintaining / implementing the source code that makes up the health-supporting application or program. Responsible for
designing the prototype application, indicate program unit structure, and coordinate application plans with the development team or client.

**Minimum Education**: Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

### Health Application Developer III

**Minimum/General Experience**: Four (4) years of experience in developing efficient application data processing systems. Experience working on and delivering large-scale distributed systems in an Agile and/or waterfall manner, with application of Test Driven Development and continuous integration knowledge. Experience in a multi-OS environment, including Unix, Linux, Microsoft Windows, involving application development and analysis.

**Functional Responsibility**: Accountable to create, test and code/programs applications software for health clinical, research, or beneficiary systems. Under limited supervision, leads teams to identify methods and concepts in response to client needs. Accountable for directly support creating, testing, debugging, and maintaining / implementing the source code that makes up the application or program. Accountable for designing the prototype application, indicate program unit structure, and coordinate application plans with the development team or client.

**Minimum Education**: Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

### Health Application Architect

**Minimum/General Experience**: Four (4) year experience defining / articulating an architectural vision, conceptualizing architectural approaches, developing and validating the architecture and high level solution design against business requirements, and guiding and mentoring development teams on methodologies, processes and best practices.

**Functional Responsibility**: Responsible for the structure, behavior and interaction of health clinical, research, or beneficiary applications and ensuring their functions are scalable, reliable and manageable consistent with client requirements. With limited supervision, the Architect is responsible for defining and maintaining best practices for application engineering, component re-use, architecture design and technical standards, while maintaining an awareness of new / emerging technologies and their potential application to existing client business requirements.

**Minimum Education**: Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

### Health Application Release Manager I

**Minimum/General Experience**: Four (4) years of experience in the end-to-end Release Management lifecycle which includes scheduling, coordinating and the management of releases across the enterprise for multiple applications. The releases can be inclusive of application updates, operating system patches, security improvements, and/or hardware upgrades.

**Functional Responsibility**: Under general supervision, define, implement and managing release processes for the progression of code in the development, test, and production environments. Collaboratively work with all participants in healthcare software development projects to define calendar/schedules, risks readiness reviews, and project metrics to ensure successful projects.

**Minimum Education**: Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.
Health Application Release Manager II

**Minimum/General Experience:** Six (6) years of experience in the end-to-end Release Management lifecycle which includes scheduling, coordinating and the management of releases across the enterprise for multiple applications. The releases can be inclusive of application updates, operating system patches, security improvements, and/or hardware upgrades. Experience includes consequential support of Enterprise Change and Configuration Boards.

**Functional Responsibility:** Under limited supervision, define, implement and managing release processes for the progression of code in the development, test, and production environments. Collaboratively work with all participants in healthcare software development projects to define calendar/schedules, risks readiness reviews, and project metrics to ensure successful projects.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline

Health Business Analyst

**Minimum/General Experience:** One (1) year experience in development of functional and business requirements, problem identification, analysis and resolution methodologies.

**Functional Responsibility:** Contributes to support planning, analysis, and design of business systems in a clinical, research, or beneficiary context. With team members, analyze and document business processes, manage change requests, document operational procedures and issues.

**Minimum Education:** Associates degree in a technical discipline.

Health Business Analyst II

**Minimum/General Experience:** Two (2) years of experience in development of functional and business requirements, problem identification, analysis and resolution methodologies.

**Functional Responsibility:** Responsible to support planning, analysis, and design of business systems. With team members, analyze and document business processes, manage change requests, document operational procedures and issues.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline

Health Business Analyst III

**Minimum/General Experience:** Three (3) years of experience in development of functional and business requirements, problem identification, analysis and resolution methodologies.

**Functional Responsibility:** Accountable to support planning, analysis, and design of clinical, research, or beneficiary health systems. With team members, analyze and document business processes, manage change requests, document operational procedures and issues.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.
Health Tech Writer II

Minimum/General Experience: Four (4) years of demonstrated topic-based authoring experience of technical manuals and or technical documentation of a moderate complexity. Able to work effectively across teams and organizations. Previous experience using RoboHelp, Framemaker, AuthorIT, or other documentation systems as may be required.

Functional Responsibility: Responsible for conducting technical research with respect to Health IT system business requirements, architecture, development, and operations, translates technical information for technical and non-technical users in web and hardcopy formats. Edits and/or reformats copy and ensures documentation is in compliance with corporate standards and follows established guidelines for the organization, design and delivery of work products. Also maintains a repository / library.

Minimum Education: Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Technical Architect – Health IT Systems

Minimum/General Experience: Four (4) years of experience leading or supporting teams which produce technical specifications for custom development and systems integration requirements.

Functional Responsibility: Responsible for the overall technical design and build of the custom elements of Health IT solutions for healthcare in a clinical, research, or beneficiary system. Produces detailed technical designs to meet the solution design specifications and requirements that comply with applicable Federal security, accessibility, and other standards. May complete/oversee the custom development projects and associated quality assurance efforts.

Minimum Education: Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Health Systems Administrator I

Minimum/General Experience: Four (4) years of experience provisioning, configuring, installing, and the successful operation, and maintenance of IT systems hardware, network resources and/or software and related infrastructure.

Functional Responsibility: Regular system and/or security monitoring, verifying the integrity and availability of network resources, key processes, and/or user management for systems in a Health setting (clinical, research, or beneficiary). The Health Systems Administrator may review system and application logs, and perform/verify completion of scheduled jobs (e.g. backups). May create, change, and delete user accounts per request and provide Tier II support, investigate and troubleshoot issues.

Minimum Education: Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Health Project Manager II

Minimum/General Experience: Five (5) years of progressive technical or managerial experience in information resources management. At least four (4) years of experience within the last three (5) years occupying a project manager position in the IT or information resources management field.
**Functional Responsibility:** Provide on-time delivery of client staff utilization, financial and other status reports as defined by the contract. Oversee and provide technical and managerial direction to contract support staff for contract monitoring and complex system development activities involving multiple technologies in a healthcare setting. Help recruit and allocate contract resources on contract to be consistent with workload, funding; ensure that all work performed is in compliance with all industry and Federal standards. Act as point of contact for support staff and the client.

**Minimum Education:** Bachelor’s degree in a technical discipline.

**Health Systems Scientist II**

**Minimum/General Experience:** Minimum of six (6) years’ experience, of which four years must be specialized. Specialized experience may include the following: lifecycle IT engineering project development from inception to deployment, demonstrated ability to provide strategic and tactical technical guidance and direction in multiple tasks across several functional areas and including the use of different technologies. Expertise in applying diverse database, information, telecommunications, healthcare, or related engineering technologies to develop and deploy integrated systems. Conducts complex technical investigations through advanced research techniques, analysis or development phases of engineering projects. Skilled in managing and control of funds and resources, demonstrated ability in managing complex multi-task contracts. General experience required includes: increasing responsibilities in information systems design and management.

**Functional Responsibility:** Responsible for the technical aspects of a healthcare (clinical, research, or beneficiary) program or project. Provides effective management of assigned resources. Operates within client guidance, contractual limitations, and Company/Client business and policy directives. Serves as technical focal point of contact with client on program activities. If performing project management roles, performs those duties and ensures that all required resources including manpower, production standards, computer time, and facilities are available for program implementation. Acting as the program manager, manages program consisting of multiple projects including project identification, design, development and delivery. May also lead or support in contract negotiations. Provides technical advice to program managers, project leads and client to resolve complex technical issues.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Health Software Scientist II**

**Minimum/General Experience:** Minimum of six (6) years’ experience, of which four years must be specialized in developing enterprise application data processing systems. Experience developing coding, testing and delivering large-scale distributed systems in an Agile and/or waterfall methodologies, with application of Test Driven Development and continuous integration knowledge. Specialized in-depth experience in security software, financial or business systems, physical or network monitoring, cloud delivery models or COTS product implementations. Experience in a multi-OS environment, including Unix, Linux, Microsoft Windows, involving application development and analysis.

**Functional Responsibility:** Responsible to create, test and code/programs applications software for healthcare systems (clinical, research, or beneficiary). Under limited supervision, work in teams to identify methods and concepts in response to client needs. Responsibilities will directly support creating, testing, debugging, and maintaining / implementing the source code that makes up the application or program. May also be responsible for designing the prototype application, and coordinate application plans with the development team or client.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Health Business Analyst IV**
Minimum/General Experience: Minimum five (5) years’ experience in applications, database and systems development activities. At least five (5) years’ experience in development of functional and business requirements, problem identification, analysis and resolution methodologies.

Functional Responsibility: Accountable to support planning, analysis, and design of healthcare systems. With team technical members, develop, analyze and document business processes, systems requirements, manage change requests, document operational procedures and issues.

Minimum Education: Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Health Quality Specialist I

Minimum/General Experience: Must have at least four (4) years’ experience of which two years must be specialized. Specialized experience includes Configuration Management, IV&V, software testing and integration, software metrics and their application to software quality assessment. General experience includes increasing responsibilities in quality assurance, quality control, validation and verification.

Functional Responsibility: Assists in the evaluation of software, systems and associated documentation in a healthcare setting (clinical, research, or beneficiary). Participates in formal and informal reviews to determine quality; presents IV&V results and troubleshoots technical problems; makes recommendations to improve overall quality.

Minimum Education: Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related discipline.

Health Graphics Designer I

Minimum/General Experience: Requires at least five (5) years’ directly related experience in graphics design. Knowledge of the associated graphics design software applications. Demonstrated knowledge in the principles, methods, and techniques used in the preparation of graphics materials.

Functional Responsibility: Performs diverse graphics/illustration activities to produce brochures, briefings, displays, and other materials documentation in a healthcare setting (clinical, research, or beneficiary). Involved in all aspects of graphics/illustration projects from conceptualization and development to final presentation. May act as a technical consultant on matters of design, composition and methods of presenting technical data; uses a broad range of graphics production software and equipment; exercises creative judgment and originality by translating needs into graphics capabilities; may participate in website design.

Minimum Education: Associates Degree or certificate from a recognized technical institution.

Health Training Specialist I

Minimum/General Experience: Five (5) years of business and/or technical course development and stand-up instruction experience in the classroom or webinar format.

Functional Responsibility: Develops and provides lesson plans, course outlines, and classroom materials to support presentations and/or instruction on business and technical subject matter in a healthcare setting (clinical, research, or beneficiary). Provides stand-up course instruction as well as develops supporting curriculum materials.

Minimum Education: Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related discipline

Health Application Engineer I
**Minimum/General Experience:** Four (4) years of experience in developing efficient application data processing systems. Experience working on and delivering large-scale distributed systems in an Agile and/or waterfall manner, with application of Test Driven Development and continuous integration knowledge.

**Functional Responsibility:** Directs and participates in the development of modernized software applications in a healthcare environment (clinical, research, or beneficiary). Development experience with Internet developer and applicator tools including emerging technology. Performs the development and/or programming, and implementation of information processing systems and applications that use current operating systems, programming languages, and applications development tools, computer systems, multi-programming technology, database management techniques, and data communications protocol. Can work independently in support of a joint applications development effort. Responsible for writing application software, data manipulation, databases programming, testing and implementation, technical and user documentation, software conversions.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

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**Application Engineer II**

**Minimum/General Experience:** Six (6) years of experience in developing efficient application data processing systems. Experience working on and delivering large-scale distributed systems in an Agile and/or waterfall manner, with application of Test Driven Development and continuous integration knowledge. Experience in a multi-OS environment, including Unix, Linux, Microsoft Windows, involving application development and analysis.

**Functional Responsibility:** Directs and participates in the development of modernized software applications in a healthcare environment (clinical, research, or beneficiary). Development experience with Internet developer and applicator tools including emerging technology. Performs the development and/or programming, and implementation of information processing systems and applications that use current operating systems, programming languages, and applications development tools, computer systems, multi-programming technology, database management techniques, and data communications protocol. Can work independently in support of a joint applications development effort. Responsible for writing application software, data manipulation, databases programming, testing and implementation, technical and user documentation, software conversions. Possesses expertise in a variety of software, hardware, and network engineering concepts, practices, procedures, tools, programming languages, technologies, and operating systems related to IT. Possesses strong knowledge of database concepts. Relies on extensive experience and judgment to plan and accomplish goals.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

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**Health Application Programmer**

**Minimum/General Experience:** At least four (4) years of experience developing web applications using web frameworks consuming RESTful/SOAP API's. Experience in service Oriented Architecture/Service integration with Web Services, EJB, REST and security integration and proficiency of scripting languages.

**Functional Responsibility:** Write codes for programs used in computers and other electronic devices in a healthcare environment (clinical, research, or beneficiary). Create software applications by writing error-free, maintainable, and scalable code. Test, evaluate, modify, and improve applications to make them easy for usage. Interact with clients to find out their needs, preparing outlines for application programming and training manuals, specify technical specifications for new projects, and training application users. Analyzes business or scientific problems for resolution through electronic data processing. Gathers information from users, defines work problems, and, if feasible, designs a system of computer programs and procedures to resolve the problems. Develops complete specifications or enable Computer Programmers to prepare required programs; analyzes subject-matter operations to be automated; specifies number and types of records, files, and documents to be used and outputs to be produced; prepares work diagrams and data flow charts; coordinates tests of the system and participates in trial runs of new and revised systems; and recommends computer equipment changes to obtain more effective operations. Provides development services for moderately complex applications using standard approaches or less complex systems using new approaches. Works on a segment of a complex data processing scheme or broad system.
Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Health BI / ETL Developer

Minimum/General Experience: Must have a strong background in software engineering principles and techniques. Must have a minimum of 3 years of experience in BI and Data Warehouse.

Functional Responsibility: Analyzes product, market, and share trends to build warehouse data in a healthcare environment (clinical, research, or beneficiary). Translates business needs into technical specifications. Develops reporting systems that provide accessible information for decision making. Uses warehouse data to generate reports to support decision making and business performance monitoring. Maintains data analytics platforms. Evaluating and improving existing BI systems. Conducting troubleshooting on BI models. Generating and delivering quality reports to customers and performing quality assurance checks on reports.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Health Business Analyst / Tester

Minimum/General Experience: Three (3) years of experience as an analyst/tester on software projects in supporting requirement analysis, application test script development and execution. Two (2) years of experience in mapping the business and technical requirements into test cases and generate test scripts. Practical experience in using relational database and generating SQL scripts is required.

Functional Responsibility: Assembles, prepares, and analyzes data for studies, statistical models, evaluations, system requirements, and other needs in a healthcare environment (clinical, research, or beneficiary). Uses technical discretion within defined practices and policies in selecting methods and techniques for determining approaches or obtaining solutions. Provides technical advice and operating assistance in interpreting results. Provides input or may prepare technical reports based on the expert interpretation of analyzed data. Knowledge in manual or automation testing.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Computer Programmer – Health IT

Minimum/General Experience: At least four (4) years of software development experience.

Functional Responsibility: Performs routine programming assignments that require knowledge of established programming procedures and data processing requirements devices in a healthcare environment (clinical, research, or beneficiary). Works according to clear-cut and complete specifications. The data are refined, and the format of the final product is very similar to that of the input, or is well defined when significantly different, i.e., there are few, if any, problems with interrelating varied records and outputs. The Computer Programmer maintains and modifies routine programs, makes approved changes by amending program flow charts, developing detailed processing logic, and coding changes, tests and documents modifications and writes operator instructions, may write routine new programs using prescribed specifications

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Health Computer Systems Analyst I

Minimum/General Experience: Four (4) years of specialized experience in the analysis and design of business applications on complex, large-scale systems, including three years experience in data base management concepts.
**Functional Responsibility:** Works independently or under only general direction on complex application problems involving all phases of systems analysis to provide resolutions for healthcare tasks (clinical, research, or beneficiary). Assists in evaluating and determining Client requirements. Provides technical and administrative direction for personnel performing software development tasks, including the review of work products for correctness, adherence to the design concept and to user standards, and for progress in accordance with schedules. Coordinates with the Project Manager to ensure problem solution and user satisfaction. Makes recommendations, if needed, for approval of major systems installations. Prepares milestone status reports and deliveries/presentations on the system concept to colleagues, subordinates, and end user representatives. Provides technical direction to lower level systems analysts.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

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**Health IT Configuration Engineer**

**Minimum/General Experience:** At least five (5) years of experience managing diverse DevOps workloads, across infrastructure, administration, deployment, development support and monitoring

**Functional Responsibility:** Develops, documents, and implements detailed plans for ensuring configuration control for IT programs, projects, and tasks in a healthcare environment (clinical, research, or beneficiary). When issues arise, is able to identify and implement solutions. Maintain thorough records and documentation to ensure accurate product builds, part ordering and product and/or software updates.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

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**Health Data Analyst / Tester**

**Minimum/General Experience:** Five (5) years of experience as an analyst/tester on software projects in supporting requirement analysis, application test script development and execution. Five (5) years of experience in mapping the business and technical requirements into test cases and generate test scripts.

**Functional Responsibility:** Develops requirements for information systems for software projects in a healthcare environment (clinical, research, or beneficiary). Develops required specifications for simple to moderately complex systems. Must be able to design and prepare all needed test data. Reviews test results and evaluates for conformance to design. Candidate should be able to develop and document test cases, testing plans and procedures. Knowledge in manual or automation testing. Familiarize with databases.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

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**Health Data Architect**

**Minimum/General Experience:** At least ten (10) years of experience in architecting solutions with expertise in planning, designing, building, and implementing IT application modernization / implementation effort. Must have a strong background in software engineering principles and techniques.

**Functional Responsibility:** Responsible for performing moderate to high-level design of healthcare application systems (clinical, research, or beneficiary). Establishes the basis structure of the system, defines essential core design features and elements that provide the framework. Works with systems users in the identification and resolution of user problems and concerns for complex projects. Performs cost-benefit analyses to determine whether requirements are best met by manual, software, or hardware functions. Generates a set of acceptance test requirements for complex systems.

Designs and builds relational or NoSQL databases. Develops strategies for data acquisitions, archive recovery, and implementation of a database. Works in a data warehouse environment, which includes data design, database architecture, metadata and repository creation. Translates business needs into long-term architecture solutions. Defines, designs, and builds dimensional databases. Perform database administration tasks. Develops data
warehousing blueprints, evaluating hardware and software platforms, and integrating systems. Evaluates reusability of current data for additional analyses. Reviews object and data models and the metadata.

**Minimum Education**: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

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**Healthcare Data Engineer**

**Minimum/General Experience**: At least eight (8) years of experience in developing cloud based multi user application with expertise in designing, building, testing and implementing IT application. Must have a strong background in software engineering principles and techniques.

**Functional Responsibility**: Provides design recommendations based on long-term IT organization strategy. Develops enterprise level application and custom integration solutions including major enhancements and interfaces, functions and features in a healthcare environment (clinical, research, or beneficiary). Uses a variety of platforms to provide automated systems applications to customers. Provides expertise regarding the integration of applications across the business. Determines specifications, then plans, designs, and develops the most complex and business critical software solutions, utilizing appropriate software engineering processes – either individually or in concert with a project team. Will assist in the most difficult support problems. Develops programming and development standards and procedures as well as programming architectures for code reuse. Has in-depth knowledge of state-of-the art programming languages and object-oriented approach in designing, coding, testing and debugging programs. Understands and consistently applies the attributes and processes of current application development methodologies. Researches and maintains knowledge in emerging technologies and possible application to the business.

**Minimum Education**: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

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**Health Data Modeler**

**Minimum/General Experience**: At least six (6) year of experience with data modeling and design. Must have a strong background in software engineering principles and techniques. Extensive experience with Relational Database systems and data modeling.

**Functional Responsibility**: Engages in translating business requirements into conceptual, logical, and physical data models in a healthcare environment (clinical, research, or beneficiary). Designs and implements scalable data models for a large enterprise application Interviews end users and other key stakeholders to understand all the data architecture global and non-functional requirements and designs the data models and databases accordingly. Participates as an active team member to design, maintain, and optimize database driven applications. Evaluates new data sources for adherence to the organization's quality standards and ease of integration.

**Minimum Education**: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

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**Health Data Scientist**

**Minimum/General Experience**: At least four (4) years of experience in Service Oriented Architecture/Service integration with Web Services, REST and security integration. At least three (3) years of experience in big data environments. At least two (2) years of experience in working, defining, maintaining architectural frameworks, patterns & data structures.

**Functional Responsibility**: Perform data analysis and modeling, trend analysis, and product impact analysis in a healthcare environment (clinical, research, or beneficiary). Identify trends and relationships within the data. Perform testing to confirm data reliability and validity. Design surveys, questionnaires, experiments, and opinion polls and other data collection methods. Present the data analysis findings in written reports, tables, charts, and graphs, as required. Experienced with non-relational databases.
**Health Database Management Specialist**

**Minimum/General Experience:** At least eight (8) years of experience in administering multi user environment with expertise in planning, designing, building, and implementing complex database systems.

**Functional Responsibility:** Provides expertise and guidance in the use of database management systems in a healthcare environment (clinical, research, or beneficiary). Designs, implements, and maintains databases with respect to access methods and time, device allocation, validation checks, file organization, indexing methods, protection and security, documentation, guidelines, and statistical methods. Establishes procedures for operations of the database and database management systems. Collects data elements and prepares database specifications. Develops, maintains, and controls the data dictionary. May include experience with database systems such as MS SQL Server, DB2, Sybase, Oracle, and Informix. May function as team leader and provide direction to less experienced database programmers/analysts.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Health Information Engineer**

**Minimum/General Experience:** At least six (6) years of experience in developing multi user applications with expertise in designing, building, testing and implementing IT application. Must have a strong background in software engineering principles and techniques

**Functional Responsibility:** Applies an enterprise-wide set of disciplines for the planning, analysis, design, and construction of information systems on an enterprise-wide basis or across a major sector of the enterprise in a healthcare environment (clinical, research, or beneficiary). Develops analytical and computational techniques and methodology for problem solutions. Performs enterprise wide strategic systems planning, business information planning, business, and analysis. Performs process and data modeling in support of the planning and analysis efforts using both manual and automated tools. Applies reverse engineering and reengineering disciplines to develop migration and planning documents. Provides technical guidance in software engineering techniques and automated support tools.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Health Infrastructure Engineer**

**Minimum/General Experience:** At least ten (10) years of working experience with Linux and Windows operating systems as well as networking. At least five (5) years of experience designing, configuring, installing, and managing infrastructure in large and small environments.

**Functional Responsibility:** Provide leadership for all design, implementation, and maintenance activities related to IT infrastructure in a healthcare environment (clinical, research, or beneficiary). Create, optimize, and continuously evaluate security monitoring content and define and update dashboards, reports and alerts. Design and create new detection techniques and improve existing ones. Identify gaps in existing security capabilities. Recommend and assist in technology evaluations and implementations to close the gaps. Plan and lead large security projects and initiatives. Work with all areas of information services, business units, and other partners on enterprise scale projects and initiatives. Responsible for the management, advanced configuration, monitoring, and log analysis of network infrastructure.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.
Health Integration Developer

**Minimum/General Experience:** At least seven (7) years of experience in designing and developing applications, knowledge of Data Mapping, Exception Handling, and integration of sources in an enterprise environment. Must have knowledge in designing and developing Source-to-Target mappings using ETL programming languages and tools.

**Functional Responsibility:** Responsible for the development and integration of healthcare Systems and Subsystems (clinical, research, or beneficiary). Provides support in the creation of strategies and plans for integration of multiple IT Systems and subsystems into an operational unit, ensuring full functional and performance capabilities are retained. When required, introduces new hardware or software into a new or existing environment while minimizing disruption and mitigating risks.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Health Middleware Engineer

**Minimum/General Experience:** At least six (6) years of experience in developing software applications focusing on middleware integration or support

**Functional Responsibility:** Analyze and develop technology solutions based on customer requirements in a healthcare environment (clinical, research, or beneficiary). Build and implement middleware products to meet business demands. Work with Developers and Architects in developing middleware configurations based on requirements. Identify and apply innovative technologies to update existing middleware. Create and maintain documentation for middleware installations, changes and upgrades. Train Junior Engineers on middleware updates and new installations. Coordinate with vendors and support team on problem resolution, design issues and upgrades. Perform troubleshooting, incident response, and patching in a timely manner. Troubleshoot and resolve technical problems in timely and accurate manner to improve application performance and functionality. Develop and implement strategies for migration, consolidation and upgrade of middleware components. Evaluate system architecture and make recommendations as required. Develop and implement standard processes for installation, maintenance and enhancement of middleware applications.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Network Engineer - Health

**Minimum/General Experience:** At least eight (8) years of experience in network management and operations. Experience working with Software Firewall Appliances, network architecture and design of wide distributed networks and operations.

**Functional Responsibility:** Plans, supports and evaluates complex existing network systems and make recommendations for resources required to maintain and/or expand service levels in a healthcare environment (clinical, research, or beneficiary). This resource will provide highly skilled technical assistance in network planning, engineering and architecture. Also provides and develops technical standards and interface applications; identifies and evaluates new products; provide solutions for network problems. Interfaces with internal/external customers and vendors to determine system needs. Plans and incorporates how new network resources and applications will exist on the network. Provide monthly metrics for network availability and bandwidth usage as well as other metrics as requested. Responsible for network capacity planning. Use network management tools to discover, map and maintain the network. Responsible for network equipment OS and version upgrades. Responsible for conducting research of new technologies and implementation strategies. Monitor and maintain network interfaces to ensure its highest level of performance and makes modifications and enhancements as needed. Responsible for documenting procedures and keeping network diagrams and related material up to date. Handle escalated user problems, questions, and request on network issues. Work with other groups within IS to resolve network related issues as needed. Leads and directs work of other Network Engineers.
Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Health Operations Analyst I

Minimum/General Experience: Minimum of two (2) years’ experience in the role of operations analyst

Functional Responsibility: Analyses IT application operations and maintains/monitor the production schedule in a healthcare environment (clinical, research, or beneficiary). Analyses production related problems and co-ordinates with application teams to resolve the issues. Notify operations management team of any schedule delays. Ensures computer system resources are used effectively. Prepares reports by collecting, analyzing, and summarizing information. Recommend and update policies and procedures to improve performance. Provide solutions to application teams to resolve operational issues.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Health Operations Analyst II

Minimum/General Experience: Minimum of four (4) years of experience in the role of operations analyst

Functional Responsibility: Analyses IT application operations and maintains/monitor the production schedule in a healthcare environment (clinical, research, or beneficiary). Analyses production related problems and co-ordinates with application teams to resolve the issues. Notify operations management team of any schedule delays. Ensures computer system resources are used effectively. Prepares reports by collecting, analyzing, and summarizing information. Recommend and update policies and procedures to improve performance. Provide solutions to application teams to resolve operational issues.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Penetration Tester – Health IT

Minimum/General Experience: Atleast six (6) years of application/network security testing experience.

Functional Responsibility: Responsible for detecting threats and vulnerabilities in target systems, networks, and applications by conducting systems, network and web penetration testing in a healthcare environment (clinical, research, or beneficiary). Identifies flaws and weaknesses in the systems than can be exploited to cause business risk, and provides crucial insights into the most pressing issues, suggesting how to prioritize security resources. Can solve more complex problems with minimal supervision.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Health IT Product Specialist

Minimum/General Experience: At least six (6) years of experience designing, building, and implementing software products in IT application environment. Must have a strong background in software engineering principles and techniques.

Functional Responsibility: Providing professional support services and/or the integration of their respective software products in a healthcare environment (clinical, research, or beneficiary). Implement the products based on best practices. Obtain customer feedback and suggest appropriate product revisions/upgrades. Coordinate with application team on usage and integration of the product. Assist in new product introduction and release activities. Coordinates with product vendor and recommend product enhancements and updates. Address product related issues in a timely fashion to ensure customer satisfaction.
**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Health Program Manager**

**Minimum/General Experience:** Eight (8) years of experience in developing software applications. Experience working on and delivering large-scale distributed systems in an Agile and/or waterfall manner.

**Functional Responsibility:** Responsible for managing the program team and daily operations of program development and helping to ensure client comfort and feasibility with designed solution in a healthcare environment (clinical, research, or beneficiary). Other experience includes communication with client and program managers and management of multiple programs across various industry lines. Manages overall project activities and is the primary point of contact with client executives. Also helps in testing, debugging and refining computer software from time to time. Enhances software to reduce operating time or improve efficiency.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Release Engineer – Health IT**

**Minimum/General Experience:** At least four (4) years of experience managing diverse operations workloads, across infrastructure, administration, deployment, development support and monitoring.

**Functional Responsibility:** The Release Manager is responsible for the Release Management lifecycle for IT programs which includes scheduling, coordinating and the management of releases across the enterprise for multiple applications across various Portfolios in a healthcare environment (clinical, research, or beneficiary). The releases can be inclusive of application updates, operating system patches, security improvements, hardware upgrades, Projects and Programs. Where necessary, provides tools and services to help product management and project teams manage and deploy releases into production. Responsible for implementing and managing release processes for the progression of code in the development, test, and production environments. The Release Manager Job function works collaboratively with all participants in software development projects and is supportive of developers and testers as they set up their build dev./test environments. This position also works with IT management to improve the software engineering processes and practices associated with continuously building, deploying, and updating software and environments.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Health IT Security Analyst**

**Minimum/General Experience:** A minimum of three (3) years of experience in analyzing and defining security requirements for large and mission critical IT applications. A minimum of two (2) years performing day-to-day security operations functions including administration, troubleshooting, and resolution of various security components.

**Functional Responsibility:** Gathers and interprets data and perform technical analysis of security operations in a healthcare environment (clinical, research, or beneficiary). Assess procedures necessary to ensure the safety of information, systems assets and to protect systems from intentional or inadvertent access or destruction. Interfaces with user community to conduct accurate evaluation of the level of security required and implements procedures to accommodate them. Analyses security plans for employing enterprise-wide security architecture. Provides security engineering support for application development (including system security certifications and project evaluations). This may include the development, design and implementation of firewalls, and evaluation, review and test of security code. Experience working in different security architectures and platforms in an integrated environment.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.
Software Developer – Health IT

**Minimum/General Experience:** At least six (6) years in designing and developing software applications. Experience with code reviews, frameworks and enterprise architecture

**Functional Responsibility:** Under general direction, in a healthcare environment (clinical, research, or beneficiary), participates as high-level technical expert in design development, coding, testing, and debugging new software or significant enhancements to existing software. Works with technical staff to understand problems with software and develops specifications to re-solve them. Resolves customer complaints and responds to suggestions for improvements and enhancements. Participates in the development of software user manuals. May act as team leader on less complex projects. Assists in training less-experienced software development staff.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Healthcare Subject Matter Expert

**Minimum/General Experience:** Eight (8) years of experience in specific functional area

**Functional Responsibility:** Provides advanced technical knowledge and expertise for analysis of highly specialized applications and operational environment, high-level functional systems analysis, design, integration, documentation, training, and implementation advice on complex healthcare-related problems (clinical, research, or beneficiary) which would require expert level knowledge of the subject matter for effective implementation. Recognized in the professional community as an "expert" in the technical/domain specific knowledge areas being addressed. Advise clients on the impact of new legislation or new technologies and confers with client executive management using line of business expertise to define the client's strategic information technology business goals and advises in the reengineering of business processes to meet these goals. Assist client in developing strategic plans and concepts. Demonstrate exceptional oral and written communication skills.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Health IT Systems Administrator II

**Minimum/General Experience:** Five (5) years of experience provisioning, configuring, installing, and the successful operation, and maintenance of IT systems hardware, network resources and/or software and related infrastructure.

**Functional Responsibility:** Provides technical support for implementation, administration, troubleshooting and maintenance of IT systems in a healthcare environment (clinical, research, or beneficiary). Manages IT system infrastructure and 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 remains involved in the resolution process. Provides support for the escalation and communication of status to agency management and internal customers. Experience in one or more systems and architectures and associated hardware: mainframe, mini, or client/server based. Experience in systems or network oversight preferred.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Health IT Systems Architect

**Minimum/General Experience:** Two (4) year experience defining / articulating an architectural vision, conceptualizing architectural approaches, developing and validating the architecture and high level solution design against business requirements, and guiding and mentoring development teams on methodologies, processes and best practices.
**Health IT Systems Engineer**

*Minimum/General Experience:* A minimum of eight (8) years of experience in System administration and development experience. At least four (4) years of experience working with design and implementation of systems and applications.

*Functional Responsibility:* Participates in all phases of computer operating/hardware systems engineering, including design, analysis, and modeling at a highly technical level; analyzes complex computer software/hardware requirements to provide integration and implementation support within a healthcare environment (clinical, research, or beneficiary). Performs operating/hardware systems engineering, including full life cycle design and development; analyzes and documents users’ functional and data requirements; develops site survey instruments to gather detailed user requirements and business process analysis data; conducts functional user interviews to document functional, system, customization, and data requirements and data sources; formulates system concepts and architecture, specifies requirements, and develops implementation approaches; determines data requirements for internal processes and external interfaces; develops new systems or tailors commercial products to meet user requirements; directs and coordinates all activities necessary to complete a major engineering project or several small projects to specification and on schedule; may serve as task or project lead, exercising leadership in either a technical role training other hardware engineers and implementing and enforcing established standards and technologies, or in a project coordination role leading tasks and assuming responsibility for the design, development, test and delivery of a software system or application.

*Minimum Education:* Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Health Technical Writer**

*Minimum/General Experience:* At least 3 years of demonstrated topic-based authoring experience of technical manuals and or technical documentation of a moderate complexity in software applications. Demonstrated skills in producing high quality technical documentation

*Functional Responsibility:* Within a healthcare environment (clinical, research, or beneficiary), responsible for writing system manuals, user guides and other technical materials and gathering & researching information to use in IT technical documentation. Possesses strong organization skills and the ability to observe technical processes and relay the information in a concise and effective way through documentation.

*Minimum Education:* Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Health IT Tester**
**Minimum/General Experience:** Four (4) years of experience in software testing and development of automation scripts. Experience in Quality Assurance (QA) related functions.

**Functional Responsibility:** Expected to design test plans, scenarios, scripts, or procedures in a healthcare environment (clinical, research, or beneficiary). Develops or specify standards, methods, or procedures to determine product quality or release readiness. Develops testing programs that address areas such as database impacts, software scenarios, regression testing, negative testing, error or bug retests, or usability. Documents software defects, using a bug tracking system, and report defects to software developers. Document test procedures to ensure replicability and compliance with standards. Identify program deviance from standards and suggest modifications to ensure compliance.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

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**Testing Specialist – Health IT**

**Minimum/General Experience:** Five (5) years of experience as tester on software projects in supporting requirement analysis, application test script development and execution. Two (2) years of experience in mapping the business and technical requirements into test cases and generate test scripts.

**Functional Responsibility:** Interacts with other engineering groups to define, document, analyze, perform, and interpret tests for software products, systems, components, or modifications in a healthcare environment (clinical, research, or beneficiary). Identifies functional problems and suggests resolutions. Assists in the definition of internal quality control standards and the maintenance of reliability programs. Analyzes test cases and provides regular progress reports. Knowledge of automation testing tools.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

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**Health Web Designer**

**Minimum/General Experience:** Five (5) years of experience in designing and developing web applications, mobile applications and cross-browser compatible responsive front-end interfaces. Ability to create wireframes and prototypes using latest UI/UX products

**Functional Responsibility:** Designs and builds Web pages using a variety of graphics software applications, techniques, and tools within a healthcare environment (clinical, research, or beneficiary). Designs and develops use interface features, site animation, and special-effects elements; designs the Website to support the customer's strategies and goals relative to external communications; contributes to the Web design group’s efforts to specify, improve, and implement the look, feel, and function of online projects; interfaces directly with customers, users, graphic artists, and Web software developers.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

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**Health Web Developer I**

**Minimum/General Experience:** At least four (4) years of Software development experience. Strong experience with full stack development, including understanding UI frameworks and back end architecture interactions

**Functional Responsibility:** Designs and builds user interfaces for web sites using a variety of graphics software applications, techniques, and tools in a healthcare environment (clinical, research, or beneficiary). Interface design includes animation and special-effects elements. Ensures that the "look and feel" supports the organization’s strategies and goals and facilitates user interaction with the system. Performs website design and creation.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.
Health Web Developer II

**Minimum/General Experience:** At least six (6) years of Software development experience. Strong experience with full stack development, including understanding UI frameworks and back end architecture interactions.

**Functional Responsibility:** Designs and builds user interfaces for web sites using a variety of graphics software applications, techniques, and tools in a healthcare environment (clinical, research, or beneficiary). Interface design includes animation and special-effects elements. Ensures that the "look and feel" supports the organization's strategies and goals and facilitates user interaction with the system. Performs website design and creation. Plans, designs, develops, tests, edits, maintains, and documents look and flow of websites. Requires strong knowledge of programming techniques and computer internet systems and must perform with minor assistance. Performs a variety of tasks. A certain degree of creativity and latitude is required. May lead or direct others.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Additional Notes:**

**Education and Experience:** To add flexibility and to assist in aligning resources proposed for future requirements, education equivalences are provided in the Table below.

It is anticipated that all experience and education will be in a technical field directly related to the labor category being proposed and all diplomas, GED certificates, and degrees will be from accredited institutions.

<table>
<thead>
<tr>
<th>Education &amp; Experience Levels</th>
<th>Equivalent Education and Experience</th>
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<tbody>
<tr>
<td>Education and Experience</td>
<td>Acquired Degree</td>
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<tr>
<td>Associate’s Degree or higher</td>
<td>High School/GED</td>
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<tr>
<td>and 2 years</td>
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<tr>
<td>Bachelor’s Degree or higher</td>
<td>High School/GED</td>
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<tr>
<td>and 5 years</td>
<td>Associate</td>
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<tr>
<td></td>
<td>Master</td>
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<td></td>
<td>Doctorate</td>
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<tr>
<td>Master’s Degree or higher</td>
<td>High School/GED</td>
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<tr>
<td>and 6 years</td>
<td>Associate</td>
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<tr>
<td></td>
<td>Bachelor</td>
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<td>Doctorate</td>
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Cloud Database Administrator

Minimum/General Experience: Four (4) years of experience performing moderately complex Cloud database engineering assignments involving the modification and/or development of enterprise Cloud database systems. Experience in developing Cloud database systems or subsystems architecture, requirements, and design documents. Experience leveraging Cloud services to accomplish tasks. Performs Cloud database algorithm development, design, coding, and documentation of systems. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

Functional Responsibility: Performs Cloud database algorithm development, design, coding, and documentation of systems. Understands and has implemented Cloud database technology. Evaluates software activities and ensures compliance with software engineering standards in the Cloud. Analyze, design, implement and maintain data models for complex Cloud-based applications. Provide routine maintenance, monitoring, troubleshooting, and problem resolution for production and non-production Cloud databases, including security and software updates. Design and implement performance improvements based on analysis of database performance in the Cloud.

Minimum Education: Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Cloud Data Modeler / Architect

Minimum/General Experience: Five (5) years of experience in the design, development, build, analysis, evaluation, and installation of Cloud database management systems. Experience leveraging Cloud services to accomplish tasks. Experience to include Cloud database modeling and design, relational Cloud database architecture, metadata and repository creation, and configuration management. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

Functional Responsibility: The analysis and design of complex Cloud data solutions while applying data architecture principles. This includes logical and physical data modelling based on data requirements using relational data modeling practices. Works with business and application/solution teams to implement data strategies, build data flows, and develop conceptual/logical/physical data models in a Cloud environment. Create and maintain data dictionary documents, tables, and data lineage models and produce artifacts to support project development. Uses data mapping, data mining, and data transformational analysis tools to design and develop Cloud databases. Determines data storage and optimum Cloud storage requirements. Prepares system requirements, source analysis, and process analyses and design throughout Cloud database implementation. Identify the architecture, infrastructure, and interfaces to data sources, tools supporting automated data loads, security concerns, analytic models, and data visualization in the Cloud.

Minimum Education: Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Cloud Database Manager

Minimum/General Experience: Five (5) years of experience in maintaining the health, functionality, and availability of production - mission-critical systems. Experience leveraging Cloud services to accomplish tasks. Experience performing Oracle/Sybase/db2 administration including dumps & loads, user account maintenance, device management, manage tables, constraints, and indexes. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.
**Functional Responsibility:** Responsible for the reliability and availability of large, scalable databases in a Cloud environment with the heavy transaction and batch activities. Maintain existing environment, perform upgrades, and the monitoring and resolution technical problems. May support migration of large data sets to and from the Cloud. Summarize large amounts of information into concise deliverables. Generate work requests and facilitate work planning. Run reports, query, and analyze Cloud databases for outliers, information, and productivity.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Cloud Software Test Engineer I**

**Minimum/General Experience:** Three (3) years of experience performing software integration and troubleshooting of multiple applications in a complex cloud-based enterprise environment. Experience to include executing tests to validate the requirements and functionality per the project specifications as detailed in the test procedures. Experience leveraging Cloud services to accomplish tasks. Relies on instructions and pre-established guidelines to perform the functions of the job. Works under immediate supervision. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Supports the development and generation of system test plans in a Cloud environment. Validate system requirements and functionality as documented in the system specifications. May support the development of test scenarios and generating test procedures to test the system requirements and functionality properly and rigorously in the Cloud. Also responsible for identifying, analyzing, and documenting any defects discovered during testing. Following established designs, builds approaches for automated testing using Cloud technologies. Responsible for the development, maintenance, and execution of software test plans, test scenarios, and test cases to be used in the evaluation of applications including recording actual results and compare to expected results documenting and performing root cause analysis of relevant defects and issues in a cloud environment.

**Minimum Education:** Associates degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Cloud Software Test Engineer II**

**Minimum/General Experience:** Four (4) years of experience performing software integration and troubleshooting of multiple applications in a complex cloud-based enterprise environment. Experience to include executing tests to validate the requirements and functionality per the project specifications as detailed in the test procedures. Experience leveraging Cloud services to accomplish tasks. Relies on limited experience and judgment to plan and accomplish goals. Works under general supervision. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Supports the development and generation of system test plans in a Cloud environment to validate system requirements and functionality as documented in the system specifications. May support the development of test scenarios and generating test procedures to test the system requirements and functionality properly and rigorously. Also responsible for identifying, analyzing, and documenting any defects discovered during testing. Following established designs, develops and builds approaches for automated testing using Cloud technologies. Responsible for the development, maintenance, and execution of software test plans, test scenarios, and test cases to be used in the evaluation of applications including recording actual results and compare to expected results documenting and performing root cause analysis of relevant defects and issues in a cloud environment.

**Minimum Education:** Associates degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.
Cloud Software Test Engineer III

**Minimum/General Experience:** Six (6) years of experience in one or more testing scenarios: Functional Testing, Performance, and Stress Testing, End-to-end testing with other systems and organizations, Acceptance, and Regression Testing. Experience leveraging Cloud services to accomplish tasks. Relies on experience and significant judgment to plan and accomplish goals. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Evaluates, recommends and implements automated test tools and strategies in the Cloud. Develops, maintains, and upgrades automated test scripts and architectures for application products. May write, implement, and report status for system test cases for testing in a Cloud environment. Analyzes test cases and provides regular progress reports. Responsible for the development, maintenance, and execution of software test plans, test scenarios, and test cases to be used in the evaluation of applications including recording actual results and compare to expected results documenting and performing root cause analysis of relevant defects and issues in a cloud environment. Provide mentoring and leadership to junior staff. Design, develop, and build approaches for automated testing using Cloud technologies.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline

Cloud Testing Engineer I

**Minimum/General Experience:** Three (3) years of experience in testing, formulating, and analyzing complex Information Systems designs to determine specific component elements. Experience leveraging Cloud services to accomplish tasks. Works under immediate supervision. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Relies on instructions and pre-established guidelines to construct alternative systems integration methods, and/or testing methods for assigned system components. Responsible for defined aspects of the test planning and execution for the systems across all projects/production defects in the Cloud environment. Maybe the first point of escalation for any production defects level questions, concerns, or decisions. Designing and implementing automated and manual testing for systems and supporting operations in the Cloud.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Cloud Testing Engineer II

**Minimum/General Experience:** Six (6) years of experience in testing, formulating, and analyzing complex Information Systems designs to determine specific component elements. Experience leveraging Cloud services to accomplish tasks. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Construct alternative Cloud systems integration methods, and/or testing methods for assigned system components. Responsible for defined aspects of the test planning and execution for Cloud systems across all projects/production defects. Designing and implementing automated and manual testing for systems and supporting operations in the Cloud. Maybe the first point of escalation for any production defects level questions, concerns, or decisions.
**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Cloud Project Manager I**

**Minimum/General Experience:** Three (3) years of progressive technical or managerial experience in information resources management. At least two (2) years of experience within the last three (3) years occupying a project manager position in the Cloud environment. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Provide on-time delivery of client staff utilization, financial and other status reports as defined by the contract for Cloud-related projects. Oversee and provide technical and managerial direction to contract support staff for contract monitoring and Cloud development activities. Help recruit and allocate contract resources on contract to be consistent with workload, funding; ensure that all work performed is in compliance with all standards. Act as point of contact for support staff and the client. Schedules and prioritizes all task development. Works with the client to clear development bottlenecks and provide solutions to complex problems in order to keep the project progressing to a successful conclusion in the Cloud environment.

**Minimum Education:** Associates degree in a technical discipline.

**Cloud Security Systems Engineer I**

**Minimum/General Experience:** Three (3) years of experience in the computer field and must have demonstrated the ability to design, develop, install, implement, and maintain Identity and Access Management security information systems for enterprise data processing applications. Relies on instructions and pre-established guidelines to perform the functions of the job. Experience leveraging Cloud services to accomplish tasks. Works under immediate supervision. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** The Security Systems Engineer develops and integrates user’s requirements into programmer tasks, designs and develops programs and Cloud databases, integrates existing Cloud-based software systems, tests the system, develops and presents training materials for Federal HSPD-12 and/or related programs. Analyzes information security requirements. Applies operating system security configuration. Applies analytical and systematic approaches in the resolution of problems of workflow, organization, and planning. Conducts security certification and accreditation for IT systems in the Cloud.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline

**Cloud Security Systems Engineer II**

**Minimum/General Experience:** Five (5) years of experience in the computer security field and must have demonstrated the ability to design, develop, install, implement, and maintain Identity and Access Management security information systems for enterprise data processing applications. Relies on experience and exercises judgment to plan and accomplish goals. Experience leveraging Cloud services to accomplish tasks. Works under limited supervision. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.
**Functional Responsibility:** Evaluates COTS tools, user environments, and makes recommendations involving Identity and Access Management solutions in a Cloud environment. Develops and integrates user requirements into programmer tasks, designs, and develops programs and Cloud databases. Integrates existing software systems, tests the system, develops and presents training materials for Federal HSPD-12 and/or related programs. Analyzes information security requirements. Applies operating system security configuration. Applies analytical and systematic approaches in the resolution of problems of workflow, organization, and planning. Conducts security certification and accreditation for IT systems in the Cloud.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Cloud Security Systems Engineer III**

**Minimum/General Experience:** Seven (7) years of broad experience in information security concepts, Federal and commercial information security policies, and system architecture concepts. Experience in Information Security tools in a large, complex, multi-platform environment. Demonstrated experience coordinating multiple projects and tasks in line with Agency goals and objectives. Relies on experience and knowledge to self-direct and work independently. Two (2) years of experience in a Cloud environment. Develop, mentor, and motivate junior staff. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** In a Cloud environment, leads design efforts for security and related portions of new applications along with application development areas; supports Enterprise Identity and Access Management (EIAM) tools; supports troubleshooting application issues related to EIAM tools; manages vendor relationships for EIAM or related tools. Manages identity provisioning systems for access to various systems; provision IDs; implements policies for managing access, roles, permissions, etc. to various systems including windows servers, Sharepoint sites, and midrange Unix servers. Support new initiatives related to HIPAA and other Federal mandates. Analyzes information security requirements. Applies operating system security configuration. Applies analytical and systematic approaches in the resolution of problems of workflow, organization, and planning. Conducts security certification and accreditation for IT systems in the Cloud.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Cloud Network Engineer II**

**Minimum/General Experience:** Four (4) years of experience in the installation, monitoring, maintenance, support, and optimization of Cloud-based network services. Support of system roll-outs, upgrades, and systems performance management activities. Experience collaborating on project teams in the planning and development of effective network solutions. Leads projects of moderate technical difficulty and possesses the competency to resolve complex systems issues. Experience leveraging Cloud services to accomplish tasks. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Monitor network or analyze systems to identify, recommend, design, and implement improvements to network processes in a Cloud environment. Remains current on new technologies and may research new solutions. Assist/support network security operations and contribute to metrics and management reporting. Plans and coordinates installation/maintenance activities with clients, development staff, other infrastructure teams, and vendors where applicable. Provide ongoing network maintenance, including updates and security patches. Monitor, evaluate, and solve potential network performance issues. Develop and maintain documentation related to the installation, administration, and maintenance of network infrastructure within the Cloud environment.
Minimum Education: Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Cloud Application Developer I

Minimum/General Experience: Two (2) years of experience in developing efficient application data processing systems. Experience working on and delivering large-scale distributed systems in an Agile and/or waterfall manner, with the application of Test-Driven Development and continuous integration knowledge. Experience in a multi-OS environment, including Unix, Linux, Microsoft Windows, involving application development and analysis. Experience leveraging Cloud services to accomplish tasks. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

Functional Responsibility: Responsible to create, test and code/programs, application software for enterprise systems in a Cloud environment. Under supervision, work in teams to identify methods and concepts in response to client needs. Responsibilities will directly support creating, testing, debugging, and maintaining/implementing the source code that makes up the application or program. May also be responsible for designing the prototype application, indicate program unit structure, and coordinate application plans with the development team or client. Translates application requirements into cloud-based solutions using available technology. Applies new and emerging technologies to the software development process. Prepares reports, studies, and documentation delivers presentations and participates in meetings. Prepares Cloud-based system documents or specifications.

Minimum Education: Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Cloud Application Developer II

Minimum/General Experience: Three (3) years of experience in developing efficient application data processing systems. Experience working on and delivering large-scale distributed systems in an Agile and/or waterfall manner, with the application of Test Driven Development and continuous integration knowledge. Experience in a multi-OS environment, including Unix, Linux, Microsoft Windows, involving application development and analysis. Experience leveraging Cloud services to accomplish tasks. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

Functional Responsibility: Responsible to create, test and code/programs, application software for enterprise systems in a Cloud environment. Under general supervision, work in teams to identify methods and concepts in response to client needs. Responsibilities will directly support creating, testing, debugging, and maintaining/implementing the source code that makes up the application or program. May also be responsible for designing the prototype application, indicate program unit structure, and coordinate application plans with the development team or client. Translates application requirements into cloud-based solutions using available technology. Applies new and emerging technologies to the software development process. Prepares reports, studies, and documentation delivers presentations and participates in meetings. Prepares Cloud-based system documents or specifications. May also supervise other Cloud application developers.

Minimum Education: Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Cloud Application Developer III

Minimum/General Experience: Four (4) years of experience in developing efficient application data processing systems. Experience working on and delivering large-scale distributed systems in an Agile and/or waterfall manner,
with the application of Test-Driven Development and continuous integration knowledge. Experience leveraging Cloud services to accomplish tasks. Experience in a multi-OS environment, including Unix, Linux, Microsoft Windows, involving application development and analysis. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Responsible to create, test and code/programs, application software for enterprise systems in a Cloud environment. Under limited supervision, work in teams to identify methods and concepts in response to client needs. Responsibilities will directly support creating, testing, debugging, and maintaining/implementing the source code that makes up the application or program. May also be responsible for designing the prototype application, indicate program unit structure, and coordinate application plans with the development team or client. Translates application requirements into cloud-based solutions using available technology. Applies new and emerging technologies to the software development process. Prepares reports, studies, and documentation delivers presentations and participates in meetings. Prepares Cloud-based system documents or specifications. May also supervise other Cloud application developers.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

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**Cloud Application Architect**

**Minimum/General Experience:** Four (4) years experience defining/articulating an architectural vision, conceptualizing architectural approaches, developing and validating the architecture and high-level solution design against business requirements, and guiding and mentoring development teams on methodologies, processes, and best practices. Experience leveraging Cloud services to accomplish tasks. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Responsible that the structure and behavior and interaction of Cloud-based applications and their functions are scalable, reliable, and manageable consistent with client requirements. With limited supervision, the Architect is responsible for defining and maintaining best practices for application engineering, component re-use, architecture design, and technical standards in a Cloud environment, while maintaining an awareness of new/emerging technologies and their potential application to existing business requirements. Plays an integral role in the needs assessment process in determining individual application needs and how each will interact within the greater systems architecture in the Cloud. Maintains a strong working knowledge of numerous technologies in order to provide a comprehensive approach to all of the client’s enterprise-level needs in the cloud environment. Develops coding standards and enforces adherence to them by all development team members. Works closely with project stakeholders to ensure that the chosen technologies meet the client's needs as they change. Uses a variety of technology solutions to integrate all applications utilized by the client to interact in the cloud.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

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**Cloud Application Release Manager I**

**Minimum/General Experience:** Four (4) years of experience in the end-to-end Release Management lifecycle which includes scheduling, coordinating, and the management of releases across the enterprise for multiple Cloud-based applications. The releases can be inclusive of application updates, operating system patches, security improvements, and/or hardware upgrades. Experience leveraging Cloud services to accomplish tasks. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.
**Functional Responsibility:** Under general supervision, define, implement, and managing release processes for the progression of code in the development, test, and production environments in the Cloud. Collaboratively work with all participants in software development projects to define calendar/schedules, risks readiness reviews, and project metrics to ensure successful projects. Work with release engineers to understand the impacts of branches and code merges. Coordinate Cloud-based release content and effort based on the service request backlog, pending service requests, third-party Cloud-based applications, or operating system updates. Maintain a release repository and manages key information such as build and release procedures, dependencies, and notification lists.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Cloud Application Release Manager II**

**Minimum/General Experience:** Six (6) years of experience in the end-to-end Release Management lifecycle which includes scheduling, coordinating, and the management of releases across the enterprise for multiple Cloud-based applications. The releases can be inclusive of application updates, operating system patches, security improvements, and/or hardware upgrades. Experience leveraging Cloud services to accomplish tasks. Experience includes consequential support of Enterprise Change and Configuration Boards. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Under limited supervision, define, implement, and managing release processes for the progression of code in the development, test, and production environments in the Cloud. Collaboratively work with all participants in software development projects to define calendar/schedules, risks readiness reviews, and project metrics to ensure successful projects. Work with release engineers to understand the impacts of branches and code merges. Coordinate Cloud-based release content and effort based on the service request backlog, pending service requests, third-party Cloud-based applications, or operating system updates. Maintain a release repository and manages key information such as build and release procedures, dependencies, and notification lists.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline

**Cloud Business Analyst**

**Minimum/General Experience:** One (1) year experience in the development of functional and business requirements, problem identification, analysis, and resolution methodologies. Works under immediate supervision. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Support planning, analysis, and design of business systems in a Cloud environment (i.e. by leveraging Cloud services). With team members, analyze and document business processes, manage change requests, document operational procedures and issues. Performs analysis and translates business needs to create high-quality Business Requirements within specified time frames to solve complex problems taking into consideration all impacted components from an end-to-end perspective. Develops Product Overviews, FAQs, Tool Glossaries, system training material, and system user documentation to support Cloud-based implementation activities. Conducts impact analysis of technology changes on business processes and existing Cloud technology.

**Minimum Education:** Associates degree in a technical discipline.

**Cloud Business Analyst II**
**Minimum/General Experience:** Two (2) years of experience in the development of functional and business requirements, problem identification, analysis, and resolution methodologies. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Responsible to support planning, analysis, and design of business systems in a Cloud environment (i.e. by leveraging Cloud services). With team members, analyze and document business processes, manage change requests, document operational procedures and issues. Performs analysis and translates business needs to create high-quality Business Requirements within specified time frames to solve complex problems taking into consideration all impacted components from an end-to-end perspective. Develops Product Overviews, FAQs, Tool Glossaries, system training material, and system user documentation to support Cloud-based implementation activities. Conducts impact analysis of technology changes on business processes and existing Cloud technology.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline

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**Cloud Business Analyst III**

**Minimum/General Experience:** Three (3) years of experience in the development of functional and business requirements, problem identification, analysis, and resolution methodologies. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Accountable for planning, analysis, and design of business systems in a Cloud environment (i.e. by leveraging Cloud services). Analyze and document business processes, manage change requests, document operational procedures and issues. Performs analysis and translates business needs to create high-quality Business Requirements within specified time frames to solve complex problems taking into consideration all impacted components from an end-to-end perspective. Develops Product Overviews, FAQs, Tool Glossaries, system training material, and system user documentation to support Cloud-based implementation activities. Conducts impact analysis of technology changes on business processes and existing Cloud technology.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

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**Cloud Tech Writer II**

**Minimum/General Experience:** Four (4) years of demonstrated topic-based authoring experience of technical manuals and or technical documentation of moderate complexity. Able to work effectively across teams and organizations. Previous experience using RoboHelp, Framemaker, AuthorIT, or other documentation systems as may be required. Experience documenting solutions in a Cloud environment is required. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Responsible to conduct technical research with respect to Cloud-based services and technologies. Translates technical information for technical and non-technical users in web and hardcopy formats. Edits and/or reformats copy and ensures documentation complies with corporate standards and follows established guidelines for the organization, design, and delivery of work products. May also maintain a repository/library. Assist in collecting and organizing information for the preparation of user manuals, training materials, installation guides, proposals, and reports of Cloud-based IT applications.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.
Cloud Technical Architect

**Minimum/General Experience:** Four (4) years of experience leading or supporting teams that produce technical specifications for custom development and systems integration requirements. Experience designing solutions leveraging Cloud technologies and services. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Responsible for the overall technical design and build of the custom elements of the solution in a Cloud environment. Produce detailed technical designs to meet the solution design specifications and requirements that comply with applicable Federal security, accessibility, and other standards. May complete/oversee the custom development projects and associated quality assurance efforts. Responsible for creating Cloud technology road-maps and defining/technical plans for the client’s system solution. Operates in a cloud environment and supports cloud solutions.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Cloud Systems Administrator I

**Minimum/General Experience:** Four (4) years of experience provisioning, configuring, installing, and successful operation, and maintenance of IT systems hardware, network resources, and/or software and related infrastructure. Experience leveraging Cloud services to accomplish tasks. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Responsibilities may include regular system and/or security monitoring, verifying the integrity and availability of all IT or network resources and key processes in a Cloud environment. The Systems Administrator may review system and application logs, and perform/verify completion of scheduled jobs (e.g. backups). May create, change, and delete user accounts per request and provide Tier II support, investigate and troubleshoot issues. Maintains data files and monitors Cloud-based system configuration to ensure data integrity. Provides support for the escalation and communication of status to agency management and internal customers. Upgrade, monitor, troubleshoot, and implement IT applications in a Cloud environment.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Cloud Project Manager II

**Minimum/General Experience:** Five (5) years of progressive technical or managerial experience in information resources management. At least four (4) years of experience within the last three (3) years occupying a project manager position in the IT or information resources management field. Experience managing service delivery in a Cloud environment. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Accountable for providing on-time delivery of client staff utilization, financial and other status reports as defined by the contract. Shall be capable of managing a large team of professionals in providing a wide range of services and managing assigned projects within scope and budget in a Cloud environment. Oversee and provide technical and managerial direction to contract support staff for contract monitoring and complex system development activities involving multiple technologies in a Cloud environment. Help recruit and allocate contract resources on contract to be consistent with workload, funding; ensure that all work performed is in compliance with all industry and Federal standards. Act as point of contact for support staff and the client.

**Minimum Education:** Bachelor’s degree in a technical discipline.
Cloud Systems Scientist II

**Minimum/General Experience:** Minimum of six (6) years of experience, of which four (4) years must be specialized. Specialized experience may include the following: lifecycle IT engineering project development from inception to deployment, in a Cloud environment. Demonstrated ability to provide strategic and tactical technical guidance and direction in multiple tasks across several functional areas and including the use of different technologies. Expertise in applying diverse Cloud database, information, telecommunications, or related engineering technologies to develop and deploy integrated systems. Skilled in managing and control of funds and resources, demonstrated ability in managing complex multi-task contracts. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Responsible for the technical aspects of a program or project in a Cloud environment. Provides effective management of assigned resources. Operates within client guidance, contractual limitations, and Company/Client business and policy directives. Serves as the technical focal point of contact with the client on program activities. For project management roles, ensures that all required resources including manpower, production standards, computer time, and facilities are available for program implementation. Act as the program manager, manages program consisting of multiple projects including project identification, design, development, and delivery. May also lead or support in contract negotiations. Provides technical advice to program managers, project leads, and the client to resolve complex technical issues in the Cloud environment. Conducts complex technical investigations through advanced research techniques, analysis, or development phases of Cloud-based IT applications.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Cloud Software Scientist II

**Minimum/General Experience:** Minimum of six (6) years of experience, of which four (4) years must be specialized in developing enterprise application data processing systems. Experience developing coding, testing, and delivering large-scale distributed systems in Agile and/or waterfall methodologies, with the application of Test Driven Development and continuous integration knowledge. Specialized in-depth experience in security software, financial or business systems, physical or network monitoring, Cloud delivery models, or COTS product implementations. Experience in a multi-OS environment, including Unix, Linux, Microsoft Windows, involving Cloud-based application development and analysis. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Responsible to create, test and code/programs, application software for enterprise systems in a Cloud environment. Under limited supervision, work in teams to identify methods and concepts in response to client needs. Supports creating, testing, debugging, and maintaining/implementing the source code in Cloud-based IT applications or programs. May also be responsible for designing the prototype application, and coordinate application plans with the development team or client. Analyzes, evaluates, and plans method of approach and organizes means to achieve the solution of complex problems in Cloud environment.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Cloud Business Analyst IV

**Minimum/General Experience:** Minimum five (5) years of experience in applications, Cloud database, and systems development activities. At least five (5) years of experience in the development of functional and business requirements, problem identification, analysis, and resolution methodologies. Experience leveraging Cloud services
to accomplish tasks. Familiar with standard concepts, practices, and procedures of Cloud technology, including
Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Accountable for planning, analysis, and design of business systems, leveraging Cloud
services. Develop, analyze, and documents business processes, systems requirements, manage change requests,
document operational procedures and issues. Performs analysis and translates business needs to create high-quality
Business Requirements within specified time frames to solve complex problems taking into consideration all
impacted components from an end-to-end perspective. Develops Product Overviews, FAQs, Tool Glossaries,
system training material, and system user documentation to support Cloud-based implementation activities.
Conducts impact analysis of technology changes on business processes and existing Cloud technology.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other
related scientific or technical discipline.

**Cloud Quality Specialist I**

**Minimum/General Experience:** Must have at least four (4) years of experience of which two (2) years must be
specialized. Specialized experience includes Configuration Management, IV&V, software testing and integration,
software metrics, and their application to software quality assessment. General experience includes increasing
responsibilities in quality assurance, quality control, validation, and verification. Experience leveraging Cloud
services to accomplish tasks. Familiar with standard concepts, practices, and procedures of Cloud technology,
including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data
as a Service (DaaS), etc.

**Functional Responsibility:** Assists in the evaluation of software, systems, and associated documentation in a Cloud
environment. Participates in formal and informal reviews to determine quality; presents IV&V results and
troubleshoots technical problems; makes recommendations to improve overall quality. Implements quality
methodologies to ensure compliance with standards, guidelines, and procedures and establish and maintains a
process for evaluating deliverables of IT applications in a Cloud environment. Performs quality control review or
data entry of Cloud-based software.

**Minimum Education:** Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other
related disciplines.

**Cloud Graphics Designer I**

**Minimum/General Experience:** Requires at least five (5) years of directly related experience in graphics design.
Knowledge of the associated graphics design software applications in a Cloud environment. Demonstrated
knowledge in the principles, methods, and techniques used in the preparation of graphics materials. Familiar with
standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform
as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Performs diverse graphics/illustration activities to produce brochures, briefings,
displays, and other materials with respect to Cloud-based application capabilities. Prepares charts, graphs, two and
three-dimensional drawings from rough sketches, models, written or verbal directions, and/or engineering drawings
for IT applications in the cloud environment. Involve in all aspects of graphics/illustration projects from
conceptualization and development to final presentation; may act as a technical consultant on matters of design,
composition, and methods of presenting technical data; uses a broad range of graphics production software and
equipment; exercises creative judgment and originality by translating needs into graphics capabilities; may
participate in website design.

**Minimum Education:** Associates Degree or certificate from a recognized technical institution.

**Cloud Training Specialist I**
Minimum/General Experience:  Five (5) years of business and/or technical course development and stand-up instruction experience in the classroom or webinar format. Experience leveraging Cloud services to accomplish tasks. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

Functional Responsibility: Develops and provides lesson plans, course outlines, and classroom materials to support presentations and/or instruction on business and technical subject matter, specifically with respect to Cloud-based solutions. Provides stand-up course instruction as well as develops supporting curriculum materials. Analyzes training needs within the context of the project’s structure and goals. Designs and implements Cloud-based training programs to better utilize and train personnel. Will use a variety of data collection strategies to develop training programs and materials to meet specific training needs.

Minimum Education: Bachelor’s degree in Computer Science, Information Systems, Engineering, Business, or other related disciplines.

Cloud Application Engineer I

Minimum/General Experience:  Four (4) years of experience in developing efficient application data processing systems. Experience working on and delivering large-scale distributed systems in an Agile and/or waterfall manner, with Cloud-based applications of Test Driven Development and continuous integration knowledge. Experience leveraging Cloud services to accomplish tasks. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

Functional Responsibility: Participates in the development of modernized software applications in Cloud environments. Development experience with Internet developer and application tools including emerging technology. Performs the development and/or programming, and implementation of information processing systems and applications that use current operating systems, programming languages, and applications development tools, computer systems, multi-programming technology, Cloud database management techniques, and data communications protocol. Can work independently in support of a joint applications development effort. Responsible for writing application software, data manipulation, Cloud databases programming, testing and implementation, technical and user documentation, software conversions.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Cloud Application Engineer II

Minimum/General Experience:  Six (6) years of experience in developing efficient application data processing systems. Experience working on and delivering large-scale distributed systems in an Agile and/or waterfall manner, with the application of Test Driven Development and continuous integration knowledge. Experience in a multi-OS Cloud environment, including Unix, Linux, Microsoft Windows, involving application development and analysis. Experience leveraging Cloud services to accomplish tasks. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

Functional Responsibility: Directs and participates in the development of modernized software applications in Cloud environments. Development experience with Internet developer and applicator tools including emerging technology. Performs the development and/or programming, and implementation of information processing systems and applications that use current operating systems, programming languages, and applications development tools, computer systems, multi-programming technology, Cloud database management techniques, and data communications protocol. Can work independently in support of a joint applications development effort. Responsible for writing application software, data manipulation, Cloud databases programming, testing and implementation, technical and user documentation, software conversions. Possesses expertise in a variety of
software, hardware, and network engineering concepts, practices, procedures, tools, programming languages, technologies, and operating systems related to IT. Possesses strong knowledge of Cloud database concepts.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Cloud Application Programmer**

**Minimum/General Experience:** At least four (4) years of experience developing Cloud-based web applications using web frameworks consuming RESTful/SOAP APIs. Experience in cloud Oriented Architecture/Service integration with Web Services, EJB, REST, and security integration and proficiency in scripting languages. Experience leveraging Cloud services to accomplish tasks. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Write code for programs used in computers and other electronic devices, to be implemented in a Cloud environment. Create software applications by writing error-free, maintainable, and scalable code. Test, evaluate, modify, and improve applications to make them easy for usage. Interact with clients to find out their needs, preparing outlines for application programming and training manuals, specify technical specifications for new projects, and training application users. Analyzes business or scientific problems for resolution through electronic data processing. Gathers information from users, defines work problems, and, if feasible, designs a system of computer programs and procedures to resolve the problems. Develops complete specifications or enable Computer Programmers to prepare required programs; analyzes subject-matter operations to be automated; specifies number and types of records, files, and documents to be used and outputs to be produced; prepares work diagrams and data flow charts; coordinates tests of the system and participates in trial runs of new and revised systems, and recommends computer equipment changes to obtain more effective operations. Provides development services for moderately complex applications using standard approaches or less complex systems using new approaches. Works on a segment of a complex data processing scheme or broad system.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Cloud BI/ETL Developer**

**Minimum/General Experience:** Must have a strong background in software engineering principles and techniques. Must have a minimum of 3 years of experience in BI and Data Warehouse. Experience leveraging Cloud services to accomplish tasks. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Analyzing product, market, and share trends to build warehouse data in a Cloud environment. Translating business needs into technical specifications. Developing reporting systems that provide accessible information for decision-making. Using warehouse data to generate reports to support business decision-making and business performance monitoring. Identify and document Cloud data migration paths and processes. Develop and perform standard queries to ensure data quality, identify data inconsistencies, missing data, and resolve as needed. Perform data extraction, storage, manipulation, processing, analysis in a Cloud environment. Maintaining data analytics platforms. Evaluating and improving existing BI systems. Conducting troubleshooting on BI models. Generating and delivering quality reports to customers and performing quality assurance checks on reports.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Cloud Business Analyst/ Tester**
**Minimum/General Experience:** Three (3) years of experience as an analyst/tester on software projects in supporting requirement analysis, application test script development, and execution. Two (2) years of experience in mapping the business and technical requirements into test cases and generate test scripts. Practical experience in using relational Cloud databases and generating SQL scripts is required. Experience leveraging Cloud services to accomplish tasks. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Within a Cloud environment, and leveraging Cloud services, assembles, prepares, and analyzes data for studies, statistical models, evaluations, system requirements, and other needs. Uses technical discretion within defined practices and policies in selecting methods and techniques for determining approaches or obtaining solutions. Implement and manage Cloud-based data platform controls to enable compliance. Provides technical advice and operating assistance in interpreting results. Provides input or may prepare technical reports based on the expert interpretation of analyzed data. Knowledge in manual or automation testing.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

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**Cloud Computer Programmer**

**Minimum/General Experience:** At least four (4) years of software development experience. Experience leveraging Cloud services to accomplish tasks. Familiar with standard concepts, practices, and procedures of Cloud-based technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Performs routine programming assignments that require knowledge of established programming procedures and data processing requirements in a Cloud environment. Works according to clear-cut and complete specifications. Analyze business applications and design specifications. Translate detailed design into computer software. Test, debug, and refine the computer software to produce the required product in a Cloud environment. The data are refined, and the format of the final product is very similar to that of the input or is well defined when significantly different, i.e., there are few, if any, problems with interrelating varied records and outputs. The Cloud computer Programmer maintains and modifies routine programs, makes approved changes by amending program flow charts, developing detailed processing logic, and coding changes, tests and document modifications, and writes operator instructions, may write routine new programs using prescribed specifications.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

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**Cloud Computer Systems Analyst I**

**Minimum/General Experience:** Four (4) years of specialized experience in the analysis and design of business applications on complex, large-scale systems, including three (3) years of experience in database management concepts. Experience leveraging Cloud services to accomplish tasks. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Within a Cloud environment, and leveraging Cloud-based services, works independently or under only general direction on complex application problems involving all phases of systems analysis to provide resolutions. Assists in evaluating and determining client requirements. Provides technical and administrative direction for personnel performing software development tasks, including the review of work products for correctness, adherence to the design concept and user standards, and for progress in accordance with schedules. Responsible for planning and designing hardware and software. Monitors the performance of systems in a Cloud environment. Coordinates with the Project Manager to ensure problem solution and user satisfaction. Makes recommendations, if needed, for approval of major systems installations. Planning and engineering of an organization’s cloud computing infrastructure and applications. Prepares milestone status reports and
deliveries/presentations on the system concept to colleagues, subordinates, and end-user representatives. Provides technical direction to lower-level systems analysts.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Cloud Configuration Engineer**

**Minimum/General Experience:** At least five (5) years of experience managing diverse DevOps workloads, across infrastructure, administration, deployment, development support, and monitoring. Experience leveraging Cloud services to accomplish tasks. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Within a Cloud environment, and leveraging Cloud-based services, develop, document, and implement detailed plans for ensuring configuration control for IT programs, projects, and tasks. When issues arise, is able to identify and implement solutions. Develops, analyzes, and maintains tools that support and automate processes for hardware and software product releases. Functionally and technically proficient in implementing modern best practices and design, test, document and deliver cloud-based applications. Maintain thorough records and documentation to ensure accurate product builds, part ordering, and product and/or software updates.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Cloud Data Analyst/Tester**

**Minimum/General Experience:** Five (5) years of experience as an analyst/tester on software projects in supporting requirement analysis, application test script development, and execution. Five (5) years of experience in mapping the business and technical requirements into test cases and generate test scripts. Experience leveraging Cloud services to accomplish tasks. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Within a Cloud environment, and leveraging Cloud-based services, develops requirements for information systems for software projects. Develops required specifications for simple to moderately complex systems. Must be able to design and prepare all needed test data. Implement and manage Cloud-based data platform controls to enable compliance. Review’s test results and evaluates for conformance to design. The candidate should be able to develop and document test cases, testing plans, and procedures. Performs manual or automation testing on Cloud databases.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Cloud Data Architect**

**Minimum/General Experience:** At least ten (10) years of experience in architecting solutions with expertise in planning, designing, building, and implementing IT application modernization/implementation effort. Must have a strong background in software engineering principles and techniques. Experience leveraging Cloud services to accomplish tasks. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Responsible for performing moderate to high-level design of enterprise application systems in a Cloud environment. Establishes the basic structure of the system, defines essential core design features
and elements that provide the framework. Works with systems users in the identification and resolution of user problems and concerns for complex projects. Design and develop scalable cloud-based data ingestion frameworks to transform a variety of datasets. Performs cost-benefit analyses to determine whether requirements are best met by manual, software, or hardware functions. Generates a set of acceptance test requirements for complex systems.

Designs and builds relational or NoSQL Cloud databases. Develops strategies for data acquisitions, archive recovery, and implementation of a Cloud database. Works in a data warehouse environment, which includes data design, Cloud database architecture, metadata, and repository creation. Translates business needs into long-term architecture solutions. Defines, designs, and builds dimensional Cloud databases. Perform Cloud database administration tasks. Develops data warehousing blueprints, evaluating hardware and software platforms, and integrating systems. Evaluates reusability of current data for additional analyses. Reviews object and data models and the metadata.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Cloud Data Engineer

Minimum/General Experience: At least eight (8) years of experience in developing Cloud-based multi-user applications with expertise in designing, building, testing, and implementing Cloud-based IT applications. Must have a strong background in software engineering principles and techniques. Experience engineering solutions within a Cloud environment. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

Functional Responsibility: Provides design recommendations based on long-term IT organization strategy in a Cloud environment. Develops enterprise-level application and custom integration solutions including major enhancements and interfaces, functions, and features. Uses a variety of platforms including Cloud, on-premises, and hybrid to provide automated systems applications to customers. Provides expertise regarding the integration of applications across the business. Determines specifications, then plans, designs, and develops the most complex Cloud-based business-critical software solutions, utilizing appropriate software engineering processes – either individually or in concert with a project team. Will assist in the most difficult support problems. Develops programming and development standards and procedures as well as programming architectures for code reuse. Has in-depth knowledge of state-of-the-art programming languages and object-oriented approach in designing, coding, testing, and debugging programs in a Cloud environment. Understands and consistently applies the attributes and processes of current application development methodologies. Researches and maintains knowledge in emerging technologies and possible applications to the business.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Cloud Data Modeler

Minimum/General Experience: At least six (6) years of experience with data modeling and design. Must have a strong background in software engineering principles and techniques. Extensive experience with Relational Cloud database systems and data modeling. Experience leveraging Cloud services to accomplish tasks. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

Functional Responsibility: Within a Cloud environment, engages in translating business requirements into conceptual, logical, and physical data models. Designs and implements scalable data models for large Cloud-based enterprise applications. Interviews end-users and other key stakeholders to understand all the data architecture global and non-functional requirements and designs the data models and Cloud databases accordingly. Provide technical design to cloud business solutions direct developers and test the modules. Participates as an active team
member to design, maintain, and optimize Cloud database-driven applications. Evaluates new data sources for
adherence to the organization's quality standards and ease of integration.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science,
Information Systems, Engineering, Business, or other related scientific or technical discipline.

Cloud Data Scientist

Minimum/General Experience: At least four (4) years of experience in Service Oriented Architecture/Service
integration with Web Services, REST, and security integration. At least three (3) years of experience in big data
environments. At least two (2) years of experience in working, defining, maintaining architectural frameworks,
patterns & data structures. Experience leveraging Cloud services to accomplish tasks. Familiar with standard
concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as
Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

Functional Responsibility: Within a Cloud environment, perform data analysis and modeling, trend analysis,
and product impact analysis. Identify trends and relationships within the data. Perform testing to confirm data reliability
and validity. Conduct Cloud data analysis using a variety of tools to query major databases. Assist in the evaluation
and approval of cloud data for validity. Assist with mining Cloud data from primary and secondary sources and
reorganizing data into formats that can be easily read by either human or machine. Use statistical tools to interpret
Cloud data sets, paying attention to trends and patterns that could be valuable for analytics efforts. Design surveys,
questionnaires, experiments, and opinion polls, and other data collection methods. Present the data analysis findings
in written reports, tables, charts, and graphs, as required. Experienced with non-relational Cloud databases.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science,
Information Systems, Engineering, Business, or other related scientific or technical discipline.

Cloud Database Management Specialist

Minimum/General Experience: At least eight (8) years of experience in administering multi-user environments with
expertise in planning, designing, building, and implementing complex Cloud database systems. Experience
leveraging Cloud services to accomplish tasks. Familiar with standard concepts, practices, and procedures of Cloud
technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service
(IaaS), or Data as a Service (DaaS), etc.

Functional Responsibility: Provides expertise and guidance in the use of Cloud database management systems in a
Cloud environment. Designs, implements, and maintains Cloud databases with respect to access methods and time,
device allocation, validation checks, file organization, indexing methods, protection and security, documentation,
guidelines, and statistical methods. Managing Cloud data cleanup projects such as maintaining Service Provider
records, merging duplicate accounts, and monitoring various cloud data points to ensure accurate record-keeping
and outcomes. Summarize large amounts of information into concise deliverables. Establishes procedures for
operations of the Cloud database and Cloud database management systems. Collects data elements and prepares
Cloud database specifications. Develops, maintains, and controls the data dictionary. May include experience with
Cloud database systems such as MS SQL Server, DB2, Sybase, Oracle, and Informix. May function as the team
leader and provide direction to less experienced Cloud database programmers/analysts.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science,
Information Systems, Engineering, Business, or other related scientific or technical discipline.

Cloud Information Engineer

Minimum/General Experience: At least six (6) years of experience in developing multi-user applications with
expertise in designing, building, testing, and implementing Cloud-based IT applications. Must have a strong
background in software engineering principles and techniques. Experience engineering solutions within a Cloud
environment. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software
as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Within a Cloud environment, applies an enterprise-wide set of disciplines for the planning, analysis, design, and construction of information systems on an enterprise-wide basis or across a major sector of the enterprise. Build a new cloud-based data center services environment for cloud initiatives. Assist with identifying and planning potential new cloud services, features, and capabilities. Develops analytical and computational techniques and methodology for problem solutions. Performs cloud-based enterprise strategic systems planning, business information planning, and business analysis. Performs process and data modeling in support of the planning and analysis efforts using both manual and automated tools. Applies reverse engineering and reengineering disciplines to develop Cloud migration and planning documents. Provides technical guidance in software engineering techniques and automated support tools.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

### Cloud Infrastructure Engineer

**Minimum/General Experience:** At least ten (10) years of working experience with Linux and Windows operating systems as well as networking. At least five (5) years of experience designing, configuring, installing, and managing infrastructure in large and small Cloud-based environments. Experience engineering solutions within a Cloud environment. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Provide leadership for all design, implementation, and maintenance activities related to Cloud-based IT infrastructure. Create, optimize, and continuously evaluate security monitoring content and define and update dashboards, reports, and alerts. Design and create new detection techniques and improve existing ones. Identify gaps in existing security capabilities. Review integration and regression test plans created by QA. Communicate with QA and porting engineering as necessary to discuss minor changes to product functionality and to ensure quality and consistency across specific products. Recommend and assist in technology evaluations and implementations to close the gaps. Plan and lead large Cloud-based security projects and initiatives. Work with all areas of information services, business units, and other partners on enterprise-scale projects and initiatives. Responsible for the management, advanced configuration, monitoring, and log analysis of Cloud-based network infrastructure.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

### Cloud Integration Developer

**Minimum/General Experience:** At least seven (7) years of experience in designing and developing applications, knowledge of Data Mapping, Exception Handling, and integration of sources in an enterprise environment. Must have knowledge in designing and developing Source-to-Target mappings using ETL programming languages and tools. Experience engineering solutions within a Cloud environment. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Responsible for the development and integration of Cloud-based IT Systems and Subsystems in a Cloud environment. Provides support in the creation of strategies and plans for integration of multiple Cloud-based IT Systems and subsystems into an operational unit, ensuring full functional and performance capabilities are retained. Develops solutions based on the cloud architecture effectively integrating new solutions into existing services and deliverables according to the software development life cycle such as requirements, functional and technical specifications, use cases, and system documentation. Helps to translate business and functional requirements into documented technical specifications. Develops cloud-based solution code and interfaces, writes unit tests when implementing deliverables against user acceptance tests. When required,
introduces new hardware or software into a new or existing environment while minimizing disruption and mitigating risks.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

### Cloud Middleware Engineer

**Minimum/General Experience:** At least six (6) years of experience in developing software applications focusing on middleware integration or support. Experience engineering solutions within a Cloud environment. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Within a Cloud environment, analyze and develop technology solutions based on customer requirements. Build and implement middleware products to meet business demands. Work with Developers and Architects in developing middleware configurations based on requirements. Identify and apply innovative technologies to update existing middleware. Analyzes monitoring results to produce recommendations for improving system performance and operational efficiency in a Cloud environment. Create and maintain documentation for middleware installations, changes, and upgrades. Train Junior Engineers on middleware updates and new installations. Coordinate with vendors and support team on problem resolution, design issues, and upgrades. Perform troubleshooting, incident response, and patching in a timely manner. Develops scripts to automate systems administration and monitoring activities. Troubleshoot and resolve technical problems in a timely and accurate manner to improve application performance and functionality in a Cloud environment. Develop and implement strategies for migration, consolidation, and upgrade of middleware components. Evaluate system architecture and make recommendations as required. Develop and implement standard processes for installation, maintenance, and enhancement of Cloud-based middleware applications.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

### Cloud Network Engineer

**Minimum/General Experience:** At least eight (8) years of experience in network management and operations. Experience working with Software Firewall Appliances, network architecture, and design of widely distributed networks and operations. Experience engineering solutions within a Cloud environment. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Within a Cloud or hybrid environment, plans, supports and evaluates complex existing network systems and make recommendations for resources required to maintain and/or expand service levels. This resource will provide highly skilled technical assistance in network planning, engineering, and architecture. Also provides and develops technical standards and interface applications in a Cloud environment. Identifies and evaluates new products; provides solutions for network problems. Interfaces with internal/external customers and vendors to determine system needs. Plans and incorporates how new network resources and applications will exist on the network. Provide monthly metrics for Cloud network availability and bandwidth usage as well as other metrics as requested. Responsible for network capacity planning. Use network management tools to discover, map, and maintain the network. Responsible for network equipment OS and version upgrades in a Cloud environment. Responsible for conducting research on new technologies and implementation strategies. Monitor and maintain Cloud network interfaces to ensure its highest level of performance and makes modifications and enhancements as needed. Responsible for documenting procedures and keeping network diagrams and related material up to date. Handle escalated user problems, questions, and requests on network issues. Work with other groups within Information Systems to resolve network-related issues as needed. Leads and directs work of other Network Engineers. Provides guidance and supervision to daily support staff.
Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Cloud Operations Analyst I

Minimum/General Experience: Minimum of two (2) years of experience in the role of operations analyst. Experience accomplishing tasks within a Cloud environment. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

Functional Responsibility: Analyzes Cloud-based IT application operations and maintains/monitors the production schedule. Analyzes production-related problems and co-ordinates with application teams to resolve the issues. Notify the operations management team of any schedule delays. Ensures Cloud system resources are used effectively. Prepares reports by collecting, analyzing, and summarizing information. Recommend and update policies and procedures to improve performance. Monitor all cloud-based components to ensure high availability and meet or exceed customer Service Level Agreements. Provide solutions to application teams to resolve operational issues.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Cloud Operations Analyst II

Minimum/General Experience: Minimum of four (4) years experience in the role of operations analyst. Experience accomplishing tasks within a Cloud environment. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

Functional Responsibility: Analyzes cloud-based IT application operations and maintains/monitors the production schedule. Analyzes production-related problems and co-ordinates with application teams to resolve the issues. Notify the operations management team of any schedule delays. Ensures Cloud system resources are used effectively. Prepares reports by collecting, analyzing, and summarizing information. Recommend and update policies and procedures to improve performance. Monitor all cloud-based components to ensure high availability and meet or exceed customer Service Level Agreements. Provide solutions to application teams to resolve operational issues.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Cloud Penetration Tester

Minimum/General Experience: At least six (6) years of cloud-based application/network security testing experience. Experience accomplishing tasks within a Cloud environment. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

Functional Responsibility: Within a Cloud or hybrid environment, responsible for detecting threats and vulnerabilities in target systems, networks, and applications by conducting systems, network, and web penetration testing. Identifies flaws and weaknesses in the Cloud-based systems that can be exploited to cause business risk, and provides crucial insights into the most pressing issues, suggesting how to prioritize security resources. Can solve more complex problems with minimal supervision. Identify security gaps in cloud infrastructure and provide with actionable guidance for remediating the vulnerabilities and improving cloud security.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.
Cloud IT Product Specialist

**Minimum/General Experience:** At least six (6) years of experience designing, building, and implementing software products in a Cloud-based IT application environment. Must have a strong background in software engineering principles and techniques. Experience accomplishing tasks within a Cloud environment. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Providing professional support services and/or the integration of their respective software products or Cloud services within a Cloud environment. Implement the products based on best practices. Obtain customer feedback and suggest appropriate product revisions/upgrades. Coordinate with application team on usage and integration of the products in the Cloud. Assists in new cloud-based product introduction and release activities. Coordinates with product vendor and recommend product enhancements and updates. Address product-related issues in the Cloud in a timely fashion to ensure customer satisfaction.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Cloud Program Manager

**Minimum/General Experience:** Eight (8) years of experience in developing cloud-based software applications. Experience working on and delivering large-scale distributed systems in an Agile and/or waterfall manner. Experience accomplishing tasks within a Cloud environment. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** For a program operating within a Cloud or hybrid environment, accountable for managing the program team and daily operations of program development and helping to ensure client comfort and feasibility with the designed solution. Other experience includes communication with client and program managers and management of multiple programs across various industry lines. Manages overall project activities including application design, development, and operations in Cloud and is the primary point of contact with client executives. Also helps in testing, debugging, and refining computer software from time to time. Enhances software to reduce operating time or improve efficiency in a Cloud environment.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Cloud Release Engineer

**Minimum/General Experience:** At least four (4) years of experience managing diverse cloud-based operations workloads, across infrastructure, administration, deployment, development support, and monitoring. Experience accomplishing tasks within a Cloud environment. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Responsible for the Release Management lifecycle for Cloud-based IT programs. Responsible for scheduling, coordinating, and the management of releases across the enterprise for multiple cloud-based applications across various Portfolios. The releases can be inclusive of application updates, operating system patches, security improvements, hardware upgrades, Projects, and Programs in the Cloud. Where necessary, provides tools and services to help product management and project teams manage and deploy releases into production. Responsible for implementing and managing release processes for the progression of code in the development, test, and production environments in the Cloud. The Release Manager Job function works collaboratively with all participants in software development projects and is supportive of developers and testers as they set up their build dev./test environments in the Cloud. This position also works with IT management to improve
the software engineering processes and practices associated with continuously building, deploying, and updating software and environments in the Cloud.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

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**Cloud IT Security Analyst**

**Minimum/General Experience:** A minimum of three (3) years of experience in analyzing and defining security requirements for large and mission-critical Cloud-based IT applications. A minimum of two (2) years performing day-to-day security operations functions including administration, troubleshooting, and resolution of various Cloud-based security components. Experience accomplishing tasks within a Cloud environment. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Gathers and interprets data and performs technical analysis of security operations in the Cloud. Assess procedures necessary to ensure the safety of information, systems assets and to protect systems from intentional or inadvertent access or destruction. Interfaces with the user community to conduct an accurate evaluation of the level of security required and implements procedures to accommodate them. Analyzes security plans for employing enterprise-wide Cloud security architecture. Provides security engineering support for Cloud-based application development (including system security certifications and project evaluations). This may include the development, design, and implementation of firewalls, and evaluation, review, and test of security code. Work in different security architectures and platforms in an integrated environment. Contribute as Subject Matter Expert in securing and assessing cloud-based solutions including IAAS, PAAS, SAAS, and secure integration of on-premises systems with cloud services.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

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**Cloud Software Developer**

**Minimum/General Experience:** At least six (6) years of experience in designing and developing Cloud-based software applications. Experience with code reviews, frameworks, and enterprise Cloud architecture. Experience accomplishing tasks within a Cloud environment. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Under general direction, participates as a high-level technical expert in design development, coding, testing, and debugging new software or significant enhancements to existing software in a Cloud environment. Works with technical staff to understand problems with cloud-based software and develops specifications to resolve them. Resolves customer complaints and responds to suggestions for improvements and enhancements. Participates in the development of Cloud-based software user manuals. May act as team leader on less complex projects. Assists in training less-experienced software development staff in a Cloud environment.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

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**Cloud Subject Matter Expert**

**Minimum/General Experience:** Eight (8) years of experience in the specific functional area. Experience designing and engineering solutions within a Cloud environment. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Within a Cloud environment, provides advanced technical knowledge and expertise for analysis of highly specialized applications and operational environment, high-level functional systems analysis,
design, integration, documentation, training, and implementation advice on complex problems which would require expert-level knowledge of the subject matter for effective implementation. Recognized in the professional community as an "expert" in the technical/domain-specific knowledge areas being addressed. Advise clients on the impact of new legislation or new Cloud-based technologies and confers with client executive management using the line of business expertise to define the client's strategic information technology business goals and advises in the reengineering of Cloud-based business processes to meet these goals. Assist client in developing strategic plans and concepts. Demonstrate exceptional oral and written communication skills.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

### Cloud Systems Administrator II

**Minimum/General Experience:** Five (5) years of experience provisioning, configuring, installing, and successful operation, and maintenance of Cloud-based IT systems hardware, network resources, and/or software and related infrastructure. Experience accomplishing tasks within a Cloud environment. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Provides technical support for implementation, administration, troubleshooting, and maintenance of Cloud-based IT systems and services. Manages Cloud-based IT system infrastructure and processes related to these systems. Provides support to Cloud-based 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 in the Cloud environment. Provides support for the dispatch system and hardware problems and remains involved in the resolution process. Provides support for the escalation and communication of status to agency management and internal customers. Upgrade, monitor, troubleshoot, and implement IT applications in a Cloud environment.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

### Cloud Systems Architect

**Minimum/General Experience:** Two (4) years of experience defining/articulating an architectural vision, conceptualizing architectural approaches, developing, and validating the architecture and high-level solution design against business requirements, and guiding and mentoring development teams on methodologies, processes, and best practices in a Cloud environment. Experience designing solutions within a Cloud environment. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Leads the analysis, assessment, and formulation of large-scale Cloud-based software system architecture. Provides leadership and guidance in software architecture, system designs, implementation planning, and software lifecycle strategies in the Cloud. Provide guidance in leveraging the best available technology to derive software systems. Manages complex Cloud-based software development programs by utilizing the latest technology in configuration management, software reusability, data flow control, and resource management. Oversees and validates Cloud-based systems testing in order to ensure intended software functionality, performance, and operations requirements are met. Estimates software development costs and schedule. Responsible for establishing system architecture requirements using analysis of the engineers in the development of enterprise-wide or large-scale Cloud-based information systems. Designs Cloud architecture to include the software, hardware, and communications to support the total requirements as well as provide for cross-functional requirements and interfaces. Ensures systems are compatible and in compliance with the standards for systems architecture. Evaluates problems of workflow, organization, and planning, and develop appropriate corrective action. Provide guidance in incorporating Cloud best practices as part of overall solution architecture.
Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Cloud Systems Engineer

Minimum/General Experience: A minimum of eight (8) years of experience in Cloud-based System administration and development experience. At least five (5) years of experience working with design and implementation of Cloud-based systems and applications. Experience engineering solutions within a Cloud environment. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

Functional Responsibility: Participates in all phases of computer operating/hardware systems engineering in a Cloud environment, including design, analysis, and modeling at a highly technical level. Analyzes complex computer software / Cloud services requirements to provide integration and implementation support within IT systems and/or cybersecurity environment. Performs Cloud-based operating/hardware systems engineering, including full life cycle design and development. Analyzes and documents users’ functional and data requirements. Develops site survey instruments to gather detailed user requirements and business process analysis data. Conducts functional user interviews to document functional, system, customization, and data requirements and data sources. Formulates system concepts and architecture, specifies requirements, and develops implementation approaches in a Cloud environment. Determines data requirements for internal processes and external interfaces. Develops new Cloud-based systems or tailors Cloud-based commercial products to meet user requirements. Directs and coordinates all activities necessary to complete a Cloud-based major engineering project or several small projects to specification and on schedule. May serve as task or project lead, exercising leadership in either a technical role training other hardware engineers and implementing and enforcing established standards and technologies, or in a project coordination role leading tasks and assuming responsibility for the design, development, test, and delivery of a Cloud-based software system or application.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Cloud Technical Writer

Minimum/General Experience: At least three (3) years of demonstrated topic-based authoring experience of technical manuals and or technical documentation of moderate complexity in cloud-based software applications. Demonstrated skills in producing high-quality technical documentation. Experience documenting solutions within a Cloud environment. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

Functional Responsibility: Responsible for writing system manuals, user guides, and other technical materials for Cloud-based solutions and gathering & researching information to use in IT technical documentation. Possesses strong organizational skills and the ability to observe technical processes and relay the information concisely and effectively through documentation. Assist in collecting and organizing information for the preparation of user manuals, training materials, installation guides, proposals, and reports of Cloud-based IT applications.

Minimum Education: Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

Cloud Tester

Minimum/General Experience: Four (4) years of experience in software testing and development of automation scripts for Cloud-based applications. Experience in Quality Assurance (QA) related functions. Experience accomplishing tasks within a Cloud environment. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.
**Functional Responsibility:** Expected to design test plans, scenarios, scripts, or procedures for Cloud-based applications. Will develop or specify standards, methods, or procedures to determine product quality or release readiness. May develop testing programs that address areas such as Cloud database impacts, software scenarios, regression testing, negative testing, error or bug retests, or usability. Will document software defects, using a bug tracking system, and report defects to software developers. Document test procedures to ensure replicability and compliance with standards. Is expected to identify program deviation from standards and suggest modifications to ensure compliance. Prepare and execute testing strategies & develop automated test plans for infrastructure and application platforms in a cloud environment.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Cloud Testing Specialist**

**Minimum/General Experience:** Five (5) years of experience as a tester on cloud-based software projects in supporting requirement analysis, application test script development, and execution. Two (2) years of experience in mapping the business and technical requirements into test cases and generate test scripts. Experience accomplishing tasks within a Cloud environment. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Interacts with other engineering groups to define, document, analyze, perform, and interpret tests for cloud-based software products, systems, components, or modifications. Identifies functional problems and suggests resolutions. Assists in the definition of internal quality control standards and the maintenance of reliable programs in the Cloud. Analyzes test cases and provides regular progress reports. Performs automation testing for applications hosted on a Cloud environment.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Cloud Web Designer**

**Minimum/General Experience:** Five (5) years of experience in designing and developing cloud-based web applications, mobile applications, and cross-browser compatible responsive front-end interfaces. Ability to create wireframes and prototypes using the latest UI/UX products. Experience designing solutions within a Cloud environment. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Designs and builds Web pages using a variety of graphics software applications, techniques, and tools within a Cloud environment. Designs and develops user interface features, site animation, and special-effects elements. Designs the Website to support the customer’s strategies and goals relative to external communications. Contributes to the Web design group’s efforts to specify, improve, and implement the look, feel, and function of Cloud-based projects. Interfaces directly with customers, users, graphic artists, and Web software developers in a Cloud environment.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Cloud Web Developer I**

**Minimum/General Experience:** At least four (4) years of Software development experience. Strong experience with full-stack development, including understanding UI frameworks and back-end architecture interactions. Experience designing solutions within a Cloud environment. Familiar with standard concepts, practices, and procedures of
Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Designs and builds user interfaces for websites hosted on the Cloud using a variety of graphics software applications, techniques, and tools in a Cloud environment. Interface design includes animation and special-effects elements. Ensures that the "look and feel" supports the organization’s strategies and goals and facilitates user interaction with the system. Performs website design and creation in a Cloud environment. Plans, designs, develops, tests, edits, maintains, and documents the look and flow of web applications in the Cloud. Performs a variety of tasks with strong knowledge of programming techniques and a certain degree of creativity on cloud-based systems.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Cloud Web Developer II**

**Minimum/General Experience:** At least six (6) years of Software development experience. Strong experience with full-stack development, including understanding UI frameworks and back-end architecture interactions. Experience designing solutions within a Cloud environment. Familiar with standard concepts, practices, and procedures of Cloud technology, including Software as Service (SaaS), or Platform as Service (PaaS), or Infrastructure as a Service (IaaS), or Data as a Service (DaaS), etc.

**Functional Responsibility:** Designs and builds user interfaces for websites hosted on the Cloud using a variety of graphics software applications, techniques, and tools. Interface design includes animation and special-effects elements. Ensures that the "look and feel" supports the organization’s strategies and goals and facilitates user interaction with the system. Performs website design and creation in a Cloud environment. Plans, designs, develops, tests, edits, maintains, and documents the look and flow of web applications in the Cloud. Performs a variety of tasks with strong knowledge of programming techniques and a certain degree of creativity on Cloud-based systems with minor assistance. May lead or direct others.

**Minimum Education:** Bachelor's Degree from an accredited college or university with a major in Computer Science, Information Systems, Engineering, Business, or other related scientific or technical discipline.

**Additional Notes:**

**Education and Experience:** To add flexibility and to assist in aligning resources proposed for future requirements, education equivalences are provided in the table below.

It is anticipated that all experience and education will be in a technical field directly related to the labor category being proposed and all diplomas, GED certificates, and degrees will be from accredited institutions.

<table>
<thead>
<tr>
<th>Education &amp; Experience Levels</th>
<th>Equivalent Education and Experience</th>
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<tbody>
<tr>
<td>Education</td>
<td>and Experience</td>
</tr>
<tr>
<td>Associate’s Degree or higher</td>
<td>2 years</td>
</tr>
<tr>
<td>Bachelor’s Degree or higher</td>
<td>5 years</td>
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</tr>
<tr>
<td>Educational Level</td>
<td>Years Required</td>
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<td>--------------------------------</td>
<td>----------------</td>
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<tr>
<td>Master’s Degree or higher</td>
<td>6 years</td>
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<tr>
<td>High School/GED</td>
<td>12 years</td>
</tr>
<tr>
<td>Associate</td>
<td>10 years</td>
</tr>
<tr>
<td>Bachelor</td>
<td>8 years</td>
</tr>
<tr>
<td>Doctorate</td>
<td>4 years</td>
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</table>
8. USA COMMITMENT TO PROMOTE SMALL BUSINESS PARTICIPATION PROCUREMENT PROGRAMS

PREAMBLE

(Name of Company) provides commercial products and services to ordering activities. We are committed to promoting participation of small, small disadvantaged and women-owned small businesses in our contracts. We pledge to provide opportunities to the small business community through reselling opportunities, mentor-protégé programs, joint ventures, teaming arrangements, and subcontracting.

COMMITMENT

To actively seek and partner with small businesses.

To identify, qualify, mentor and develop small, small disadvantaged and women-owned small businesses by purchasing from these businesses whenever practical.

To develop and promote company policy initiatives that demonstrate our support for awarding contracts and subcontracts to small business concerns.

To undertake significant efforts to determine the potential of small, small disadvantaged and women-owned small business to supply products and services to our company.

To insure procurement opportunities are designed to permit the maximum possible participation of small, small disadvantaged, and women-owned small businesses.

To attend business opportunity workshops, minority business enterprise seminars, trade fairs, procurement conferences, etc., to identify and increase small businesses with whom to partner.

To publicize in our marketing publications our interest in meeting small businesses that may be interested in subcontracting opportunities.

We signify our commitment to work in partnership with small, small disadvantaged and women-owned small businesses to promote and increase their participation in ordering activity contracts. To accelerate potential opportunities please contact (Srinivas Challapalli, CEO, phone 573-230-1625, srinivas.challapalli@innosoft.com, fax 206-309-0196).
9. BEST VALUE
BLANKET PURCHASE AGREEMENT
FEDERAL SUPPLY SCHEDULE

(Insert Customer Name)

In the spirit of the Federal Acquisition Streamlining Act (ordering activity) and (Contractor) enter into a cooperative agreement to further reduce the administrative costs of acquiring commercial items from the General Services Administration (GSA) Federal Supply Schedule Contract(s) ____________________.

Federal Supply Schedule contract BPAs eliminate contracting and open market costs such as: search for sources; the development of technical documents, solicitations and the evaluation of offers. Teaming Arrangements are permitted with Federal Supply Schedule Contractors in accordance with Federal Acquisition Regulation (FAR) 9.6.

This BPA will further decrease costs, reduce paperwork, and save time by eliminating the need for repetitive, individual purchases from the schedule contract. The end result is to create a purchasing mechanism for the ordering activity that works better and costs less.

Signatures

__________________________________________
Ordering Activity Date

__________________________________________
Contractor Date
10. BLANKET PURCHASE AGREEMENT

Pursuant to GSA Federal Supply Schedule Contract Number(s) __________, Blanket Purchase Agreements, the Contractor agrees to the following terms of a Blanket Purchase Agreement (BPA) EXCLUSIVELY WITH (ordering activity):

(1) The following contract items can be ordered under this BPA. All orders placed against this BPA are subject to the terms and conditions of the contract, except as noted below:

<table>
<thead>
<tr>
<th>MODEL NUMBER/PART NUMBER</th>
<th>*SPECIAL BPA DISCOUNT/PRICE</th>
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(2) Delivery:

<table>
<thead>
<tr>
<th>DESTINATION</th>
<th>DELIVERY SCHEDULES / DATES</th>
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(3) The ordering activity estimates, but does not guarantee, that the volume of purchases through this agreement will be ________________________.

(4) This BPA does not obligate any funds.

(5) This BPA expires on _______________ or at the end of the contract period, whichever is earlier.

(6) The following office(s) is hereby authorized to place orders under this BPA:

<table>
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<tr>
<th>OFFICE</th>
<th>POINT OF CONTACT</th>
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</table>

(7) Orders will be placed against this BPA via Electronic Data Interchange (EDI), FAX, or paper.

(8) Unless otherwise agreed to, all deliveries under this BPA must be accompanied by delivery tickets or sales slips that must contain the following information as a minimum:

(a) Name of Contractor;
(b) Contract Number;
(c) BPA Number;
(d) Model Number or National Stock Number (NSN);
(e) Purchase Order Number;
(f) Date of Purchase;
(g) Quantity, Unit Price, and Extension of Each Item (unit prices and extensions need not be shown when incompatible with the use of automated systems; provided, that the invoice is itemized to show the information); and

(h) Date of Shipment.

(9) The requirements of a proper invoice are specified in the Federal Supply Schedule contract. Invoices will be submitted to the address specified within the purchase order transmission issued against this BPA.

(10) The terms and conditions included in this BPA apply to all purchases made pursuant to it. In the event of an inconsistency between the provisions of this BPA and the Contractor’s invoice, the provisions of this BPA will take precedence.

*******************************************************************************************
11. BASIC GUIDELINES FOR USING “CONTRACTOR TEAM ARRANGEMENTS”

Federal Supply Schedule Contractors may use “Contractor Team Arrangements” (see FAR 9.6) to provide solutions when responding to a ordering activity requirements.

These Team Arrangements can be included under a Blanket Purchase Agreement (BPA). BPAs are permitted under all Federal Supply Schedule contracts.

Orders under a Team Arrangement are subject to terms and conditions or the Federal Supply Schedule Contract.

Participation in a Team Arrangement is limited to Federal Supply Schedule Contractors.

Customers should refer to FAR 9.6 for specific details on Team Arrangements.

Here is a general outline on how it works:

- The customer identifies their requirements.
- Federal Supply Schedule Contractors may individually meet the customers needs, or -
- Federal Supply Schedule Contractors may individually submit a Schedules “Team Solution” to meet the customer’s requirement.
- Customers make a best value selection.