



**National Aeronautics and Space
Administration (NASA) Integrated
Communications Services (NICS)**

Attachment J-1

Performance Work Statement

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1 NASA INTEGRATED COMMUNICATIONS SERVICES (NICS)

1.1 INTRODUCTION AND OVERVIEW

Since its establishment, the National Aeronautics and Space Administration (NASA) (also referred to as the Government or the Agency) has continued to evolve as a result of changing missions and priorities. Similarly, NASA's Information Technology (IT) infrastructure is evolving toward a level of maturity that will allow it to successfully change NASA's existing IT environment into a seamless and truly integrated IT architecture. NASA recognizes that effectively and efficiently creating, researching, managing, preserving, protecting, and disseminating the information required to achieve the objectives of space exploration, as well as other NASA missions, is vital to mission success.

The nature of NASA's program implementation model requires extensive cross-Center collaboration which is vital to the planning, design, and development of mission-related capabilities and technology in the future. NASA, therefore, requires a seamless technical IT infrastructure to ensure interoperability both within programs and across Centers and facilities.

The NICS contract will develop a long-term arrangement with the commercial sector to provide and manage the vast majority of NASA's IT communications infrastructure.

NASA considers its IT communications infrastructure assets vital to its continuing success as the world leader in aeronautics, space exploration, and scientific research. NASA personnel use IT to support NASA's core business, scientific, research, and computational activities. It is imperative that the commercial sector deliver secure and cost-effective IT services that meet NASA mission and program needs while achieving efficiency and high level customer satisfaction.

Within this framework, the task of the NICS contractor (hereafter referred to as the contractor) is to provide, manage, secure, and maintain IT services that meet the requirements as defined in this Performance Work Statement (PWS) and Appendix A, *I³P Cross Functional Performance Work Statement*.

The existing NASA Integrated Services Network (NISN) provides the Wide Area Network (WAN) communications infrastructure between NASA Centers, whereas independent Center-managed contracts provide Metropolitan and Local Area Network (MAN and LAN) communications within the NASA facilities. In this configuration, the present network is not optimally configured to accomplish the seamless, technical infrastructure to ensure effective and efficient interoperability.

Central to the I³P initiative is the recognition that responsibility for major elements of the Agency's 'As-Is' IT environment must be consolidated into a smaller number of integrated Agency-wide I³P contracts. The I³P vision for the NICS contract is an end-to-end seamless communications network that encompasses both the existing NISN and Center Local Area Network (LAN) services at NASA Centers and associated component facilities. NASA is expecting the NICS contractor to continually reduce cost based on contractor routine incremental improvements in productivity.

Attachment J-1, Appendix A, *Cross Functional Performance Work Statement*, is referred to several times within this PWS and forms an integral part of the overall NICS work requirements. Appendix A provides a detailed description of the NASA “go to” IT environment (described briefly in PWS sections 1.1 through 1.4 of this PWS) and outlines the cross functional requirements that are the responsibility of the contractor. In this regard, Appendix A goes into greater detail in describing some aspects of the NICS contractor’s responsibility than this parent document, Attachment J-1, *Performance Work Statement*.

1.2 GOALS AND OBJECTIVES

The NASA Chief Information Officer (CIO) has established the following principles to guide tactical decisions and planning now and in the future:

- a. Mission Enabling: IT at NASA serves to enable NASA's business and mission processes.
- b. Integrated: NASA will implement IT that enables integration of business and mission processes and information across organizational boundaries.
- c. Efficient: NASA will implement IT to achieve efficiencies and ensure that IT is efficiently implemented.
- d. Secure: NASA will implement and sustain secure IT solutions.

Using these four principles as guidance, NASA is pursuing a strategy intended to:

- a. Clearly define that the CIO shall provide reliable and efficient IT infrastructure services; and
- b. Standardize and consolidate infrastructure to provide end-to-end visibility, improving security, reducing cost and enabling collaboration.

In direct support of these key principles and strategy, the following goals and objectives are established for the NICS contract:

Goal 1: Consolidate the provisioning of IT communications infrastructure services across all NASA Centers and Facilities using a single Agency solution.

Objectives:

- a. Achieve operational efficiencies through standardized hardware and software solutions.
- b. Improve service and end-user experience by providing standardized service delivery across all Centers and Facilities.
- c. Increase insight into NASA’s IT assets.
- d. Leverage economies of scale to obtain a lower overall cost on a per capita basis.

Goal 2: Ensure NASA’s mission is enabled by the Agency IT communications infrastructure solution.

Objectives:

- a. Provide a sufficiently flexible approach to meet the diverse needs of NASA's mission.
- b. Serve as a mission enabler by appropriately infusing emerging technology and transforming IT communications infrastructure as NASA's mission evolves.
- c. Enable NASA users to seamlessly collaborate across organizational boundaries.

Goal 3: Improve NASA's IT security posture.

Objectives:

- a. Become the single provider of IT Security solutions within the NICS scope for all IT communications infrastructure across the Agency.
- b. Provide a standardized, coordinated, and rapid response to IT Security issues.
- c. Implement consistent IT Security on services.
- d. Secure systems in a manner that enables NASA's mission.

Goal 4: Improve the management of NASA's IT infrastructure.

Objectives:

- a. Provide a consolidated interface for IT communications infrastructure in support of NASA IT Governance.
- b. Operate and maintain the NASA enterprise IT communications infrastructure.
- c. Align service delivery with Information Technology Infrastructure Library (ITIL Version 3.0).

Goal 5: Enable a mechanism for transformation of NASA's IT communications infrastructure in support of emerging mission requirements.

Objectives:

- a. Enable infusion of new technologies across the Agency through partnership between the Government and the NICS contractor.
- b. Assist IT communications infrastructure adoption of new technologies that enable NASA's mission while minimizing adverse impacts.
- c. Infuse new technology while maintaining cost efficiencies.
- d. Facilitate the Agency's IT communications infrastructure transformation through application of Government and industry best practices.

1.3 CHARACTERISTICS OF SUCCESS

The following characteristics are representative indicators of successful attainment of the above goals and objectives:

- a. Seamless integration between NICS operations and the other I³P contracts is achieved.
- b. NICS demonstrates an integrated, streamlined support of the Agency and Center governance model and processes.
- c. Participation in NICS grows so that maximum participation is achieved.

- d. NICS is routinely cited by Government and industry as a model for quality of service and cost containment.
- e. Demonstration of improved NICS services at a per capita decreased cost on an annual basis.
- f. NASA mission organizations repeatedly seek out the NICS contractor to partner with in meeting their IT infrastructure service needs.
- g. The NICS configuration control data is an authoritative source for communications configuration management across the Agency.
- h. Repeated achievement of indicators reflecting a strong IT security posture in IT infrastructure services. Examples include:
 - 1. The reduction in the number of IT Security incidents associated with NICS systems always meeting or exceeding Agency metrics.
 - 2. Results from external reviews (Office of Management and Budget (OMB)/General Services Administration (GSA) report cards, third-party audits, etc.) are repeatedly positive in areas associated with NICS services.
 - 3. Seamless integration of NICS operations and the NASA Security Operations Center (SOC) is achieved.
 - 4. Certification and Accreditation (C&A) is achieved on all NICS systems with near-zero Plan of Action & Milestones (POA&M) items.
 - 5. A contract management structure exists that supports infusion of emerging technologies in NICS services, anticipates changing mission requirements, and implements robust and flexible change management.

1.4 GOVERNMENT-RETAINED AUTHORITIES

The Government will retain a set of key authorities that encompass the overall service strategy and service design related to IT communications infrastructure services. The Government will also retain authority for all demand management, governance, and approval functions associated with NICS. In addition, the Government will perform key roles in customer relationship management.

General information about responsibilities of the NICS Project Office is provided in Appendix A, *Cross Functional Performance Work Statement*. Within the Project Office, a Project Office Manager (POM) will be responsible for oversight of NICS operations. Management of the NICS contract will be carried out by the Contracting Officer (CO) and Contracting Officer's Representative (COR). In support of the COR's responsibilities, NICS Technical Monitors (TMs) will be appointed to provide local Center and Associated Component Facilities oversight, as required.

In support of the Government's retained authorities, the contractor will review proposed changes to such things as Agency and Center IT policies, architectures, standards, and procedures and recommend additions, modifications, and deletions as needed to ensure conformity with the NICS contract. The contractor will advise the Agency of any adverse impacts to stability, cost, architecture, interoperability, compatibility, or service and recommend mitigation strategies. The contractor will surface to the NICS COR any issues caused by proposed changes to Agency and Center IT policies, architectures, standards, and procedures during the informal or formal review cycles in accordance with PWS Section 3.11.

To assure maintenance of the NASA IT architectural configuration, the contractor will follow the process set forth in NASA Policy Directive (NPD) 2800.1, *Managing Information Technology*. The contractor will bring recommendations for changes to the NASA IT architecture and standards to the attention of the NICS COR. The NICS COR is responsible for ensuring that the review and approval process is conducted in compliance with NPD 2800.1. The contractor will support the NICS COR when presenting NICS issues and resolutions to the OCIO or other Agency organizations. This support will include such things as travel to meetings, video teleconferences, voice teleconferences, and the development of support documentation.

In addition to Project Office Configuration Control Boards (CCBs), each Center or associated component facility may convene their local CCB, which will include a NICS contractor representative. Functions of the CCB include approving proposed changes to local architectures and standards, to ensure consistency with Agency interoperability and compatibility standards.

1.5 PWS OVERVIEW

Within this framework, the contractor's mission is to provide IT services to meet the requirements as defined by this PWS. The PWS consists of the following sections:

- a. **Contract Management:** These services include program management, financial management, logistics, contract Phase-In/Transition management, procurement, security management, safety, health & environmental management, facilities management, quality assurance and management, I³P program integration, other interface points, and contract and subcontract administration.
- b. **Enterprise Services:** These services include network services, voice services, data services, collaboration services, corporate management and operations, mission services, mission management and operations, customer relationship management, service management, strategy generation, IT security support, GSA contract integration, **cable plant services, and Voice over Internet Protocol (VoIP) / telephone services**. This is to include WAN and LAN communication services at all NASA Centers and associated component facilities.
- c. **Center and Associated Component Facility Services:** These services include Center and associated component facility-specific services such as Emergency Warning System (EWS), public address system, radio, and cable television (TV).
- d. **Infrastructure Projects:** This activity includes both continuation and new projects and shall include all the effort to perform projects such as NICS Incident Tracking System, NICS Service Order Fulfillment System, NICS Consolidated Configuration Management System, Consolidated Corporate Network Operations Center Project, and other NASA-approved projects. These projects shall be accomplished in accordance with NPR 7120.7, *NASA Information Technology and Institutional Infrastructure Program and Project Management Requirements*.
- e. **Unique Services:** These services include infrastructure (i.e. desktop, LAN management) for Russia IT services, NASA National Security Systems (NSS) service IT support, and Digital Television (DTV) engineering services, **Automated Behavioral Analysis (AuBA) system services, Continuous Diagnostics & Mitigation (CDM) support, and internet protocol video and video captioning services**.

2 CONTRACT MANAGEMENT

The contractor shall provide contract management services including program management, financial management, logistics, contract Phase-In/transition management, procurement services, security management, safety, health, and environmental management, facilities management, quality assurance and management, I³P program integration, other interface points, and contract and subcontract administration.

2.1 PROGRAM MANAGEMENT

The contractor shall perform cost, schedule, risk, and technical management of all NICS services, functions, and tasks. The contractor shall:

- a. Provide, implement, and maintain the Management Plan in accordance with DRD 1294MA-001, *Management Plan*.
- b. Maintain records management in accordance with NPD 1440.6, *NASA Records Management*, and NPR 1441.1, *NASA Records Retention Schedules*.
- c. Prepare and submit monthly reports of project plans, status, and schedules in accordance with DRD 1294MA-018, *NICS Monthly Status Review Report*. Prepare and conduct monthly program management reviews including presentation and discussion of program priorities, project statuses, significant accomplishments, risk management, and problem areas.
- d. Prepare and submit the “Top Five Report”, which provides status, progress, and problem information on a bi-weekly basis in accordance with DRD 1294MA-005, *Documentation*.
- e. Track and provide status of official communication with the Contracting Officer’s Representative (COR) such as technical direction, requests for information, and transmittals.
- f. Assist NASA with risk management consistent with the requirements defined by NPR 7120.7, *NASA Information Technology and Institutional Infrastructure Program and Project Management Requirements* (e.g. Risk Management Plan, Analysis, and Tracking Reports). Additionally, the contractor shall participate in recurring risk management meetings, and coordinate with Agency and Center Chief Information Officers (CIOs) in the execution of its responsibilities.
- g. Measure and report the service level objectives and performance for each of the services defined in this PWS in accordance with DRD 1294MA-008, *Service Performance Report*.
- h. Prepare and submit a Contractor Self-Assessment Report in accordance with DRD 1294MA-012, *Contractor Self-Assessment Report*.
- i. Prepare and submit a Work Breakdown Structure (WBS) and WBS Dictionary in accordance with DRD 1294MA-006, *Work Breakdown Structure and WBS Dictionary*.
- j. Adhere to all Government, Agency, and Center-specific documents as listed in Attachment J-10, *Applicable Regulations and Procedures*. The contractor shall bring to the attention of the Contracting Officer any conflicts between the listed documents.

The contractor shall align their services and operations processes with the Information Technology Infrastructure Library (ITIL) Version 3 as defined in the Cross-Functional PWS described in Attachment J-1 Appendix A, *Cross Functional Performance Work Statement*, to establish common terminology and processes across all of the I³P contracts. ITIL is a commonly accepted information technology service management framework that provides a cohesive set of public and private sector best practices which are supported by a comprehensive qualifications scheme, accredited training and certification organizations, and implementation and assessment tools.

2.2 FINANCIAL MANAGEMENT

The contractor shall perform all business and financial functions necessary to fulfill the requirements of this contract and integrate these functions across all areas of performance. The contractor shall also provide on-going business analysis and respond to requests and inquiries from the Government relating to budget, schedule, Work Year Equivalents (WYE), cost plans, NASA-defined work packages, and cost performance. In performing these functions, the contractor shall:

- a. Provide and maintain a contractor financial management system in accordance with DRD 1294MA-011, *Financial Management Report* and DRD 1294MA-009, *Cost Reports*. The contractor's system shall be the authoritative source for contractor financial data across all PWS elements and shall provide committed, obligated, accrued and actual costs. DRD 1294MA-011, *Financial Management Report*, will be entered into NASA's financial system, SAP Core Financials.
- b. Prepare and submit DRD 1294MA-009, *Cost Reports*, which include detailed monthly financial analyses by customer and/or fund source based on the approved yearly plan for each service, project, and/or customer by cost and WYE. The analysis shall provide variance explanations in the areas of actual cost versus planned, estimate at completion of current Fiscal Year (FY), funding balances, overtime, and WYE.
- c. Prepare and submit monthly financial management reports (NASA Form 533M& 533Q) in accordance with DRD 1294MA-011, *Financial Management Report*.
- d. Assist in the preparation of the NASA Program Planning, Budgeting, Execution (PPBE) process, which typically includes five-year budget projection planning.
- e. Assist in the preparation and statusing of NASA-defined work packages such as service requests, customer-funded services, and Center-specific services.
- f. Assist in the preparation of financial data for business cases.
- g. Provide cost data for services in support of ITIL processes.
- h. Assist in the preparation of OMB Exhibit 300, *Business Case Analyses*, as required.
- i. Prepare and submit the Cost Performance Report in accordance with DRD 1294MA-013, *Cost Performance Reports*.

2.3 LOGISTICS

The contractor shall provide logistics management functions to support services as detailed in this contract, in accordance with Agency and Site/Center guidelines, policies, and directives, and as specified in Clause G.6, *Installation-Accountable Government Property (Deviation) Alternate 1 (Deviation)*, Clause G.17, *NICS Property Accountability*, and Clause G.18, *Center-Specific*

Shipping and Receiving Procedures. These functions include property/inventory management, shipping/receiving/inspection services, and vehicles.

2.3.1 PROPERTY/INVENTORY MANAGEMENT

The contractor shall perform property management functions in accordance with NPR 4100.1, *NASA Materials Inventory Management Manual*, NPD 4200.1, *Equipment Management*, NPR 4200.1, *NASA Equipment Management Procedural Requirements*, NPR 4200.2, *Equipment Management Manual for Property Custodians*, and NPR 4300.1, *NASA Personal Property Disposal Procedural Requirements*. In performance of these functions, the contractor shall:

- a. Prepare, implement, and maintain the Government Property Management Plan in accordance with DRD 1294LS-001, *Government Property Management Plan*.
- b. Enter all required data for property acquired by the contractor into a NICS-specific sub-installation within the NSSC domain of the NASA Integrated Asset Management Property, Plant, and Equipment (IAM PP&E) database, apply Radio Frequency Identification (RFID) tag at time of receipt at the applicable centers identified in the table in G-18, assign the property to the requiring organization/end user, prepare a Government-designated form for property and financial traceability, and maintain supporting documentation.
- c. Coordinate with Center logistics organizations to facilitate the transfer of property from legacy contracts to the NICS-specific sub-installation within the NSSC domain of PP&E during contract phase-in/transition.
- d. Manage property not recorded in NASA systems and managed under NASA Procedural Requirements in accordance with FAR 52.245-1, *Government Property*, including but not limited to providing and maintaining an asset management tool.
- e. Prepare and maintain an Asset Management Report in accordance with DRD 1294MA-005, *Documentation*, identifying and listing all NICS property.
- f. Perform property custodian functions in accordance with NPR 4200.2, *Equipment Management Manual for Property Custodians*, for all property as listed in Attachment J-9, *Installation-Accountable Government Property*.
- g. Perform property user functions as delineated in Clause G.6, *Installation-Accountable Government Property (Deviation)*, *Alternate I (Deviation)*.
- h. Utilize Government systems to screen for excess property needed in support of the contract and use the resulting components in support of the infrastructure in a cost-effective manner.
- i. Survey manufacturers of components which are important to the supportability of NICS communications systems to identify and respond to "last production runs" in sufficient time to continue to support the affected system.
- j. Identify excess and obsolete out-of-service assets, and initiate disposal in accordance with Agency, Center, and associated component facility guidelines, policies, and directives.
- k. Ensure all items removed from service have all data removed prior to excess, in accordance with the applicable policies and procedures listed in Attachment J-10, *Applicable Regulations and Procedures*.
- l. Utilize the existing property tags permanently affixed to all existing assets. Utilize Government-provided NASA Equipment Control Number (ECN) and apply Radio

- Frequency Identification (RFID) tag at time of receipt at the applicable centers identified in the table in G-18, tags and decals for acquired or procured property.
- m. Affix a unique NICS identifier or bullet tag to all NICS-managed property.
 - n. Establish loan agreements for all IAGP that will be utilized at off-site locations.
 - o. Conduct an annual physical inventory of all NICS IAGP in coordination with the NSSC Logistics organization and facilitate related communications with NASA Center Supply and Equipment Management Officers.
 - p. Utilize Government-provided Radio Frequency Identification (RFID) tags for government management equipment of three thousand dollars and above or sensitive item at the applicable centers identified in the table in G-18.
 - q. Conduct an annual physical inventory of the GSA Networx AT&T Mission equipment) and provide the results to the NASA Networx AT&T Mission COR. Track all change activity (location change, replacement, etc.) in the NITSM (NPAM) and report monthly to the NASA Networx AT&T Mission COR.

In extreme circumstances where a piece of equipment is not physically accessible due to access restrictions or location (geographical or otherwise), the contractor may request a waiver, from the agency SEMO, to utilize the process of generating an electronic signal (ping) to validate an asset is active and in use as inventoried. This process will be initiated by the Contractor only after obtaining a waiver from the Agency SEMO. The Contractor will be responsible for documenting the generation and receipt of the electronic signal acknowledgement for the piece of equipment that is not accessible by the Contractor at the time the inventory is required to be conducted. If approved by the SEMO, the date the electronic signal (ping) is conducted will be the date recorded (as an override) in SAP as the “Date of Last Inventoried”, and this shall be accepted as evidence of the equipment’s physical and working presence. The Contractor will be responsible for documenting and maintaining the records and waivers associated with “electronic pinging” of such equipment per Government regulations.

2.3.2 SHIPPING/RECEIVING/INSPECTION SERVICES

The contractor shall utilize the most cost-efficient procedures and storage for shipping/receiving/inspection services. The contractor shall comply with Agency, Center, and associated component facility guidelines, policies, and directives listed in Attachment J-10, *Applicable Regulations and Procedures*, Clause G.6, *Installation-Accountable Government Property (Deviation) Alternate 1 (Deviation)*, Clause G.17, *NICS Property Accountability*, and Clause G.18, *Center-Specific Shipping and Receiving Procedures*. The contractor may utilize Government-provided receiving or storage facilities (See Clause G.18) for receipt and storage of hardware, software, and other associated property to meet the requirements of this contract. If contractor-provided receiving or storage facilities are utilized, the contractor shall ensure that such facilities provide adequate protection of all items to which the Government has or will obtain title. In addition, the contractor shall:

- a. Prepare items for shipping with required documentation.
- b. Provide receiving and inspection functions including accountability, storage and warehousing support.

- c. Document transfer of property between Centers utilizing a Form DD1149 or other NASA-designated form.

2.3.3 VEHICLES

The contractor shall, where applicable, use vehicles from the Center or associated facility vehicle pool, or furnish and maintain all vehicles in support of contract requirements (see Clause G.18 *Center-Specific Shipping and Receiving Procedures*). The contractor shall further be responsible for performing vehicle management functions in accordance with NPR 6200.1, *NASA Transportation and General Traffic Management* and NPD 6000.1, *Transportation Management*, GSA leasing and reporting requirements, Center or associated component facility-specific vehicle management policies and procedures, and Executive Order 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*.

In performance of these services, the contractor shall:

- a. Utilize GSA schedules to satisfy the requirements for motor vehicles to the maximum practicable extent.
- b. Utilize Center-provided vehicles, where available, to satisfy the requirement.
- c. Utilize on-site fueling stations for fueling GSA-leased vehicles and Government-furnished vehicles.
- d. Ensure that all drivers have proper state licenses, with the applicable endorsements, for requisite equipment being operated.

2.4 CONTRACT PHASE-IN/TRANSITION MANAGEMENT

The contractor shall provide contract phase-in/transition management functions to support Agency transformation of multiple legacy contracts into a single contract, NICS. These functions include contract phase-in and contract transition.

2.4.1 CONTRACT PHASE-IN

The contractor shall provide the services necessary to perform all Phase-In activities in accordance with the schedule delineated in Attachment J-19, *Contract Phase-In/Transition Schedule*. NOTE: The Phase-In activities will be conducted under a separate Purchase Order and are not considered within the scope of the NICS contract.

2.4.2 CONTRACT TRANSITION

The contractor shall provide the services necessary to transition, and assume full contractual responsibility for, those Center communications services identified for transition subsequent to the contract Phase-In period, in accordance with Attachment J-19, *Contract Phase-In/Transition Schedule*, and DRD 1294MA-003, *Transition Plan*.

2.5 PROCUREMENT SERVICES

The contractor shall provide effective, customer-focused procurement and purchased services that result in the delivery of consistently high-quality products, services, and deliverables (not otherwise furnished by the Government) required to perform the services and functions specified in the PWS and to accomplish the NICS mission. This includes utilizing Agency-wide or Government-wide contracts or site software license agreements for the systems assigned to the

contractor. Commodities or services of the types normally purchased under the NICS contract to support the NICS mission may be purchased for use outside of the NICS contract at the request of the government.

The contractor shall also develop and execute documentation to support the procurement of services, supplies, materials, and equipment including, but not limited to: consumables and store stock; replacement parts or equipment; routine and critical spares; purchase, rental, lease, or maintenance of equipment; hardware and hardware upgrades; temporary labor services; vendor maintenance agreements; software, such as software necessary to perform the operations and maintenance functions of this contract; and software licenses, such as systems and applications licenses, subscription, renewal and enhancement services, and software maintenance.

In performing the procurement functions, the contractor shall:

- a. Maintain management, control, and visibility of intra-company, subcontractor, lease agreements, and major vendor activities that are used to fulfill contract requirements.
- b. Maintain accountability for quality and timeliness, including expediting of high priority items, of the goods and services that are subcontracted or procured.
- c. Establish and ensure continuous certification of a Government-approved purchasing system in accordance with the Federal Acquisition Regulations (FAR) and NASA FAR Supplement (NFS).
- d. RESERVED
- e. Provide small business and small disadvantaged business concerns the maximum practical opportunity to receive a fair portion of procurement awards.
- f. Establish a status and tracking system for all acquisitions from receipt of purchase request through close-out of acquisition documentation. The tracking system shall provide visibility of order status to the requestor. Documentation in the tracking system shall include, but is not limited to:
 1. Assigned work or purchase request number.
 2. Date of receipt.
 3. Date order or subcontract is placed.
 4. Order delivery or completion date.
 5. Actual receipt or completion date.
 6. Actual delivery date to requestor.
 7. Vendor name, address, and contact information.
 8. Order dollar value.
 9. Assigned buyer.
- g. Coordinate with requestors to confirm requirements for any item with hazardous content, prior to ordering.
- h. Generate and maintain purchasing and subcontracting documentation sufficient to ensure compliance with the Contractor's approved purchasing system and allow for audit of all such documentation as required by the Government. These documentation files shall allow for clear traceability through all phases of the acquisition cycle, and shall include, commensurate with the size and complexity of the acquisition, purchase request/funding documentation, evaluation plans, requests

- for quotation/proposal, successful and unsuccessful quotations/offers, negotiation documentation including rationale for selection, and copy of award document.
- i. Procure and manage telecommunications services that are not available via GSA contracts, as defined in PWS 3.12.
 - j. Ensure that procurements of systems and applications associated with one or more of the six covered Electronic and Information Technology Accessibility product groups specified below comply with the applicable standards contained with the Federal Acquisition Circular 97-27, *Electronic and Information Technology (EIT) Accessibility*, Section 508 of the Rehabilitation Act of 1973. The applicable Technical Standards (Subpart B) include:
 - 1. Software Applications and Operating Systems (1194.21).
 - 2. Web-based Intranet and Internet Information and Applications (1194.22).
 - 3. Telecommunications Products (1194.23).
 - 4. Video or Multimedia Products (1194.24).
 - 5. Self-Contained Closed Products (1194.25).
 - 6. Desktop and Portable Computers (1194.26).

2.6 SECURITY MANAGEMENT

The contractor shall provide NICS security management services including physical security, IT security, export control, and emergency management.

2.6.1 PHYSICAL SECURITY

The contractor shall implement a comprehensive security program consistent with NASA, Department of Defense (DoD), and Center-specific regulations and procedures as listed in Appendix J-10, *Applicable Regulations and Procedures*, for the performance of the NICS mission and the protection of assigned assets and equipment.

2.6.2 INFORMATION TECHNOLOGY (IT) SECURITY

The contractor shall incorporate appropriate safeguards in accordance with applicable NASA IT security standards to ensure availability, integrity, and confidentiality of information and IT resources utilized in performance of this contract. The contractor shall submit all data in accordance with applicable Government standard formats and protocols. Further, the contractor shall:

- a. Assist NASA in the development, documentation, management and integration of operational and technical IT security policies, procedures and control measures in accordance with NPR 2810.1, *Security of Information Technology*, NPR 1600.1, *NASA Security Program Procedural Requirements*, NFS 1852.204-76, *Security Requirements for Unclassified Information Technology Resources*, and other guidelines identified in Attachment J-10, *Applicable Regulations and Procedures*.
- b. Ensure that systems institute information security controls as outlined in the National Institute of Standards and Technologies (NIST) Special Publication SP 800-53, *Recommended Security Controls for Federal Information Systems*.
- c. Ensure that systems meet the Federal Information Security Management Act (FISMA) requirements for Certification and Accreditation (C&A).

- d. Ensure that systems secure sensitive data, as it is stored or transmitted across the network, complies with NPR 2810.1, *Security of Information Technology*, and Federal Information Processing Standards (FIPS).
- e. Prepare, submit, and maintain Contractor Account Management documentation to include contractor user account information (e.g. userids, access, quotas, and requirements), smart cards, and secure tokens in accordance with DRD 1294MA-005, *Documentation*.
- f. Ensure that when using NASA IP address space, only NASA-provided external Internet connections shall be used in accordance with NPR 2810.1, *Security of Information Technology*, and associated NASA Information Technology Requirements (NITRs).

2.6.3 EXPORT CONTROL

The contractor shall implement a comprehensive export control process consistent with applicable NASA, Department of State, and Department of Commerce regulations and procedures for the performance of the NICS mission. The contractor shall comply with NASA FAR Supplement 1852.225-70, *Export Licenses*, NPD 2190.1, *NASA Export Control Program*, and NPR 2190.1, *NASA Export Control Program*. The contractor shall also:

- a. Prepare, submit, and maintain an Export Control Plan in accordance with DRD 1294MA-010, *Export Control Plan and Reports*.
- b. Provide a monthly report of all export control activities in accordance with DRD 1294MA-010, *Export Control Plan and Reports*.
- c. Maintain a database recording export control activities that is accessible to contractor and NASA personnel as designated by the COR.

2.6.4 EMERGENCY MANAGEMENT

Each Center CIO has key responsibilities related to the Center's Continuity of Operations (COOP) in accordance with NPR 1040.1, *NASA Continuity of Operations (COOP) Planning and Procedural Requirements*. The contractor shall provide each Center CIO with the necessary NICS support to meet COOP requirements by providing related IT materials, equipment and emergency-essential personnel in support of the COOP. Additionally, the contractor shall support the operations of the Mobile Emergency Operations Vehicles (MEOV), which are a set of vehicles that provide Command, Control, and Communications for NASA during a natural or man-made disaster. This support shall include monitoring of the vehicles for operational readiness.

2.7 SAFETY, HEALTH AND ENVIRONMENTAL (SHE) MANAGEMENT

The contractor shall establish and implement an industrial safety, occupational health, and environmental program that prevents employee fatalities, reduces the number of incidents, reduces the severity of employee injuries and illnesses, and protects the environment through the ongoing planning, implementation, integration and management control of these programs in accordance with DRD 1294SA-001, *Safety, Health, and Environmental (SHE) Plan*. The SHE Plan shall address each of the following SHE core program requirements in detail that are applicable to the contracted effort and include a matrix that identifies where each requirement is addressed:

- a. Management leadership and employee involvement.
- b. System and worksite analysis.
- c. Hazard prevention and control.
- d. Safety, health, and environmental training.

For each NASA Center where work will be performed, the contractor shall coordinate with each Center's Safety and Mission Assurance Directorate/Office to ensure compliance with that Center's specific safety, health, and environmental requirements, delineated in Attachment J-10, *Applicable Regulations and Procedures*, and shall maintain an up-to-date listing of Center Safety Points of Contact to facilitate communications.

The contractor shall report mishaps and safety statistics to the Center's Safety Office in accordance with DRD 1294SA-002. The contractor shall submit directly into the NASA Incident Reporting Information System (IRIS) or shall use the forms listed in section 15.4 of DRD 1294SA-002 or electronic equivalent to report mishaps and related information required to produce the safety metrics.

The contractor shall ensure that all work, including that which may require exposure to asbestos, is performed in accordance with all Federal, State, Local, and Center-specific safety, health, environment, and fire protection/prevention regulations and procedures, as well as the contractor's Safety and Health Plan per DRD 1294SA-001, *Safety, Health, and Environmental (SHE) Plan*, and each Center's applicable asbestos requirements. The contractor shall also provide safety, training, and protective equipment as required.

The contractor shall prepare and submit Environmental and Energy Consuming Product Compliance Reports in accordance with DRD 1294SA-003.

Additionally, the contractor shall provide, implement, and maintain procurement controls, including contractor policies and procedures governing standards of conduct, procurement processes and practices, and the prevention of waste, fraud and abuse, in accordance with DRD 1294MA-005, *Documentation*.

2.8 FACILITIES MANAGEMENT

The contractor shall provide, implement, and maintain a uniform process of managing the use of assigned facility space in accordance with DRD 1294MA-005, *Documentation*. In performance of this function, the contractor shall:

- a. Maintain documentation as a basis for requesting and recommending additional space and reallocation of assigned space or interior partitions.
- b. Maintain floor plans of all assigned facility space to reflect the location of furniture, equipment, telephones, environmental systems and electrical services in equipment areas.
- c. Monitor and report utilization and capacity for power, HVAC, and floor and rack space.
- d. Maintain continuous records of changes or movements of equipment, furniture, and telephones to ensure that accountability requirements for all equipment and systems are met.

- e. Maintain continuous records of changes or movements of personnel, providing this information online for COR-designated personnel to review.
- f. Maintain location information including number of personnel by location, square footage, and associated lease and maintenance costs.
- g. Review, assess, and provide comments to Center Facilities Offices' planning activities for impact on NICS systems. Comments shall be provided on designs and drawings in accordance with Center processes and policies.
- h. Assist in the planning of future facility requirements, to include facility modifications to accommodate personnel space changes and new equipment installations, while minimizing disruption of daily operations.
- i. Obtain approval from the cognizant NASA Facilities Offices before performing any facilities activities at a NASA installation.
- j. Track the schedule and status information for facilities work requests and facilities projects that affect IT service delivery.
- k. Define and document environmental requirements to accommodate equipment.
- l. Provide off-site office space in support of work performed under this PWS, as appropriate.
- m. Ensure physical security requirements are met in compliance with NPR 1620.3, *Physical Security Requirements for NASA Facilities and Property*.

2.9 QUALITY ASSURANCE AND MANAGEMENT

The contractor shall maintain a quality system compliant with ISO9001:2000. The contractor may satisfy this requirement by current registration by a recognized registrar and/or by NASA audit of their system. The contractor shall detail their planned quality controls in accordance with DRD 1294QE-001, *Quality Plan*.

The contractor shall establish an IT Service Management framework in compliance with IT Infrastructure Library (ITIL) V3.

If the contractor operates to or uses NASA Center procedures, the contractor shall support the applicable Center's registration process for these procedures.

2.10 I3P PROGRAM INTEGRATION

The NICS contract is part of the NASA Agency Office of the Chief Information Officer's (OCIOs) multi-sourced I³P acquisition strategy, which spans the following services: Network Communications, Data Center, End-user Services, Enterprise Applications, and Web Services.

Success of NASA's I³P is dependent upon the ability of I³P contractors to work within, and across, independent service contracts (I³P and non- I³P) to ensure a seamless IT service delivery environment and capability across the Agency. To better enable this environment, the contractor shall, at a minimum, implement Associate Contractor Agreements (ACAs) with I³P contractors and other contractors (e.g., other Agency and Center/Facility contractors) to ensure continuity of service and provide transparency to the NASA end-users in accordance with defined Service Level Agreements.

The contractor shall meet the requirements stated in Attachment J-1, Appendix A, *Cross Functional Performance Work Statement*. In addition, the following integration requirements apply:

a. Agency Consolidated End-user Services (ACES)

This section identifies the NICS integration requirements with the ACES contractor. The ACES contract provides a variety of end-user services (e.g., e-mail and collaborative calendaring, end-to-end computing services and back-office infrastructure support) and IT product catalog services to NASA and NASA contractors. The NICS contractor shall utilize the ACES services.

The following PWS sections define services that represent significant integration points with ACES:

1. 3.1 – Corporate Network Services (Internet Protocol Address Management (IPAM), Remote Access Services (RAS), and Enterprise Internal Border (EIB) Network Access Control (NAC))
2. 3.4 – Corporate Data Services (Routed Data, Firewall Services, Proxy Services, and Layer 2 VPN Services)
3. 3.14 – Cable Plant Services
4. 3.15 – VoIP/Telephone Services

Additionally, specific ACES and NICS integration requirements are located in PWS sections 3.6, 3.6.1, and 3.14.

b. NASA Enterprise Data Center (NEDC)

This section identifies the NICS integration requirements with the NEDC contractor. The NEDC will provide Enterprise data center services to NASA and NASA contractors. The NICS contractor shall utilize the NEDC services.

The following PWS sections define services that represent significant integration points with NEDC:

1. 3.1 – Corporate Network Services (Internet Protocol Address Management (IPAM), Remote Access Services (RAS), and Enterprise Internal Border (EIB) Network Access Control (NAC))
2. 3.4 – Corporate Data Services (Routed Data, Data Center Networks, Firewall Services, Proxy Services, and Layer 2 VPN Services)
3. 3.14 – Cable Plant Services

Additionally, specific NEDC and NICS integration requirements are located in PWS section 3.4.2.

c. Enterprise Applications Service Technologies (EAST)

This section identifies the NICS integration requirements with the EAST contractor. The EAST contract includes support of existing operational applications and systems, as well as improvements and additions to existing capabilities.

The following PWS sections define services that represent significant integration points with EAST:

1. 3.1 – Corporate Network Services (Internet Protocol Address Management (IPAM), Remote Access Services (RAS), and **Enterprise Internal Border (EIB)Network Access Control (NAC)**)
2. 3.4 – Corporate Data Services (Routed Data, Firewall Services, Proxy Services, and Layer 2 VPN Services)

Additionally, specific EAST and NICS integration requirements are located in PWS sections 3.4.1 and 3.6.1.

d. Web Enterprise Services Technologies (WEST)

The WEST contract includes public website hosting, Web content management and integration, and support of other website services.

The following PWS section defines services that represent significant integration points with WEST: 3.1.1 – Internet Protocol Address Management (IPAM)

e. Enterprise Service Desk (ESD) and Enterprise Service Request System (ESRS)

This section identifies the NICS integration requirements with the ESD/ESRS contractor. The ESD/ESRS contract provides Tier 0/1 Help Desk support services (ESD) in response to reported I³P incidents and problems and provides an integrated service ordering capability (ESRS) for all I³P services. The NICS contractor shall utilize the ESD/ESRS services.

The following PWS sections define services that represent significant integration points with ESD/ESRS:

1. 3.1 – Corporate Network Services (Internet Protocol Address Management (IPAM), Remote Access Services (RAS), and **Enterprise Internal Border (EIB)Network Access Control (NAC)**)
2. 3.4 – Corporate Data Services (Routed Data, Firewall Services, Proxy Services, and Layer 2 VPN Services)
3. **3.14 – Cable Plant Services**
4. **3.15 – VoIP/Telephone Services**

Additionally, specific ESD/ESRS and NICS integration requirements are located in PWS sections 3.6.6, 3.10.2, 5.1, 5.2, 5.3, and 5.4.

The contractor shall ensure that NICS successfully interfaces with all other I³P contracts/contractors as delineated in the clause entitled “Associate Contractor Agreements” and all touch

points for the successful accomplishment of NICS I³P objectives. The contractor shall meet the requirements as delineated in Attachment J-1, Appendix A, *Cross Functional Performance Work Statement*, and the following DRDs:

- a. DRD 1294CF-001, *Information Security Management Plan*
- b. DRD 1294CF-002, *Information Technology (IT) System Security Plan*
- c. DRD 1294CF-003, *Service Asset & Configuration Management (SACM) Plan*
- d. DRD 1294CF-004, *Release and Deployment Management (RDM) Plan*
- e. DRD 1294CF-005, *Application Inventory (AI) Report*
- f. DRD 1294CF-006, *Capacity Management Plan*
- g. DRD 1294CF-007, *Service and Component Capacity Report*
- h. DRD 1294CF-008, *Availability Management (AM) Plan*
- i. DRD 1294CF-009, *Availability, Reliability, and Maintainability (ARM) Report*
- j. DRD 1294CF-010, *IT Service Continuity Management (ITSCM) Plan*
- k. DRD 1294CF-011, *Interface Definition Agreement (IDA)*
- l. DRD 1294CF-012, *IT Security Incident Report*

- m. DRD 1294CF-013, *NASA Enterprise Service Catalog Data Requirements*
- n. DRD 1294CF-014, *Problem Documentation*

2.11 OTHER INTERFACE POINTS

The contractor shall adhere to local Center CIO governance processes for activities that involve design modification/enhancement of Enterprise and local services contained within a Center's physical infrastructure.

The contractor shall ensure that NICS successfully interfaces with other related NASA integration points as delineated in the clause entitled *Associate Contractor Agreements*.

2.12 CONTRACT AND SUBCONTRACT ADMINISTRATION

In performance of contract and subcontract administration functions, the contractor shall:

- a. Provide a single point of contact with contractual obligation authority to perform all contract administration functions and activities required for this contract. This point of contact shall have access to all contract administration data and information related to contract performance.
- b. Provide a single point of contact for all subcontract management activities. This point of contact shall have access to all subcontract administration data and information related to contract performance.
- c. Provide online access to contract administration information and other required data to the Contracting Officer (CO) and designated personnel, in accordance with NPD 1440.6, *NASA Records Management*.
- d. Provide and maintain complete subcontract award documentation in accordance with the contractor's approved purchasing system, to support subcontract consent and subcontract audit activities.
- e. Ensure delivery and archival, with accessibility by designated NASA personnel, of all documentation required by this PWS, as well as the documentation required by

- Attachment J-2, *Data Procurement Document*. The activity shall include retaining and maintaining support documentation, controlling the documentation, and maintaining a document control list, naming convention, and storage control system.
- f. Separately track all costs associated with contract changes issued by the CO pursuant to the *Changes* clause, as well as IDIQ Task Orders, if requested in advance by the CO.
 - g. Provide and maintain a listing of all contractor and subcontractor employees working under this contract and their designated locations in accordance with DRD 1294MA-014, *Badged Employee and Remote IT User Listing*.
 - h. Provide to the CO, upon request, Option Decision Package (ODP) documentation and associated proposals in accordance with the clause entitled, *Option to Extend*, in accordance with DRD 1294CD-001, *Option Decision Package*.
 - i. Prepare and submit a Contractor Employee Clearance Document in accordance with DRD 1294MA-015, *Contractor Employee Clearance Document*.
 - j. Determine the Level of Risk (LoR) for all contractor employees requiring physical or logical access to NASA in accordance with Identity, Credential, and Access Management (ICAM) Services Handbook IT-HBK-2841-001. The contractor shall also provide electronically the Level of Risk (LoR) information for each applicant's fitness for the position or access using the Identity Management and Account Exchange (IdMAX) system ICAM process in accordance with the Enterprise Performance Support System (EPSS)/Creating a NASA Identity (End User Procedure).
 - k. Report and document this work and fulfill the requirements of associated Data Requirement Descriptions (DRD's) as outlined in Attachment J-2, *Data Procurement Document*. The contractor shall determine the data restriction that applies to each data deliverable and mark or transmit the data restriction in accordance with section 2.3.3 of the Data Procurement Document.
 - l. Maintain and update the Organizational Conflicts of Interest (OCI) Avoidance Plan in accordance with DRD 1294MA-017, *Organizational Conflicts of Interest (OCI) Plan*.
 - m. Prepare, submit, and maintain a Personnel Activity Report in accordance with DRD 1294MA-005, *Documentation*. Provide small business and small disadvantaged business concerns the maximum practical opportunity to receive a fair portion of subcontract awards in accordance with Attachment J-7, *Small Business Subcontracting Plan*.
 - n. Provide quarterly listings of all purchases to facilitate audits and verification of receipt of purchased hardware and services in accordance with DRD 1294MA-005, *Documentation*.

3 ENTERPRISE SERVICES

NASA has established a strategic approach to the management of IT infrastructure that will treat all inter-Center and standard intra-Center IT infrastructures as a set of unified, enterprise-wide services throughout their life cycle. The NICS contractor shall implement and manage a single end-to-end service provisioning organization that combines and streamlines LAN and WAN communications services for both corporate and mission networks. Therefore, for purposes of this contract, NASA has expanded the **Communication Services Office (CSO)** program/project responsibilities to include all services defined in this PWS section.

The purpose for managing IT infrastructure using an enterprise model is to improve the planning and delivery of enterprise-wide IT services and to obtain cost efficiencies resulting from the consolidated delivery structure. The NASA enterprise model will improve the consistency of infrastructure services built and operated in multiple locations (e.g., LANs and firewall management) to better enable cross-Center collaboration, user mobility, and security. It will also enable greater leverage of NASA infrastructure investments across Centers and projects. The contractor shall partner with NASA for continuous innovation.

This PWS facilitates the transformation of NASA's architecture from an individual Center-driven operations and services model to a cohesive Enterprise operations and services model. This transformation shall not include the addition or deletion of any of the services under this PWS without the approval of NASA.

PWS 3 is structured as follows:

- a. Sections 3.1 through 3.5, **3.14, and 3.15** describe the engineering effort necessary to perform Corporate services.
- b. Section 3.6 describes the Corporate operations effort necessary to provide the Corporate services called out in Sections 3.1 through 3.5, **3.14, and 3.15**.
- c. Section 3.7 describes the engineering effort necessary to provide Mission services.
- d. Section 3.8 describes the Mission operations effort necessary to provide Mission services called out in Section 3.7.
- e. Sections 3.9 through 3.11 and 3.13 describe the overarching support services for both Corporate and Mission. Section 3.12 describes Corporate IT security requirements.

Performance specifications for all requirements in PWS 3 are found in Attachment J-1, Appendix C, *Performance Specifications*.

The contractor shall be responsible for providing the Enterprise services and associated operations activities for those services. Specifically, the contractor shall be responsible for providing Corporate network services, Corporate voice services, Corporate data services, Corporate collaboration services, Corporate management and operations, Mission services, Mission management and operations, customer relationship management, service management, strategy generation, Corporate IT security, GSA contract integration, **cable plant services, and VoIP/telephone services**. These **CSO** services and operations are performed at the NASA Centers and associated component facilities.

3.1 CORPORATE NETWORK SERVICES

The contractor shall be responsible for Internet Protocol Address Management (IPAM), Remote Access Services (RAS), and Enterprise Internal Border (EIB) Network Access Control (NAC). In performing these services, the contractor shall provide the systems and sustaining engineering required to facilitate the design of the infrastructure and development of operations concepts used to provide Corporate services. This shall include the preparation of requirements analyses and a prototyping strategy for implementing the requirements, development of network architecture(s) and approved products lists, design, site preparation, installation, integration and testing for deployment, capacity management, trouble resolution, SLA compliance, and preparing as-built documentation for all implemented requirements. NASA will review and approve the design concepts.

3.1.1 INTERNET PROTOCOL ADDRESS MANAGEMENT (IPAM)

The contractor shall provide systems and sustaining engineering to plan, track and manage all NASA Internet Protocol (IP) addresses using NASA's IP address management (IPAM) systems and techniques. The contractor shall provide engineering support for NASA's Domain Name Service (DNS) to include management of the e-root domain name server at Ames Research Center (ARC), the domain level servers (including but not limited to scijinks.gov), and the sub-domain name servers (e.g. msfc.nasa.gov). In addition, the contractor shall provide engineering support for the IPAM Dynamic Host Configuration Protocol (DHCP) services. In providing these services, the contractor shall:

- a. Be responsible for the infrastructure and tools to manage, assign, delegate, and reclaim as necessary the NASA Internet Protocol resources (i.e., IPv4 and IPv6 address space, autonomous system numbers (ASN), and domains) assigned to the Agency.
- b. Be responsible for the infrastructure and tools to coordinate with the appropriate Regional Internet Registry (RIR), for example, the American Registry of Internet Numbers (ARIN) and Reseaux IP Europeens (RIPE), for registration of NASA's IP resources.
- c. Support the maintenance of NASA IP management policy documents as defined by NASA.
- d. Be responsible for the infrastructure and tools to verify and validate NASA address space, including performing audits to determine address space utilization as required, and ensure compliance with NASA address management policies.
- e. Be responsible for the infrastructure and tools to collect and enter DNS, DHCP, and IP address configuration information for each NASA Center into the Agency provided Internet Protocol Address Management (IPAM) system via the Government furnished interface.
- f. Be responsible for the infrastructure and tools to maintain documentation for IP address to physical location mapping in the IPAM system.
- g. Be responsible for the infrastructure and tools to maintain documentation for IP address to points of contact mapping in the IPAM system including administration, IT security, technical, and user (for single-user systems only).
- h. Provide risk analysis and mitigation to include continual identification and assessment of technical, process and organizational risks.

- i. Perform service infrastructure sparing analysis and maintain adequate sparing levels and inventories to support service performance requirements.
- j. Perform related Network Service Request (NSR) analysis and design to meet customer requirements, minimize impacts of service implementation to the current operational infrastructure, and coordinate with responsible organizations. Utilize the NICS Service Order Fulfillment System (NSOFS) and NISN Infrastructure Information System (NIIS) Corporate tools as provided under PWS 3.10.2.
- k. Assist NASA in the update of the NSD and ESRS to accurately reflect the services as approved by NASA (e.g. DNS entries, static IP address assignment).

3.1.2 REMOTE ACCESS SERVICES (RAS)

The contractor shall provide systems and sustaining engineering and capacity management for the secure remote access systems (e.g. Client Virtual Private Network (VPN), dial-in, Secure Sockets Layer (SSL) VPN) located at the NASA external border/Trusted Internet Connection (TIC) boundary and/or NASA Centers. In performance of RAS, the contractor shall:

- a. Maintain operational capability and enhance the performance and functionality of the Agency VPN/remote access solution between this Internet and NASA's private internal networks at the NASA external border/TIC boundary.
- b. Be responsible for the infrastructure and tools necessary to provide secure remote access services for the NASA Enterprise.
- c. Provide risk analysis and mitigation to include continual identification and assessment of technical, process and organizational risks.
- d. Perform service infrastructure sparing analysis and maintain adequate sparing levels and inventories to support service performance requirements.
- e. Perform related Change Request (CRQ) and Design-Cost-Schedule (DCS) development, requirements analysis and design in order to meet customer requirements, minimize impacts of service implementation to the current operational infrastructure, and ensure effective coordination with responsible organizations. Utilize the NICS IT Service Management (NITSM) tool as provided under PWS 3.10.2.

3.1.3 ENTERPRISE INTERNAL BORDER (EIB) NETWORK ACCESS CONTROL (NAC)

The contractor shall perform systems and sustaining engineering and capacity management for CSO Enterprise Internal Border Network Access Control services in accordance with NASA Agency IT Security policies and directives. In support of EIB NAC services, the contractor shall:

- a. Maintain operational capability and enhance the performance and functionality of the enterprise network access control solution for the NASA Corporate network based on device and/or user authentication and the appropriate authorization policy.
- b. Be responsible for the EIB infrastructure and tools necessary to provide network access control at all centers.

- c. Support network zone architecture and related authentication and authorization policies that have been established and are governed by the Agency IT Security Office.
- d. Support NASA in the development of standard NAC policies and processes for corporate LAN services, including guest network access, across all centers.
- e. Provide risk analysis and mitigation to include continual identification and assessment of technical, process and organizational risks.
- f. Support migration of users from legacy solutions to new network access control solution.
- g. Perform related Change Request (CRQ) and Design-Cost-Schedule (DCS) development, requirements analysis and design in order to meet customer requirements, minimize impacts of service implementation to the current operational infrastructure, and ensure effective coordination with responsible organizations. Utilize the NICS IT Service Management (NITSM) tool as provided under PWS 3.10.2.

3.1.4 (RESERVED)

3.2 CORPORATE VOICE SERVICES

The contractor shall provide systems and sustaining engineering and capacity management in support of NASA Switched Voice Services (SVS) to all NASA Centers, associated component facilities, Headquarters, JPL, and non-NASA locations as designated by the COR. SVS includes domestic and international long distance service from the desktop, telephone calling cards held by individuals, and toll-free in-bound services. The contractor shall support NASA selection and management of General Services Administration (GSA) services, as defined in PWS 3.13. The contractor shall:

- a. Perform capacity and utilization analysis and recommend alternative solutions, as appropriate.
- b. Provide audit, analysis and reporting of SVS call detail records to support investigations of fraud and/or abuse, only at the request of the CO or COR.
- c. Provide risk analysis and mitigation to include continual identification and assessment of technical, process and organizational risks.
- d. Perform related Network Service Request (NSR) analysis and design to meet customer requirements, minimize impacts of service implementation to the current operational infrastructure, and coordinate with responsible organizations. Utilize the NICS Service Order Fulfillment System (NSOFS) and NISN Infrastructure Information System (NIIS) Corporate tools as provided under PWS 3.10.2.
- e. Assist NASA in the update of the NSD and ESRS to accurately reflect the services as approved by NASA.

3.3 (RESERVED)

3.4 CORPORATE DATA SERVICES

The contractor shall be responsible for Corporate data services, including routed data, data center networks, custom networks, firewall services, proxy services, layer 2 VPN services, and international services. In performing these services, the contractor shall provide the engineering to facilitate the design of the infrastructure and development of operations concepts used to provide corporate data services. This shall include the preparation of requirements analyses and a prototyping strategy for implementing the requirements, development of network architecture(s) and design, site preparation, installation, integration and testing for deployment, sustaining engineering, capacity management, trouble resolution, and preparing as-built documentation for all implemented requirements. NASA will review and approve the design concepts.

3.4.1 ROUTED DATA

The contractor shall provide systems and sustaining engineering and capacity management for NISN's Corporate Internet Protocol (IP)-based routed data requirements in support of NASA programs, projects, and Centers. NISN's corporate network includes routed data presence (both WAN and LAN) at all NASA Centers and associated component facilities. Additionally, NISN's WAN routed data presence extends to NASA's Carrier Independent Exchange Facilities (CIEF), Internet exchange facilities, NASA contractor sites, universities, and international locations.

NISN's corporate routed data systems include routers, switches, circuit emulation equipment, multiplexers, wireless access points, associated cabling, network monitoring and management tools, network timing protocol (NTP), guest network, and associated protocols. In support of corporate routed data services, the contractor shall:

- a. Provide network design, traffic analysis, capacity management, modeling, and operational concepts for the NISN routed data network (end-to-end).
- b. Be responsible for routed data demarcation interface specifications and the coordination with ACES, EAST, and other NASA routed data customers.
- c. Be responsible for Internet peering to commercial, research, and other Internet Service Providers in support of external agency data content exchange requirements, in compliance with OMB-mandated Trusted Internet Connection (TIC).
- d. Provide risk analysis and mitigation to include continual identification and assessment of technical, process and organizational risks.
- e. Perform service infrastructure sparing analysis and maintain adequate sparing levels and inventories to support service performance requirements.
- f. Perform related **Change Request (CRQ) and Design-Cost-Schedule (DCS) development, requirements** analysis and design **in order** to meet customer requirements, minimize impacts of service implementation to the current operational infrastructure, and **ensure effective coordination** with responsible organizations. Utilize the NICS **IT Service Management (NITSM) tool**.
- g. Update the requirements database to support engineering activities, with clear linkage to documented customer requirements as identified in PWS 3.9.
- h. Maintain arrangements and subcontracts for facility and operations with Carrier Independent Exchange Facilities (CIEFs).

- i. Support LAN connection services for single devices (e.g. workstations, laptops, and servers).
- j. Support LAN connection services for multiple devices (e.g. network demarcations between the NICS-managed network and other NASA networks).
- k. Support LAN connection services for multiple devices with redundancy (e.g. redundant network demarcations between the NICS-managed network and other NASA networks, high availability connections for critical assets).
- l. Assist NASA in the update of the **CSD** and ESRS to accurately reflect the services as approved by NASA (e.g. WAN service, tail circuits, LAN single device, LAN multiple devices and guest networks).
- m. Support Agency (e.g. WAN) and Center (e.g. LAN) network timing systems to provide Stratum 1 timing for all network equipment managed by the contract and to provide Network Timing Protocol (NTP) service to all NASA customers, ensuring compliance with Internet Engineering Task Force (IETF) Request for Comments (RFC) Memorandums 778, 891, 956, and 1305.
- n. Support NASA Guest Networks at each NASA Center and associated component facility, wired and wireless infrastructure, including account management and user instruction documentation.
- o. Support NASA in the development of standard policies and processes for corporate routed data services, including guest network access, across all Centers.
- p. **Provide temporary labor to augment the existing workforce to accelerate completion of the analog telephone service upgrade in remaining KSC facilities with Voice over IP (VoIP) telephone service. Scope includes designing, procuring, testing, and documenting network and UPS equipment per KNET standards to support standard IP telephony service in the remaining KSC non-VoIP telephone facilities. Design reviews to be coordinated with the TM. The contractor shall coordinate with the KIAC and the ISC contractors throughout the lifecycle of the project, as required.**

3.4.2 DATA CENTER NETWORKS

The contractor shall provide system and sustaining engineering and capacity management for three types of data center environments: (1) Data centers within the scope of NEDC located on NASA Centers and associated component facilities; (2) Data centers within the scope of NEDC located at vendor-provided facilities; and (3) other data center environments located on NASA Centers and associated component facilities. NICS shall provide LAN and WAN services for (1) and (3) above. For (2), NICS shall only provide location demarcation point at the CIEFs. In support of Data Center Networks support services, the contractor shall:

- a. Provide network design, traffic analysis, capacity management, and operational concepts.
- b. Provide the NEDC contractor the ability to configure network assets within the data center through role-based security.
- c. Maintain operational capability and enhance the performance and functionality of the Data Center Network service.
- d. Respond to requests for Data Center Network services by providing consultation and direct technical assistance for the development of requirements for Data Center Network solutions.

- e. Ensure that Data Center Network systems are adequate to meet performance (availability and throughput) and log retention requirements.
- f. Perform related Network Service Request (NSR) analysis and design to meet customer requirements, minimize impacts of service implementation to the current operational infrastructure, and coordinate with responsible organizations. Utilize the NICS Service Order Fulfillment System (NSOFS) and NISN Infrastructure Information System (NIIS) Corporate tools as provided under PWS 3.10.2.
- g. Assist NASA in the update of the NSD and ESRS to accurately reflect the services as approved by NASA (e.g. NEDC CIEF connection and Center-specific data center LAN connection services).

3.4.3 CUSTOM NETWORKS

The contractor shall provide continuity of service for legacy custom data network solutions for point-to-point network connections until their transition to an OMB-mandated Trusted Internet Connection (TIC). The contractor shall also provide continuity of service for Center point-to-point copper and fiber optic circuits that allow for data connectivity that are not part of the Center private network. The contractor shall perform related Network Service Request (NSR) analysis and design to meet customer requirements, minimize impacts of service implementation to the current operational infrastructure, and coordinate with responsible organizations. Utilize the NICS Service Order Fulfillment System (NSOFS) and NISN Infrastructure Information System (NIIS) Corporate tools as provided under PWS 3.10.2.

3.4.4 FIREWALL SERVICES

The contractor shall perform system and sustaining engineering and capacity management of **CSO Corporate enterprise, center** and project firewall systems for the LANs and WAN managed under this PWS, as approved by NASA. The contractor shall:

- a. Maintain operational capability and enhance the performance and functionality of the Agency network and web application firewall services between the Internet and NASA's private internal networks at the NASA external border / TIC boundary in accordance with Agency IT Security policies and directives.
- b. Maintain the legacy and **project firewalls**.
- c. Maintain operational capability and enhance the performance and functionality of the firewall services.
- d. Respond to requests for firewall services by providing consultation and direct technical assistance to customers for the development of secure firewall and networking solutions.
- e. Ensure that firewalls are adequate to meet performance (availability and throughput) and log retention requirements.
- f. Collect and assess security requirements against network data flow requirements and define network firewall implementation.
- g. Maintain a De-Militarized Zone (DMZ) design at the **CSO Corporate network Internet** peering points and/or the NASA TIC, NASA Centers, and NASA Data Centers, consistent with the Agency-wide architecture.
- h. Maintain monitoring points between all IT Security zones, as directed by the Security Operations Center (SOC).

- i. Provide risk analysis and mitigation to include continual identification and assessment of technical, process and organizational risks.
- j. **Change Request (CRQ) and Design-Cost-Schedule (DCS) development, requirements analysis and design in order** to meet customer requirements, minimize impacts of service implementation to the current operational infrastructure, and **ensure effective coordination with** responsible organizations. **Utilize the NICS IT Service Management (NITSM) tool** as provided under PWS 3.10.2.

3.4.5 PROXY SERVICES

The contractor shall **perform** system and sustaining engineering and capacity management for **network filtering services** for the **CSO** Corporate network, in accordance with NASA Agency **IT Security policies and directives**. **In support of proxy services**, the contractor shall:

- a. **Maintain operational capability and enhance the performance and functionality of the Agency web proxy / content filtering solution between the Internet and NASA's private internal networks at NASA's TIC locations.**
- b. **Be responsible for the infrastructure and tools necessary to provide secure network filtering services for the NASA Enterprise.**
- c. **Maintain the legacy proxies or the NCI-transitioned proxies, as required.**
- d. Maintain operational capability and enhance the performance and functionality of the proxy servers.
- e. Ensure that proxy servers are adequate to meet performance (availability and throughput) and log retention requirements.
- f. Provide risk analysis and mitigation to include continual identification and assessment of technical, process and organizational risks.
- g. Perform related **Change Request (CRQ) and Design-Cost-Schedule (DCS) development, requirements analysis and design in order** to meet customer requirements, minimize impacts of service implementation to the current operational infrastructure, and **ensure effective coordination** with responsible organizations. **Utilize the NICS IT Service Management (NITSM) tool** as provided under PWS 3.10.2.

3.4.6 (RESERVED)

3.4.7 LAYER 2 VPN SERVICES

The contractor shall provide systems and sustaining engineering for NISN's unencrypted corporate Open Systems Interconnect (OSI) Layer 2 virtual private network (L2VPN) requirements in support of NASA programs and projects. NISN's corporate L2VPN service includes presence at several NASA Centers and component facilities, as required. NISN's L2VPN systems include switches and associated cabling. In support of corporate L2VPN services, the contractor shall:

- a. Provide network design, traffic analysis, capacity management, and operational concepts.
- b. Maintain operational capability and enhance the performance and functionality of the L2VPN service.

- c. Respond to requests for L2VPN services by providing consultation and direct technical assistance to customers for the development of requirements for L2VPN solutions.
- d. Ensure that L2VPN systems are adequate to meet performance (availability and throughput) and log retention requirements.
- e. Provide risk analysis and mitigation to include continual identification and assessment of technical, process and organizational risks.
- f. Perform service infrastructure sparing analysis and maintain adequate sparing levels and inventories to support service performance requirements.
- g. Perform related Network Service Request (NSR) analysis and design to meet customer requirements, minimize impacts of service implementation to the current operational infrastructure, and coordinate with responsible organizations. Utilize the NICS Service Order Fulfillment System (NSOFS) and NISN Infrastructure Information System (NIIS) Corporate tools as provided under PWS 3.10.2.

3.4.8 INTERNATIONAL SERVICES

The contractor shall provide systems engineering and sustaining engineering and capacity management of international telecommunications services to facilitate communications with NASA's International Partner Agencies and their research facilities, as designated by the COR. This service provides transport of data, voice, and video for both corporate and mission communications.

3.4.9 HYPERSONIC NETWORK SUPPORT

The contractor shall provide systems engineering and sustaining engineering and capacity management of the secure Hypersonic Network managed at LaRC to facilitate communications between LaRC, GRC and Other Government Agency (OGA) for the transport of data, voice, and video communications. In support of Hypersonic Network, the contractor shall:

- a. Provide support to all classified network switches, routers, National Security Agency Type I encryptors, and firewalls including policy, design, installation, and maintenance.
- b. Develop, author and implements testing strategies and documentation.
- c. Develop LAN/WAN network designs to accommodate projects as required
- d. Administer and maintain secure messaging and data communications networks
- e. Manage the usage and performance of messaging and or data communications networks
- f. Maintain network security and ensure compliance with security policies and procedures
- g. Participate in the development and implementation of network-related procedures and standards.
- h. Participate in aspects of major network upgrades and detailed system acceptance testing.
- i. Interface with vendors and critical customers to ensure appropriate restoration of systems during network outages or periods of reduced performance.

- j. Maintain current knowledge of relevant hardware and software applications as assigned.
- k. Research and recommend technical solutions for system upgrades
- l. Participate in special projects as required.

3.5 CORPORATE COLLABORATION SERVICES

The contractor shall provide Video Conferencing Services (VCS), Audio Conferencing Services (ACS), and Web Collaboration Services (WCS). In performing these services, the contractor shall provide system and sustaining engineering for the VCS, ACS, and WCS infrastructure and concepts. This shall include requirements analyses and a prototyping strategy for implementing the requirements, development of network-related architecture(s) and design changes, service optimization and consolidation, room design, installation, integration and testing for deployment, sustaining engineering, capacity management, trouble resolution, and preparing as-built documentation for all implemented requirements. Collaboration Services Facilities documentation shall be prepared and delivered in accordance with DRD 1294MA-005, *Documentation*. NASA will review and approve the design concepts. The enterprise-wide listing of VCS, ACS and Limited Service Conferencing and Audio facilities for which the contractor has support responsibility shall be maintained in the NITSM Configuration Management Data Base (CMDB).

3.5.1 VIDEO CONFERENCING SERVICES (VCS)

The contractor shall provide systems and sustaining engineering for CSO Video Conferencing Services. The contractor shall support NASA procurement of General Services Administration (GSA) contracts, as defined in PWS 3.13. The contractor shall:

- a. Be responsible for the infrastructure and tools for the NASA Teleconferencing Center (NTC).
- b. Provide the service performance report(s) as specified in DRD 1294MA-008, *Service Performance Reports*.
- c. Be responsible for the infrastructure and tools for the VCS Bridging System.
- d. Develop and maintain processes for activation of, and failover to, the GSA backup VCS bridging service.
- e. Provide engineering support and develop procedures for the integration and interoperability with non-NASA conferencing services, including but not limited to, GSA/Network, Defense Information Services Agency (DISA), and internet-based conferencing services.
- f. Sustain the VCS facilities, including associated hardware and software systems, room layout, video projection screens or monitors, audio equipment, interactive graphics and document sharing systems, and room operations panel.
- g. Customize VCS facilities to provide support as requested by the NASA customer, while standardizing designs to the extent possible.
- h. Sustain the designs that maintain interoperability between all VCS facilities and industry standards.

- i. Be responsible for the infrastructure and tools for the VCS Reservation System, including account approval and reservation of facility and bridging resources.
- j. Be responsible for the infrastructure and tools for the VCS Facilities Directories to contain at a minimum building, room, point of contact information, facility conference name designation and dial number(s), and internet protocol addresses (to conference directly with facility).
- k. Develop and maintain the VCS user guides encompassing both facility and service operations.
- l. Develop and maintain the VCS Room Operator guides, encompassing facility and service operations.
- m. Develop, maintain, and implement VCS Room Operator training and certifications, VCS facility maintenance policies, and VCS Room Certification processes.
- n. Coordinate VCS room certification processes with the GSA Backup VCS Bridging Service. Review, disposition and submit to GSA requests for VCS accounts.
- o. Review GSA VCS usage and service performance reports.
- p. Provide risk analysis and mitigation to include continual identification and assessment of technical, process and organizational risks.
- q. Perform service infrastructure sparing analysis and maintain adequate sparing levels and inventories to support service performance requirements.
- r. Perform related **Change Request (CRQ) and Design-Cost-Schedule (DCS) development, requirements** analysis and design **in order** to meet customer requirements, minimize impacts of service implementation to the current operational infrastructure, and **ensure effective coordination** with responsible organizations. Utilize the **NICS IT Service Management (NITSM) tool** as provided under PWS 3.10.2.
- s. Assist NASA in the update of the **CSD** and ESRS to accurately reflect the services as approved by NASA (e.g. additional VCS facility request).
- t. **Manage and maintain a supply of video equipment that can be loaned to customers on a short termed basis. (KSC only).**

3.5.2 AUDIO CONFERENCING SERVICES (ACS)

The contractor shall provide systems, sustaining engineering, and account management for the ACS facilities and services. The contractor shall support NASA procurement of General Services Administration (GSA) and/or Commercial contracts, as defined in PWS 3.13. The contractor shall:

- a. Be responsible for the infrastructure and tools for the ACS Facilities Directory that will contain at a minimum building, room, point of contact information, and facility conference dial number (to conference directly with facility).
- b. Develop and maintain ACS user guides, encompassing both facility and service operations.
- c. Develop and maintain ACS facility maintenance policies.
- d. Be responsible for the infrastructure and tools for ACS facilities, including associated hardware and software systems, room layout, audio equipment and room operations panel.

- e. Submit requests and coordinate with facility engineers on facility changes as a result of an ACS installation or modification.
- f. Be responsible for the infrastructure and tools for on-site support and trouble isolation/escalation for ACS conferences held to conduct the planning, monitoring, and closeout of missions.
- g. Develop and coordinate with the GSA and/or Commercial vendors to create the “Holiday Notification Letter” that will notify ACS users of official Government holidays.
- h. Review, disposition and submit to GSA and/or Commercial vendors, for requests for ACS accounts.
- i. Review GSA and/or Commercial ACS usage and service performance reports.
- j. Provide risk analysis and mitigation to include continual identification and assessment of technical, process and organizational risks.
- k. Perform service infrastructure sparing analysis and maintain adequate sparing levels and inventories to support service performance requirements.
- l. Perform related **Change Request (CRQ) and Design-Cost-Schedule (DCS) development, requirements** analysis and design **in order** to meet customer requirements, minimize impacts of service implementation to the current operational infrastructure, and **ensure effective coordination** with responsible organizations. Utilize the NICS IT Service Management (NITSM) **tool** as provided under PWS 3.10.2.
- m. Assist NASA in the update of the CSD and ESRS to accurately reflect the services as approved by NASA (e.g. additional ACS facility request).
- n. Develop and execute a transition of the Reservationless Audio Conferencing Service (also known as “Instant Meeting” or “Meet Me”) from any current provider to new provider found to offer better service value for NASA.
- o. Manage and maintain the GSA and/or Commercial vendor contract for Audio Conferencing Services including, but not limited to, delivery of contract Data Requirement Deliverables (DRDs) that support functions defined in PWS 3.5.2.

3.5.3 LIMITED SERVICE VIDEO CONFERENCING SERVICES (VCS) AND AUDIO CONFERENCING SERVICES (ACS)

The contactor shall provide systems and sustaining engineering for Limited Service Conferencing and Audio facilities and services. The contractor shall:

- a. Sustain Limited Service facilities, including associated hardware and software systems, room layout, video projection screens or monitors, audio equipment, interactive graphics and document sharing systems, and room operations panel.
- b. Customize and refresh facilities to provide support as requested by the NASA customer, while standardizing designs to the extent possible.
- c. Develop and maintain user guides encompassing both facility and service operations.
- d. Develop and maintain facility maintenance policies.
- e. For Limited Service rooms having devices which are no longer supportable, based on age and ability to provide spares or software upgrades or non-compatibility with existing systems, the contractor shall:

1. Recommend and maintain a small cache of replacement parts based on common items at each center and the population of specific makes and models of equipment.
2. Utilize and replenish spares or submit Service Requests on the customer's behalf in order to determine the feasibility of component replacement required for re-design or procurement of replacement equipment to restore functionality.

3.5.4 WEB COLLABORATION SERVICES (WCS)

The contractor shall provide systems and sustaining engineering for the CSO Web Collaboration Services. The contractor shall support NASA procurement of General Services Administration (GSA) and/or Commercial contracts, as defined in PWS 3.13. The contractor shall:

- a. Be responsible for the CSO-provided cloud-based WebEx service.
- b. Be responsible for the Skype service provided as part of the NASA cloud-based Microsoft Office 365 Suite for Government.
- c. Provide Tier-3 incident resolution support for the WebEx and Skype services.
- d. Develop and maintain operational policies.
- e. Provide the service performance report(s) as specified in DRD 1294MA-008, Service Performance Reports.
- f. Provide engineering and operational support of, and develop procedures for, the integration and interoperability of WCS, including but not limited to, NASA Launchpad, NASA ViTS, NASA IMS, NASA VoIP, GSA/Networx, Defense Information Services Agency (DISA), and internet-based conferencing services.
- g. Provide risk analysis and mitigation to include continual identification and assessment of technical, process, and organizational risks.
- h. Supply and maintain ESD Knowledge Articles (KAs) to provide end user self-help guidance plus tips and techniques for accessing features. There are also KAs intended for ESD agents only to provide guidance on assisting customers with login issues and general call support.
- i. Maintain system baseline documentation such as system drawings, and system/policy configuration.
- j. Coordinate system and client software updates with the relevant NASA Division, Program, and Service offices to ensure Agency-wide service availability and security. This is to include maintaining appropriate listings in, and alignment with, NASA-STD-2804 and NASA-STD-2805.
- k. Ensure all documentation is available upon request by appropriate Government personnel.
- l. Prepare and obtain the assessment and authorization for associated system security plans. This may consist of process support, analysis support, coordination support, security certification test support, and security documentation support.
- m. Assist NASA in the update of the CSD and ESRS to accurately reflect the services as approved by NASA.

3.6 CORPORATE MANAGEMENT AND OPERATIONS

The contractor shall provide operations, sustaining support, and technical support to the CSO corporate service elements in PWS sections 3.1 through 3.5, 3.14 and 3.15. This includes network, collaboration and VoIP/telephone system monitoring and management, technical field support, maintenance, Corporate services scheduling, and Tier 2 service desk management and integration. The contractor shall perform all Corporate management and operations functions in compliance with CSO SOP-002, *CSO Standard Operating Procedures (SOP) for Trouble Reporting, Activity Scheduling, Mission Freeze, and Major Outage Notifications*, and in accordance with DRD 1294MA-005, *Documentation*.

The contractor shall ensure, as applicable, that employees are approved at the appropriate position risk designation to work in a Mission Essential Infrastructure (MEI) Facility, in accordance with NPR 1600.1, *NASA Security Program Procedural Requirements*.

The contractor shall implement service requests (including Move/Adds/Changes) and perform incident management/problem management within the bands delineated below, and within the estimated/target cost of the contract. These activities are considered within the scope of the PWS and shall not, in general, be construed as changes within the meaning of the “Changes – Cost-Reimbursement – Alternate II” clause of this contract as long as the total number of service requests and trouble tickets per year fall within the following parameters:

Category	CSO Corporate Service Request Implementations	Number per Year
1	Highly complex (200+ days to implement)	60 – 100
2	Moderate complexity (100-199 days to implement)	130 - 170
3	Low complexity/routine service (30-99 days to implement)	220 – 300
4	Routine LAN service Moves/Adds/Changes (less than 30 days)	36,000 – 48,000

CSO Corporate Trouble Tickets	Number per Year
WAN trouble tickets	2,400 – 3,600 *
Center trouble tickets	24,000 – 36,000 *

The contractor shall implement Cable Plant service requests and perform trouble ticket resolution within the bands delineated below, and within the estimated/target cost of the contract. These activities are considered within the scope of the PWS and shall not, in general, be construed as changes within the meaning of the *Changes – Cost-Reimbursement – Alternate II* clause of this contract as long as the total number of service requests and trouble tickets per year fall within the following parameters:

AFRC Cable Plant Services	Number Per Year
Service request outside building cable plant	25
Service request inside building cable plant	400
Cable plant trouble tickets	50

ARC Cable Plant Services	Number Per Year
Service request outside building cable plant	5-10
Service request inside building cable plant	300 - 400
Cable plant trouble tickets	200 - 300 *

GRC Cable Plant Services	Number Per Year
Service request outside building cable plant	5-10
Service request inside building cable plant	200 - 240
Cable plant trouble tickets	120 - 240 *

GSFC Cable Plant Services	Number Per Year
Service request outside building cable plant	10 - 20
Service request inside building cable plant	1000 - 1200
Cable plant trouble tickets	480 - 720*
WFF Cable Plant Services	Number Per Year
Service request outside building cable plant	5 - 10
Service request inside building cable plant	100 - 120
Cable plant trouble tickets	60 - 120*

HQ Cable Plant Services	Number Per Year
Service request inside building cable plant	100 - 120
Cable plant trouble tickets	50 – 75*

JSC Cable Plant Services	Number Per Year
Service request outside building cable plant	10 - 20
Service request inside building cable plant	1000 - 1200
Cable plant trouble tickets	480 - 720*
WSTF Cable Plant Services	Number Per Year
Service request outside building cable plant	5 - 10
Service request inside building cable plant	100 - 120
Cable plant trouble tickets	60 - 120*

LARC Cable Plant Services	Number Per Year
Service request outside building cable plant	5-10
Service request inside building cable plant	400 - 480
Cable plant trouble tickets	240 - 480*

MSFC Cable Plant Services	Number Per Year
Service request outside building cable plant	80-125
Service request inside building cable plant	150-200
Cable plant trouble tickets	80-140 *
MAF Cable Plant Services	Number Per Year
Service request outside building cable plant	10-30
Service request inside building cable plant	100-150
Cable plant trouble tickets	10-20
NSSC Cable Plant Services	Number Per Year
Service request inside building cable plant	100 - 120
Cable plant trouble tickets	50 – 75*

The contractor shall implement VoIP/Telephone service requests and perform trouble ticket resolution within the bands delineated below, and within the estimated/target cost of the contract. These activities are considered within the scope of the PWS and shall not, in general, be construed as changes within the meaning of the *Changes – Cost-Reimbursement – Alternate II* clause of this contract as long as the total number of service requests and trouble tickets per year fall within the following parameters:

AFRC Telephone Services	Number Per Year
Telephone Service Request MAC	710
Telephone Trouble Tickets	220

ARC Telephone Services	Number Per Year
Telephone Service Request MAC	1200 - 1600
Telephone Trouble Tickets	800 - 1200

GRC Telephone Services	Number Per Year
Telephone Service Request MAC	1400 - 1600
Telephone Trouble Tickets	1000 - 1200

GSFC Telephone Services	Number Per Year
Telephone Service Request MAC	250 - 400
Telephone Trouble Tickets	1600 - 1800
WFF Telephone Services	Number Per Year
Telephone Service Request MAC	1400 - 1600
Telephone Trouble Tickets	1000 - 1200

HQ Telephone Services	Number Per Year
Telephone Service Request MAC	100 - 120
Telephone Trouble Tickets	50 – 75*

JSC Telephone Services	Number Per Year
Telephone Service Request MAC	4400 – 5100
Telephone Trouble Tickets	3240 - 3960
WSTF Telephone Services	Number Per Year
Telephone Service Request MAC	470 – 580
Telephone Trouble Tickets	360 - 500

KSC Telephone Services	Number Per Year
Telephone Service Request MAC	4500 – 8500
Telephone Trouble Tickets	1500 - 2100

LaRC Telephone Services	Number Per Year
Telephone Service Request MAC	350 - 600
Telephone Trouble Tickets	1720 - 1980

MSFC Telephone Services	Number Per Year
Telephone Service Request MAC	3580 – 4600
Telephone Trouble Tickets	1020 – 1240
MAF Telephone Services	Number Per Year
Telephone Service Request MAC	1000 – 1200
Telephone Trouble Tickets	85 - 100

NSSC Telephone Services	Number Per Year
Telephone Service Request MAC	No Numbers Provided
Telephone Trouble Tickets	No Numbers Provided

SSC Telephone Services	Number Per Year
Telephone Service Request MAC	4500 - 8500
Telephone Trouble Tickets	1500 - 2100

* Up to 2% of trouble tickets per month can be elevated to priority status for incident management. Priority status requires a 2-hour response time. This will provide consistency of priority restoration with the ACES contract.

The contractor shall create and implement a project that transitions operational processes to the Corporate Network Operations Center (CNOC). Implementation of the Consolidated Network Operation Services (CNOS) Project shall begin in contract year 3 and finish no later than the end of Option 1. Operational efficiencies shall be implemented as part of the CNOS Project.

3.6.1 CORPORATE SERVICE MONITORING AND MANAGEMENT

The contractor shall provide CSO Corporate **service** monitoring and management 24 hours a day/7 days a week in support of all the services described in PWS sections 3.1 through 3.4, **3.14** and **3.15**. The contractor shall:

- a. In performance of **service** monitoring:
 - 1. Operate the corporate network management system to monitor and manage the network.
 - 2. Provide tiered network monitoring.
 - 3. Monitor up/down status, performance characteristics, end-to-end response time, and physical parameters of network devices at all locations.
 - 4. Provide proactive health monitoring, and archival of network monitoring data for trend analysis and system tuning.
 - 5. Maintain the CSO Out-of-Band Administration (OOBA) system.
 - 6. Provide visibility and connectivity into carrier/supplier network management systems for the services described in PWS sections 3.1, 3.2, 3.3, 3.4, 3.5, **3.14**, **3.15** 4.0 and 6.0, as applicable.
 - 7. Operate network-based monitoring tools that show near-real-time status.
 - 8. Operate and display performance characteristics and specific bandwidth to be made available to approved customers and other help desks.
 - 9. Report service performance metrics in support of service level agreements per DRD 1294MA-005, *Documentation*.
 - 10. Provide operational read only access to network assets and network monitoring and management systems for NASA personnel as designated by the COR or designee.
 - 11. Provide read/write access to limited NASA personnel for emergency management, as designated by the COR.
- b. In performance of network management:
 - 1. Perform real-time fault isolation and restoration of failed services, including coordination with carriers and other suppliers.
 - 2. Analyze system traffic patterns and develop expansion plans to quickly react to traffic peaks with minimal user impact.
 - 3. Obtain and review monthly and quarterly carrier performance reports and provide resulting data to the Government.
 - 4. Reconcile vendor outages with vendor billings to determine carrier credits due to the Government.
 - 5. Provide recommendations to the Government for the improvement of carrier performance and the resolution of recurring problems.
 - 6. Perform software updates of CSO-managed devices, as required and approved by NASA (e.g. based on vendor releases, IT security control changes, OPM mandates).
 - 7. Maintain configuration control of CSO-managed devices, to include backups and change history.
- c. In performance of service operations for IPAM:

1. Manage, assign, delegate, and reclaim as necessary the NASA Internet Protocol resources (i.e., IPv4 and IPv6 address space, autonomous system numbers (ASN), and domains) assigned to the Agency.
 2. Coordinate with the appropriate Regional Internet Registry (RIR), for example, the American Registry of Internet Numbers (ARIN) and Reseaux IP Europeens (RIPE), for registration of NASA's IP resources.
 3. Verify and validate NASA address space, including performing audits to determine address space utilization as required, and ensure compliance with NASA address management policies.
 4. Collect and enter DNS, DHCP, and IP address configuration information for each NASA Center into the Agency provided IPAM system via the Government furnished interface.
 5. Maintain documentation for IP address to physical location mapping in the IPAM system.
 6. Maintain documentation for IP address to points of contact mapping in the IPAM system, including administration, IT security, technical, and user (for single-user systems only).
- d. In performance of service operations for RAS:
1. Provide end user support and coordination with the ACES contract for integrated service delivery of remote access services, problem management, and incident response, to include VPN client issues. This support will be limited to NASA-managed clients on ACES equipment only (i.e. no personal devices).
 2. Additionally, the contractor shall coordinate with the I³P ACES contract, which is responsible for the provisioning of secure ID tokens and client software, and with the I³P EAST contract, which is responsible for secure ID infrastructure systems.
 3. Provide administration and perform configuration management of Agency VPN / RAS systems in accordance with Agency IT security policy and standards.
 4. Operate and maintain the infrastructure and tools necessary to provide secure RAS services at the NASA external border / TIC boundary.
- e. In performance of service operations for EIB NAC:
1. Maintain and operate EIB NAC related hardware at all Centers.
 2. Provide administration and perform configuration management of EIB NAC systems in accordance with Agency IT security policy and standards.
 3. Support analysis of EIB NAC logs and provide results to the appropriate Government security personnel.
 4. Perform service infrastructure sparing analysis and maintain adequate sparing levels and inventories to support service performance requirements.
- f. (RESERVED)
- g. In performance of service operations for Firewall Services:
1. Provide firewall rule set administration and perform configuration management of CSO Corporate enterprise, center and project network and web application firewall systems in accordance with Agency IT security policy and standards and Center IT operations procedures.
 2. Analyze firewall logs and provide results to the appropriate Government security personnel.

3. Perform service infrastructure sparing analysis and maintain adequate sparing levels and inventories to support service performance requirements.
4. Operate and maintain the infrastructure and tools necessary to provide Agency network and web application firewall services at the NASA external border / TIC boundary.
5. In support of IT security incident response, provide real-time response to requests for emergency firewall rule modification upon receipt of notification from authorized IT Security Office personnel.
- h. In performance of service operations for Proxy Services:
 1. Provide proxy rule set administration and perform configuration management of the proxy servers in accordance with Agency IT security policy and standards.
 2. Analyze proxy logs and provide results to the appropriate Government security personnel.
 3. Perform service infrastructure sparing analysis and maintain adequate sparing levels and inventories to support service performance requirements.
 4. Maintain existing web-filtering system(s), including subscription services for updates to prohibited site lists.
 5. Operate and maintain the infrastructure and tools necessary to provide Agency web proxy / content filtering services at the NASA external border / TIC boundary.
 6. In support of IT security incident response, provide real-time response to requests for emergency web site blocking/unblocking upon receipt of notification from authorized IT Security Office personnel.
- i. In performance of launch and mission readiness, prepare and submit DRD 1294MA-007, *CSO Systems Readiness Reports*, and participate in flight, mission, program, and system readiness reviews to verify systems are ready to support missions, programs, flights, and operational users.
- j. Provide network performance data to customers, as designated by the COR.
- k. In performance of service operations for Intrusion Prevention Systems (IPS):
 1. Provide IPS administration and configuration management in accordance with Agency IT security policy and standards and SOC operations procedures.
 2. Implement filter/policy updates, as provided by the SOC, during a scheduled weekly maintenance window. Issues associated with IPS filter/policy updates or out-of-cycle updates would be excluded from the contractor J-4 Performance Measures. Rollback of policy or IPS by-pass would be as directed by the NASA CSO Operations Manager.
 3. Response to hardware failures and Return to Service (RS) in accordance with the vendor maintenance agreement. IPS downtime would be excluded from the contractor J-4 Performance Measures.
- l. In performance of service operations for VoIP/Telephone Services:
 1. Operate and maintain both the analog and digital telephone system infrastructure, including call processing systems, voicemail systems, gateways, E911 systems, IP telephone instruments and Uninterruptible Power Supplies (UPS).
 2. Maintain directory assistance information.

3. Provide current telephone data for the Emergency Operations Center Automatic Numbering Identification (ANI)/Automatic Location Identification (ALI) database on a daily basis. The data shall include the building, room, occupant/assignee, organization and mail code, and directory number(s) for all active ports. This data shall be made available electronically to the Government.
4. Monitor usage on telephone trunk lines and notify the Government when usage levels indicate service degradation or excess capacity, in accordance with DRD1294CF-007.
5. Protect the privacy rights of users of the telephone systems by protecting Private Act Information (PAI).

3.6.2 COLLABORATION MANAGEMENT AND MONITORING

The contractor shall provide collaboration management and monitoring operations in support of all the services described in PWS 3.5. The contractor shall:

- a. Maintain VCS and ACS facilities, including associated hardware and software systems, room layout, video projection screens or monitors, audio equipment, interactive graphics and document sharing systems, and room operations panel. The contractor will be responsible for supporting the VCS, ACS and Limited Service Conferencing and Audio facilities as identified in the NITSM Configuration Management Data Base (CMDB).
- b. Maintain the VCS Reservation System.
- c. Maintain the VCS Bridging System.
- d. Provide dedicated room operator support at locations designated by the COR or designee and defined in the Support Table shown below.

SUPPORT TABLE

Video Teleconferencing Room Support		
Center	Room Location	Hours of Operations
Ames Research Center	None	
Armstrong Flight Research Center	None	
Glenn Research Center	a. On-call scheduling and basic operational assistance as needed (e.g. guided instructions or call setup): GRC-3-113, GRC-3-110, GRC-3-215, GRC-3-225, GRC-14-131A, GRC-54-232, GRC-60-027, GRC-86-316, GRC-142-182A, GRC-142-186-1, GRC-142-290, GRC-OAI-1E4, GRC-142-229, GRC-142-230, GRC-142-249, PBS-7141-141, GRC-142-128, GRC-162-130, GRC-162-209, GRC-162-310, and GRC-162-302. b. On-call scheduling assistance as needed: 50/108, 14/140D, 301/214, 86/100, 86/315, and 54/232.	Standard business hours

	c. Fully-staffed operations support: GRC 3-7.	
Goddard Space Center (including Wallops Island)	None	
Headquarters	None	
Jet Propulsion Laboratory	None	
Johnson Space Center (including White Sands)	None	
Kennedy Space Center	a. On-call scheduling and full operational assistance as needed: Training Auditorium, O&C Mission Briefing Room, OSB II Mission Briefing Room, SSPF Conference Center, HQ 3125, Center Director's Conference Room, HQ 3225, O&C 2106, and O&C 3106. b. On-call scheduling and basic operational assistance as needed (e.g. guided instructions or call setup): All ViTS conference rooms. See attachment.	
Langley Research Center	a. On-call scheduling and full operational assistance as needed; LaRC-1201-115A (Primary Full Service Room); LaRC-1219-225, LaRC-1212-202 (Secondary Full Service Rooms); and LaRC-2101-301 (Center Director's room). b. On-call scheduling assistance as needed: LaRC-2101-305 (Center Director's use) and all IESB rooms to include: LaRC-2102-100A/C, 108, 112, 113, 114, 115, 116, 188, 210, 212, 243, 244, 262, 263, 265, 266, 268, and 272.	Standard business hours
Michoud Assembly Facility	a. On-call scheduling and basic operational assistance as needed (e.g. guided instructions or call setup): MAF-102-1EJ22, MAF-351-EDR, MAF-320-2G2, MAF-320-2L1, MAF-101-1EC42, MAF4-101-1EA17, and MAF-351-EAST. b. On-call basic operational assistance as needed (e.g. guided instructions or call setup): MAF-101-1EC24, MAF-102-2EH2, MAF-103-1P2, MAF2-102-2EJ35, MAF-320-1L1, and MAF5-320-ANNEX-PSO.	Standard business hours
Marshall Space Flight Center	a. Coordinated and assistance: MSFC1-4200-106, MSFC5-4200-504, MSFC7-4201-118, MSFC19-4200-509, MSFC22-4200-915, MSFC43-4200-409, MSFC46-4200-P110, MSFC-	

	4200-950A, MSFC2-4202-406, MSFC-4220-1103, MSFC29-4203-1201, MSFC31-4201-319. b. Coordinated only: MSFC-4201-129, MSFC-4220-5106, MSFC-Space & Center-DLN, MSFC-Space & Rocket Center-ERC, MSFC-4494-25, MSFC-4601-3105, MSFC-WYNN-3137, MSFC25-4600-2104, MSFC33-4610-2060, MSFC44-4494-17.	
NASA Shared Services Center	None	
Stennis Space Center	None	

- e. Maintain interoperability between all Full service VCS and ACS facilities provided under this contract. Limited service VCS and ACS facilities may or may not be compatible.
- f. Implement the VCS and ACS facility maintenance policies.
- g. Provide on-site support, for those locations designated by NASA, and trouble isolation/escalation for VCS and ACS conferences held to conduct the planning, monitoring, and closeout of manned spaceflight missions.
- h. Staff the NASA Teleconferencing Center (NTC) Monday through Friday, 6am-6pm, Central Time. The NTC shall be staffed outside of these hours as requested and scheduled by NASA.
- i. Perform the following functions at the NTC:
 - 1. Provide the interface between the users and providers of the Collaboration Services.
 - 2. Maintain the Collaboration Services Facilities Directories to contain at a minimum building, room, point of contact information, and facility conference name designation and dial number(s), and internet protocol address(es) (to conference directly with facility).
 - 3. Process reservations, schedule resources for video conferences, initiate VCS calls, and monitor call quality.
 - 4. Operate VCS Reservation System, including account approval and reservation of facility and bridging resources.
 - 5. Provision and operate the VCS Bridging System.
 - 6. Develop and maintain usage and service performance reports for the VCS.
 - 7. Maintain and implement processes for activation of, and failover to, the GSA backup VCS bridging service.
 - 8. Maintain integration and interoperability procedures with non-NASA VCS conferencing services, including but not limited to GSA/Networx, Defense Information Services Agency (DISA), and internet-based conferencing services.
 - 9. Monitor VCS and ACS conferences held to conduct the planning, monitoring, and closeout of manned spaceflight missions.
 - 10. Review, disposition and provision WebEx account requests submitted via the NASA Account Management System (NAMS).
 - 11. Provide Tier-2 incident resolution support for the WebEx service.

3.6.3 TECHNICAL FIELD SUPPORT

The contractor shall provide operational and technical field support to maintain service performance requirements at each Center and associated component facilities or as designated by the COR or designee. Additionally, the contractor shall provide heightened operational and technical field support during Government-defined mission critical periods. This support shall include:

- a. Operate and maintain network services in accordance with Performance Specifications as called out in Attachment J-1, Appendix C, *Performance Specifications*, and Attachment J-4, *Performance Measures*.
- b. Participate in CSO, program, flight, operational readiness reviews, and certification of flight readiness reviews to ascertain whether WAN/LAN services are ready to support missions, programs, flight, and operational users.
- c. Implement new infrastructure components related to infrastructure changes and Change Requests (CRQ).
- d. Perform Remedial Maintenance (RM) and ensure that the maintenance tools, spares, procedures, skills, and response times are adequate to meet performance metrics.
- e. Operate and maintain the cable plant infrastructure, including Uninterruptible Power Supplies (UPS).
- f. Maintain communications manholes (exclusive of structural maintenance), ducts, handholds, and cable pathways.
- g. Perform corrective and preventative maintenance of IP, digital and analog telephone instruments and cable drops.
- h. Provide end-to-end support equipment and services for moves, adds, and changes (MAC). These services include instrument placement and relocation, infrastructure management, and other required services to provide telephone-related connectivity within, and external to, the Center such as moving a user's telephone to a new location, changing a user's extension, and changing a user's name in telecommunication systems.
- i. Provide and/or ensure coordination of telephone operator services including placement of international calls, collect calls, conference calls, other operator-assisted calls, and directory assistance.
- j. Provide touch labor, to include the installation and deployment of server hardware, for NASA Consolidated Active Directory (NCAD) services agency-wide.
- k. Provide temporary labor to augment the existing workforce to perform expanded shift coverage for KSC wired and wireless network service support for the Exploration Ground Systems (EGS) Multi Element Verification and Validation (MEVV) Program.
- l. Provide temporary labor to augment the existing workforce to accelerate completion of the analog telephone service upgrade in remaining KSC facilities with Voice over IP (VoIP) telephone service. Scope includes the installation, activation, validation, and documentation of equipment for upgrade of network and VoIP systems, and the installation of UPS systems in communication rooms in support of this project. The contractor shall coordinate with the KIAC and the ISC contractors throughout the lifecycle of the project, as required.

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- m. Provide temporary labor to augment the existing workforce to support the installation, activation, validation, and documentation of equipment procured for upgrade of specifically designated KSC Conference Rooms. The contractor shall coordinate with the KIAC and the ISC contractors throughout the lifecycle of the project, as required.

3.6.4 MAINTENANCE

The contractor shall maintain in a fully operational condition all equipment for those systems which the contractor has responsibility. In performance of this function, the contractor shall:

- a. Provide, implement, and maintain the Operability/Maintainability Plan in accordance with DRD 1294RM-001, *Operability/Maintainability Plan*, to include operational procedures that ensure the system continues to operate while any failed component is being replaced, as applicable.
- b. Review and consolidate vendor hardware and software maintenance and license agreements in accordance with DRD 1294MA-005, *Documentation*, where possible, to achieve operational efficiencies and cost reductions including Mission services.
- c. Input into the trouble ticket system information on operational failures, incidents, discrepancies, and problem disposition and resolution, to include a daily log of all maintenance and repair activities.
- d. RESERVED
- e. Compile and maintain a list of key contacts responsible for coordinating and conducting the required equipment maintenance functions in accordance with DRD 1294MA-005, *Documentation*.
- f. Submit activities for maintenance performed via the Communications Service Office Outage Notification System (CSONS) process in accordance with CSO SOP-002, *CSO Standard Operating Procedures (SOP) for Trouble Reporting, Activity Scheduling, Mission Freeze, and Major Outage Notifications*. This shall encompass all CSO services.
- g. Provide updates as a result of any maintenance activity to the IT asset management database in accordance with PWS section 2.5, *Procurement Services*.
- h. Maintain up-to-date vendor documentation for all systems.
- i. Develop Preventative Maintenance (PM) schedules that minimize disruption to customer operations in accordance with DRD 1294RM-001, *Operability/Maintainability Plan*.
- j. Coordinate the installation of software updates/releases/patches with NASA and customers, as required.

3.6.5 CORPORATE SERVICES SCHEDULING

The contractor shall provide scheduling and coordination to optimize the operation of all CSO Corporate services. Documentation shall be prepared and delivered in accordance with DRD 1294MA-005, *Documentation*. The contractor shall:

- a. Provide scheduling of systems and circuit releases used in the network.

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- b. Ensure that all scheduled maintenance activities include risk assessments and back-out plans and that all contractor personnel participating in the activities are properly trained and familiar with the planned activity.
- c. Maintain a daily log of all service scheduling activities.
- d. Operate the **CSONS** system, which notifies approved users of user-impacting activities at least 10 calendar days prior to conducting the activity (or less, if approved by customer(s), per Agency policy). Network activity and outage reports shall be archived and available via the web to approved users. Grant access to this system and any archived information to COR-designated personnel and ensure only authorized users gain access.
- e. Support customer requests for cancellation or rescheduling of activities.
- f. Adhere to NASA mission freeze policies which disallow certain changes during mission-critical periods, follow the NASA freeze exemption request and waiver process, and coordinate requests for exemptions to network freezes.

3.6.6 TIER 2 SERVICE DESK MANAGEMENT AND INTEGRATION

The contractor shall provide incident management in response to service problems detected by the contractor, vendors, or users. Documentation shall be in accordance with DRD 1294MA-005, *Documentation*. The contractor shall:

- a. Provide and operate the Tier 2 service desk 24 hours a day, 7 days a week and integrate with the ESD Tier 0/1 service desk to include status reports, in accordance with Appendix A, *Cross Functional Performance Work Statement*.
- b. Utilize for automated logging, categorization, prioritization, and tracking of **CSO** Corporate incidents the MITS-provided trouble ticket tracking service until the NICS Incident Tracking System (NITS) is available. NITS is described in PWS section 5.1 and sustained in PWS section 3.10.2.
- c. Isolate, escalate, and automatically route calls to appropriate operations center and field personnel.
- d. Support user-initiated, supplier-initiated, and auto-detected problem reporting and resolution processes.
- e. Provide processes, criteria, and points of contact (including other services providers and suppliers) necessary for effecting problem resolution, including but not limited to, maintaining escalation contacts and procedures and notification lists and processes.
- f. Maintain a knowledge management capability to assist in resolution of troubles on the first call and to identify trends, in accordance with Attachment J-1, Appendix A, *Cross Functional Performance Work Statement*.
- g. Generate and review with NASA for approval root cause analysis and correction action plans.
- h. Generate and report root cause analysis and corrective action plans for outages.

3.7 MISSION SERVICES

The contractor shall provide the systems and sustaining engineering necessary to support NISN Mission services. This includes Mission voice services, Mission video services, Mission routed data services, Mission integration services, Mission dedicated data and custom services, Center-specific Mission services, Mission IT security services, and Mission configuration management and documentation.

Mission services include the Agency Mission WAN services (e.g., routed data, dedicated data and custom networks, and communication integration services for missions, projects, and launches), the GSFC-specific Mission services (e.g., GSFC LAN, Voice, and Video), and Center-specific Mission services. The Mission WAN has a point-of-presence at multiple NASA Centers and associated component facilities and includes the WAN equipment at these locations. The GSFC-specific Mission services represent the unique services dedicated for Missions at GSFC. It is NASA's intent that any other Center-specific Mission services will be included in NICS as IDIQ task orders, as defined in PWS 3.7.6, at the direction of NASA.

In performing these services, the contractor shall provide the engineering required to facilitate the design of the infrastructure and development of operations concepts used to provide Mission services. This shall include the requirements analyses and a prototyping strategy for implementing the requirements, development of related network architecture(s) and designs, site preparation, installation, integration and testing for deployment, sustaining engineering, capacity management, trouble resolution, preparing as-built documentation, and providing on-call support during mission activities. The contractor shall develop network designs and operational concepts. NASA will approve the concepts through the appropriate review channels.

3.7.1 MISSION VOICE SERVICES

The contractor shall provide support for a system of dedicated Mission voice circuits, working in conjunction with Center switching and conferencing systems and with GSA carriers to create inter-connected voice communications loops. The voice loops interconnect the different Center voice distribution systems that support multiple missions within the Agency. The contractor shall provide operations and sustaining engineering of the Center switching and conferencing systems. In providing this service, the contractor shall:

- a. Coordinate and interface with Government and contractor personnel regarding mission voice requirements.
- b. Perform related Network Service Request (NSR) analysis and design to meet customer requirements, minimize impacts of service implementation to the current operational infrastructure, and coordinate with responsible organizations. Utilize the NICS Service Order Fulfillment System (NSOFS) and NISN Infrastructure Information System (NIIS) Corporate tools as provided under PWS 3.10.2.
- c. Provide sustaining engineering support for the NASA/Agency Mission Operations Voice Enhancement (MOVE) Services.

3.7.2 MISSION VIDEO SERVICES

The contractor shall provide for the distribution of video signals in support of NASA programs. The particular implementation shall be dependent on the specific requirements of the program and may involve terrestrial or satellite transmission, with or without the utilization of digital compression and encoding techniques. Examples of current video distribution services include Shuttle External Tank Ice Video, Mission Tracking & Data Relay Satellite System (TDRSS), and NASA Select.

The contractor shall provide systems and sustaining engineering of the Mission video distribution system. In providing mission video, the contractor shall:

- a. Perform design, procurement, and installation of terrestrial and satellite services and associated hardware and software to extend, enhance, and/or standardize existing services.
- b. Coordinate with NASA centers to obtain frequency authorization (in compliance with NPR 2570.1, *NASA Radio Frequency (RF) Spectrum Management Manual* prior to implementation of or changes to satellite services.
- c. Procure the satellite services that support the Public Affairs Office, DTV, and Mission Video.
- d. Document all operations, engineering, maintenance and repair activities, including a daily log, in accordance with DRD 1294MA-005, *Documentation*.
- e. Coordinate and interface with Government and contractor personnel regarding Mission video activities.
- f. Perform related Network Service Request (NSR) analysis and design to meet customer requirements, minimize impacts of service implementation to the current operational infrastructure, and coordinate with responsible organizations. Utilize the NICS Service Order Fulfillment System (NSOFS) and NISN Infrastructure Information System (NIIS) Corporate tools as provided under PWS 3.10.2.

3.7.3 MISSION ROUTED DATA SERVICES

The contractor shall provide the systems and sustaining engineering necessary to support NISN's Mission routed data networks. The contractor shall support Internet Protocol (IP) as the Agency's standard for routed data services and legacy non-IP protocols until they are phased out.

Performance requirements for these services are specified in the NISN-SOP-001, *NISN Services Document*. Requirements that are not satisfied by these performance categories shall be provided as a custom service and shall not be construed as a contract change in accordance with the *Changes* clause. NISN's Mission routed data includes routers, switches, firewalls, Small Conversion Devices (SCD), associated cabling, and network monitoring and management tools. In support of Mission routed data services, the contractor shall:

- a. Provide network design, traffic analysis, capacity management, and operational concepts.
- b. Provide engineering support to transition and maintain all external connections to an approved NASA Trusted Internet Connection (TIC), in accordance with OMB mandates.

(Mod 6)

- c. Provide technical coordination with the managed backbone service provider, procured by NASA from the GSA Network contract.
- d. Perform related Network Service Request (NSR) analysis and design to meet customer requirements, minimize impacts of service implementation to the current operational infrastructure, and coordinate with responsible organizations. Utilize the NICS Service Order Fulfillment System (NSOFS) and NISN Infrastructure Information System (NIIS) Corporate tools as provided under PWS 3.10.2.

3.7.4 MISSION INTEGRATION SERVICES

The contractor shall provide NISN WAN and GSFC LAN Mission integration service out of the Network Operations and Management Center (NOMC) located at GSFC. The contractor's Mission integration service personnel at GSFC that support the NISN Mission WAN shall coordinate with the Mission operations personnel at all Centers with Mission communications control. This coordination shall ensure requirements for Mission technical support meet availability and restoration requirements for Mission Services. The contractor shall provide for Mission Communications Managers and Shift Communications Managers. The contractor shall:

- a. In providing Mission Communications Managers:
 - 1. Assess the technology, processes and significance of all Mission services and their impact to specific Missions.
 - 2. Provide leadership in the resolution of all specific mission-impacting issues associated with Mission services.
 - 3. Coordinate with each specific Shuttle Mission or Project to understand communications and support requirements and develop Operational Support Plans for the specific mission or project in accordance with DRD 1294MA-005, *Documentation*.
 - 4. Provide on-console staffing augmentation during critical coverage periods for specific missions to provide the mission-focused communications management support.
 - 5. Participate in program, flight, and operational readiness reviews and certification of flight readiness reviews to ascertain whether Mission communications services are ready to support the specific missions, programs, flight, and operational users.
 - 6. Provide, implement, and maintain the annual Training and Certification Plan in accordance with DRD 1294MA-005, *Documentation*, for each mission operations support function.
 - 7. Provide and maintain annual certification training to include written tests in the areas of Mission-critical operations, on-the-job training, and on-the-job skill assessment.
 - 8. Enter incidents into the NASA Incident Tracking System (e.g. Tier 2) to provide a record of mission incident reports.
- b. In providing Shift Communications Managers:
 - 1. Assess the technology, processes and significance of all Mission services and their impact to all ongoing Missions.
 - 2. Provide leadership in the resolution of all specific Mission-impacting issues associated with all ongoing Mission services.

3. Coordinate the day-to-day operations of Mission communications services and staff the on-console position of Shift Communications Manager, 24 hours a day, 7 days a week.
4. Categorize, prioritize, escalate, track and log NISN Mission incidents and/or problems.
5. Interface with Missions and projects to receive requests for all service repairs and other functions required of the entities in the NOMC.
6. Furnish information to Missions and projects concerning service outages and trouble resolution.
7. Coordinate the activities of all functional areas to provide Mission services.
8. Prioritize problem trouble resolution and restoration activities.
9. Coordinate all work during Mission freeze periods.
10. Prepare and send Mission outage notifications utilizing the Mission Outage Notification System (MONS) to the appropriate distribution listing, in coordination with the Government, for outages meeting the established criteria.
11. Prepare and submit a Daily Summary Report (DSR) in accordance with DRD 1294MA-005, *Documentation*.
12. Provide, implement, and maintain the annual Training and Certification Plan in accordance with DRD 1294MA-005, *Documentation*, for each Mission operations support function.
13. Provide and maintain annual certification training to include written tests in the areas of Mission-critical operations, on-the-job training, and on-the-job skill assessment. Ensure recertification annually for certified personnel.

3.7.5 MISSION DEDICATED DATA AND CUSTOM SERVICES

Although NASA encourages the use of Mission routed data services, there are customer requirements that result in dedicated data and custom services. In those instances, the contractor shall support the Government in procurement of point-to-point network connections between two or more discrete locations, in accordance with OMB-mandated TIC, due to performance and/or security considerations, or to support unique data transfer protocols not otherwise supported by the routed data network. The contractor shall maintain any highly specialized software for systems whose requirements cannot be met using Commercial Off-the-Shelf (COTS) Software (e.g. Small Conversion Devices, Tracking Data System), as determined by the Government. The contractor shall:

- a. Perform requirements analysis, system design, coding, configuration management, testing for implementation, and software and network design reviews.
- b. Perform application modifications to support network requirements and modifications to correct software issues.
- c. Provide maintenance of several tools (e.g., debuggers, traffic generators, and traffic capture software) that provide system test and network capabilities, diagnostic and fault isolations capabilities, and network traffic data collections capabilities.
- d. Provide integration and testing support for the distribution of operating systems upgrades, security patches/fixes, kernel upgrades, custom kernel upgrades, and custom serial drivers.

- e. Provide notification of problems to communications control personnel and the Government.
- f. Provide subject matter expertise and problem resolution support to communications control during critical coverage periods.
- g. Coordinate with communications control to review and analyze internal Event Reports (ER) and if related to the software, resolve appropriately via an internal System Problem Report (SPR)/change request and a new release/patch.
- h. Coordinate the release/patch of software into operations with Mission Operations Manager.
- i. Provide, implement, and maintain the annual Training and Certification Plan in accordance with DRD 1294MA-005, *Documentation*, for each Mission operations support function.
- j. Perform related Network Service Request (NSR) analysis and design to meet customer requirements, minimize impacts of service implementation to the current operational infrastructure, and coordinate with responsible organizations. Utilize the NICS Service Order Fulfillment System (NSOFS) and NISN Infrastructure Information System (NIIS) Corporate tools as provided under PWS 3.10.2.

3.7.6 CENTER-SPECIFIC MISSION SERVICES

The contractor shall provide Center-specific mission services as they are identified throughout the entire period of NICS performance, and as directed in accordance with Task Orders issued in accordance with the clauses entitled *Task Ordering Procedure* and *Supplemental Task Ordering Procedures*. In performing these services, the contractor shall provide all necessary labor (both prime and subcontractor), materials, travel, and Other Direct Costs to accomplish the tasks delineated therein.

3.7.7 MISSION IT SECURITY SERVICES

The contractor shall support the security systems within the Mission network. The contractor shall verify and specify the appropriate security controls and designs that meet Federal, Agency, NISN, and Mission security requirements. Documentation shall be prepared and delivered in accordance with DRD 1294MA-005, *Documentation*. The contractor shall:

- a. Provide support to the Mission intrusion detection system until transition to SOC is achieved by the end of the contract base period.
- b. Collect and assess security requirements against Mission network data flow requirements and define Mission network firewall implementation.
- c. Provide support to Mission incident investigation and IT security incidents/emergency response, to include SOC notification, in coordination with the Mission Network Security Officer (NSO).
- d. Perform Mission vulnerability scanning, including unannounced scanning, consistent with the current network scanning architecture and approach. Provide scanning findings and metrics quarterly in accordance with NPR 2810.1, *Security of Information Technology*. Coordinate with each Center's IT Security Manager (ITSM) for the use of the scanning tools (e.g. Foundstone).
- e. Report all identified intrusions to the Mission NSO and report intrusion detection findings monthly to the Mission NSO, to include SOC notification when required.

- f. Maintain a security incident response team to support the Mission NSO.
- g. Provide security-engineering consultation and intrusion evaluation services to the mission community.
- h. Develop, maintain, and test the contingency and related Disaster Recovery Plans, in accordance with DRD 1294MA-005, *Documentation*, to ensure the orderly recovery from a disaster that may render all or part of information facilities, systems, and equipment inoperable. This plan shall be in accordance with NPR 1040.1, *NASA Continuity of Operations (COOP) Planning Procedural Requirements*.
- i. Coordinate with information systems and disaster recovery experts across NASA to verify integration of procedures and planning techniques.
- j. Execute effective measures to protect all systems equipment and data from potential environmental threats.

3.7.8 MISSION CONFIGURATION MANAGEMENT AND DOCUMENTATION

The contractor shall be responsible for Mission configuration management and documentation. Specifically, the contractor shall:

- a. Manage a physical and electronic server library consisting of internal and external supporting documents, including but not limited to, Local Operating Procedures (LOP's), Operational Directive Memorandums (ODM's), Interface Control Document (ICD's), Memorandums of Agreements (MOA's), Memorandums of Understanding (MOU's), Mission Operations Interface Documents (MOID's) and Inter-Agency Agreements.
- b. Maintain the NISN Management Services Integration System (NMSIS) and database that contains the complete end-to-end configuration of the carrier network and supporting infrastructure such as the power panels, PDU's, and voice and data ports.
- c. Maintain routing topology diagrams of the Mission network and key individual services.
- d. Provide technical writing support for document development and formal document review preparation, presentation development and CCB preparation.
- e. PTP development and maintenance.
- f. Project/Task Slide development and maintenance.

3.8 MISSION MANAGEMENT AND OPERATIONS

The contractor shall provide Mission management and operations including communications control, installation and maintenance, Mission network scheduling, Mission security operations support, and Mission facilities management. Documentation of management and operations shall be prepared and delivered in accordance with DRD 1294MA-005, *Documentation*. The contractor shall operate and maintain Mission network services in accordance with Performance Specifications as called out in Attachment J-1, Appendix C, *Performance Specifications*, and Attachment J-4, *Performance Measures*.

The contractor shall implement Mission service requests and perform mission incident management/problem management within the bands delineated below, and within the estimated/target cost of the contract. These activities are considered within the scope of the PWS and shall not, in general, be construed as changes within the meaning of the "Changes – Cost-

Reimbursement – Alternate II” clause of this contract as long as the total number of service requests and trouble tickets per year fall within the following parameters:

Category	NISN Mission Service Request Implementations	Number per Year
1	Highly complex (200+ days to implement)	10 – 20
2	Moderate complexity (100-199 days to implement)	220 – 240
3	Low complexity/routine service (30-99 days to implement)	15 – 25
4	Routine Services (< 30 days to implement)	15 – 25

NISN Mission Trouble Tickets		Number per Year
Mission trouble tickets (WAN & LAN)		1000 - 1200

3.8.1 COMMUNICATIONS CONTROL

The contractor shall provide communications control for day-to-day operations and trouble resolution of the Mission services, which includes five integrated functional areas. These areas are Mission routed data, Small Conversion Devices (SCD), Mission voice switches, Mission GSA carriers, and Mission video. Other NASA Centers provide communications control through local contracts. The communications control personnel at GSFC shall coordinate with the communications control personnel at these Centers to support Mission services. The contractor shall:

- a. Staff on-console positions, 24 hours a day, 7 days a week, during day-to-day, mission-critical, and special support periods, unless otherwise noted.
- b. Report all anomalies and the results of all subsequent restorations to the Shift Communications Manager.
- c. Escalate anomalies associated with custom software systems to internal event reports (ER) for resolution by software engineering.
- d. Maintain the historical database of all logs for operations, testing, and restoration activities.
- e. Perform fault isolation and trouble resolution and coordinate fault isolation and trouble resolution efforts at remote locations.
- f. In performance of Mission routed data services:
 1. Monitor frame/cell switched and routed networks using the existing Network Management System (NMS) and workstations.
 2. Monitor all network problem isolation and resolutions.
 3. Compile traffic statistics for network optimization and engineering.
 4. Provide configuration management for all infrastructure components.
 5. Coordinate maintenance issues and work with maintenance providers to maintain, repair, and upgrade network equipment.
 6. Create and test all new configurations and/or configuration changes for the Internet Protocol Operational Network (IONet).
 7. Operate, maintain and upgrade the Internet Protocol Network Operations Center (IPNOC) NMS using Commercial Off-The-Shelf (COTS) tools.
 8. Maintain and upgrade the IONet firewall and any related firewall tools.
 9. Maintain IONet Domain Name Service (DNS) records in the Agency IPAM system.
- g. In support of the Small Conversion Devices:

1. Manage, operate, configure, install, troubleshoot, and repair conversion devices used in the network as gateways between the legacy 4800 bit block and the IP network.
2. Configure, manage, and operate conversion devices for operational and testing support of missions and projects, according to approved requirements and mission briefings.
3. Reconfigure conversion devices to maintain and support missions and projects.
4. Generate secure gateway requests associated with conversion devices.
5. Assign network data routing codes (source/destination, logical port addresses and fixed multicast addresses).
6. Assist in the maintenance of the Source/Destination Code Handbook containing network data routing codes and security level of the handbook according to the applicable NASCOM security guidelines and operating procedures.
- h. In support of the Mission voice switches:
 1. Manage, operate, configure, and troubleshoot Mission voice systems, including but not limited to, designated Center switching and conferencing systems used to provide Mission voice service in the form of digital switching and conferencing, 24 hours per day, 365 days per year, at the NASA Information Category Level of "Mission (MSN)," in accordance with NPR 2810.1, *Security of Information Technology*.
 2. Establish, maintain, and monitor voice conferences to NASA network and mission control centers and various other NASA, federal Government, contractor, and international partner facilities, according to approved requirements and mission briefings.
 3. Provide fault isolation, restoration, testing, and monitoring, including detection of circuit degradation, of all voice circuits terminated in the voice switching and conferencing systems.
- i. In monitoring the performance of the GSA carriers that provide Mission critical services:
 1. Coordinate with GSA Carrier to provide configuration of high speed, wideband and video transport systems to meet specific mission requirements.
 2. Monitor services and coordinate any necessary trouble resolution activities with both the GSA Carrier and other Center Contractors.
- j. In performance of the Mission video services:
 1. Provide operations, sustaining engineering, and maintenance of GSFC's video distribution system to support missions, projects and organizations.
 2. Provide and distribute timing references for mission control centers.
 3. Operate and maintain the GSFC TV Central Facility, 8:00 am to 5:00 pm, Eastern Time, Monday through Friday, at the NASA Information Category Level of "Mission (MSN)," as defined in NPR 2810.1, *Security of Information Technology*. During Shuttle Mission support, the facility shall be operated and maintained 24 hours per day, 7 days per week.
 4. Perform recording, editing, dubbing, and playback of video for Agency Mission and GSFC programmatic activities.
 5. Provide switching and distribution of video feeds throughout GSFC.
 6. Provide transponder switching of the NASA Select TV service.

- k. In performance of Mission operations:
 - 1. Provide at least one Mission-certified Shift Communications Manager for each shift.
 - 2. Ensure that employees are approved at the appropriate position risk designation to work in a Mission Essential Infrastructure (MEI) Facility, in accordance with NPR 1600.1, *NASA Security Program Procedural Requirements*.

3.8.2 INSTALLATION AND MAINTENANCE

The contractor shall install and maintain the infrastructure components used to provide Mission services. In support of this function the contractor shall:

- a. Provide support for the implementation of Service Requests (SR's) for Mission work, including the installation and documentation of implemented solutions.
- b. Participate in reviews (design, requirement, test, operational readiness and others) as requested.
- c. Staff these services on a 8 hours a day, 5 days a week basis, except when requested to provide Mission-critical or special support.
- d. Perform physical installation of equipment and cables in support of Mission Services including the installation of systems and equipment racks.
- e. Provide and maintain the cable plant and associated systems required to provide Mission video, mission data, TV, and precision timing references.
- f. Maintain approved documentation of the cable plant to track the connections and available fibers in the cable plant.
- g. Perform Preventative Maintenance (PM) on equipment supporting Mission Services.
- h. Perform Line Replaceable Unit (LRU) replacement on equipment supporting Mission Services.
- i. Operate and maintain the GSFC Modular Repair Facility to repair LRU modules for a number of otherwise non-maintainable systems.
- j. Perform system administration functions for Mission systems and ensure that all IT Security requirements are implemented in full compliance with NASA directives.
- k. Log all maintenance and repair activities.
- l. Interface and coordinate with communications control, as necessary, to provide and restore service.
- m. Report all activities to the Shift Communications Manager.
- n. Document all implementations with drawings and Engineering Changes (ECs), using the EC format as approved by NASA and in accordance with ISO certified processes.
- o. Review and consolidate hardware and software vendor maintenance and license agreements, where possible, to achieve operational efficiencies and cost reductions including with Mission services.
- p. Provide host center support at KSC locations (Communications Distribution and Switching Center (CD&SC), KSC Uplink Station (KUS), and Ponce De Leon (PDL)) associated with troubleshooting and maintaining NICS Mission Voice Channel, Serial Data, Small Conversion Device (SCD) and Routed Data services. Includes technician touch labor to support CRQ implementations at these locations. Host center support services are to be staffed on an 8 hour a day, 5 days a week basis, except when

requested to provide Mission-critical or special support such as KSC tests, simulations, and launches.

3.8.3 MISSION NETWORK SCHEDULING

The contractor shall provide scheduling and coordination to optimize the operation of all NISN entities. The contractor shall:

- a. Provide scheduling of satellite transponders, systems and circuit releases.
- b. Distribute communications alert and advisory messages to network users and common carriers notifying them of mission critical support periods, events, and/or changes (e.g., Network Advisory Messages, Support Preparedness Advisories, Channel Rename Advisories, Communication Service Advisory Messages).
- c. Maintain a daily log of all network-scheduling activities.
- d. Maintain and operate the e-mail based activities scheduling system, which shall notify approved users of user-impacting activities at least 10 calendar days prior to conducting the activity. The contractor shall provide a feedback mechanism for customers to request cancellation or rescheduling of activities. Network activity and outage reports shall be archived and available via the web to approved users.
- e. Manage notification process for the Mission Freeze Policy as defined in the NISN-SOP-002.
- f. Issue mission-related video schedules identifying the latest composite of television requirements.
- g. Calculate network availability for services and report on a monthly basis to the carriers and NISN management.
- h. Enter trouble ticket information into NISN Management Services Integration System (NMSIS) for trending and reporting analysis.

3.8.4 MISSION SECURITY OPERATIONS SUPPORT

The contractor shall ensure all work in the Mission support areas is properly coordinated under Engineering Changes (ECs) and Release Requests and that all sections have current versions of supporting documentation. In support of this PWS, the contractor shall provide support to the NASCOM programmatic security operations and configuration management programs and all Mission operation facilities. The contractor shall:

- a. Staff the Security Control Center, 24 hours a day, 7 days a week.
- b. Provide physical security control, electronics systems control, and security configuration management of all mission operations facilities, according to the applicable security guidelines and operating procedures.
- c. Report all security anomalies, or breaches, to the Shift Communications Manager and the Systems Security Officer (SSO), and to the SOC, as applicable.
- d. Interface and coordinate with all areas of the NOMC, as required, to provide security services.
- e. Log all security operations and coordinate content with the SSO.
- f. Ensure continuity of operations by providing safe and secure storage of all mission-related software necessary to support mission critical network equipment.

3.8.5 MISSION FACILITIES MANAGEMENT

The contractor shall provide the Mission facility management services to support the Mission Operations Manager(s). The contractor shall provide, implement, and maintain a uniform process of managing the use of assigned facilities in accordance with DRD 1294MA-005, *Documentation*. In performance of this work, the contractor shall:

- a. Ensure that all mission critical network infrastructure is configured properly to provide diverse main power sources, backup power source, and surge protection in order to provide uninterrupted power supply.
- b. Interface with the GSFC Facilities Division, building Facility Operations Managers (FOMs) and Building Engineers to ensure that Center-wide facility work does not impact the mission critical network infrastructure.
- c. Provide coordination for work requests and mission related work freezes.
- d. Participate in the GSFC safety reviews and coordinate resolution of safety violations.
- e. Serve as the primary point of contact for the internal organization for facility modifications, relocations and repairs.
- f. Attend all Utility Working Group (UWG) meetings for buildings that house mission critical infrastructure and supporting infrastructure such as duct banks, load centers, and HVAC.
- g. Serve as a member of the Freeze Exemption Request review board and perform physical site assessment when necessary to determine if proposed work could have potential impact on the Mission network.
- h. Ensure that the mission control room power infrastructure is managed and maintained. The contractor shall interface with the various working groups to ensure that missions are not impacted by facilities work that may have an impact to mission networks. Attached is the detail description of the work.
- i. Provide mission control room maintenance services and ensure that maintenance personnel are adequately trained and screened.

3.9 CUSTOMER RELATIONSHIP MANAGEMENT

The contractor shall be responsible for providing on-site customer interface support for NASA's Centers and associated component facilities. The contractor shall also provide documentation in accordance with DRD 1294MA-005, *Documentation*. In performance of these functions, the contractor shall:

- a. Partner with NASA Customer Relationship Managers (CRMs) to perform customer relations functions across all services.
- b. Serve as point of contact for customer requirements and liaison to Center and Program representatives, in coordination with the Center CIO's office.
- c. Assist service owners, NASA CRMs, and customers in the development of new requirements for programs and projects.
- d. Document and maintain customer agreements, including requirements formulation, establishment of Service Level Agreements (SLAs), and communication of any impacts caused by changes to requirements.

- e. Access, retrieve, review and disseminate accurate and timely information related to service requests, incident management, problem resolution, operational status, service level management, costs, cost estimates, and usage.
- f. Identify resources necessary to accomplish customer requirements and ensure service implementation that meets customer needs.
- g. Schedule and conduct customer requirements reviews, support annual requirements review and PPBE generation, and participate in mission directorate reviews.
- h. Communicate NISN's new services, existing services, service changes, existing operating level agreements, operating level changes, mission freeze policies, infrastructure architecture and changes to this architecture, procurement status, NISN processes, funding policy and changes, billing requirements and changes, and any other NISN policies and procedures.
- i. Plan, coordinate, and conduct NISN customer meetings, including support for site visits by NISN civil service and contractor personnel.
- j. Provide support for NISN-sponsored customer meetings, including input to agenda, ensuring appropriate customers are invited, and participating in events.
- k. Maintain NISN website customer information.
- l. Utilize NSSC-provided customer satisfaction survey tool(s) to conduct customer satisfaction surveys. Additionally, identify, collect, summarize, and present customer satisfaction data within each customer service area, to include as a minimum summarization of customer satisfaction survey data (number of surveys sent, responses received, action taken, and results) for general, problem resolution, and service request process by PWS level 2.
- m. Utilize information management systems to support effective customer relationship management.
- n. Maintain the existing NISN Services Document (NISN 001-001) and update to include all services offered via the NICS contract.
- o. Provide class documentation, videotapes, hardcopy and computer-based tutorial information, and reference information for user/specialized training of NISN services and systems.
- p. Provide and maintain the status of all active service requests.

3.10 SERVICE MANAGEMENT

The contractor shall provide Service Management, including but not limited to facilities engineering IT support, NISN service delivery support software, and configuration management.

3.10.1 FACILITIES ENGINEERING IT SUPPORT

The contractor shall provide on-site field engineering IT support for NICS services in support of construction and refurbishment projects at NASA Centers and associated component facilities. In providing these services, the contractor shall:

- a. Participate in design reviews, planning meetings, scope development, and coordination with other construction disciplines.
- b. Provide communications engineering consultation services to the Centers' Facilities Offices for the Centers' Master Construction of Facilities (CoF) Plan.

3.10.2 CSO SERVICE DELIVERY SUPPORT SOFTWARE

The contractor shall provide the systems, software and sustaining engineering to support CSO's integrated service delivery. This includes the Corporate network management systems/tools, Tier 2 incident tracking systems/tools, service fulfillment tracking systems/tools, connectivity management tools, and device configuration tools. The contractor shall:

- a. Track and maintain vendor maintenance agreements, equipment warranties, license agreements, and systems software.
- b. Maintain up-to-date vendor support, configuration management and as-built documentation for all systems.
- c. Acquire, evaluate, test, and install software and security updates, releases, and patches.
- d. Maintain software change management system (includes priority determination and ranking for schedule integration).
- e. Consolidate vendor maintenance and license agreements, where possible, to achieve operational efficiencies and cost reductions.
- f. Provide software architecture and engineering support for tools and systems.
- g. Provide and maintain IAGP software and hardware systems for the Network Incident Tracking, NITS, as defined in PWS section 5.1. *NITS Project*. The contractor shall be responsible for any upgrades to operational NITSM to ensure on-going interoperability with the Tier 0/1 ESD, CNOC and NOMC, in accordance with Attachment J-1, Appendix A, *Cross Functional Performance Work Statement*. The contractor shall notify the ESD owner 30 days prior to operational change to NICS Tier 2 documentation, scripts, and procedures interface with the ESD per DRD 1294CF-014, *Problem Documentation*. The system shall contain information on operational failures, incidents, discrepancies, and problem disposition and resolution, to include a daily log of all maintenance and repair activities. Additionally, the contractor shall provide read-only access to the NITSM for NASA personnel as designated by the COR or designee.
- h. Be responsible for Commercial off the Shelf (COTS) tools and the **Corporate Enterprise Nework Management Systems (CENMS)**, hardware systems and connectivity to monitor, in real-time, system performance parameters such as network latency and throughput for the entire end-to-end system, from user device to the server.

- i. Provide and maintain IAGP software and hardware systems displaying performance characteristics and specific bandwidth to be made available to authorized customers and help desks.
- j. Provide and maintain IAGP software and hardware systems for customer-facing tools including Communications Service Office Outage Notification Tool (CSONS), VoTS usage, NASA Collaborative Infrastructure Resource Scheduler (NRS), Desktop Appliance Video Conference (DAVC) and NISN Call Detail to be made available to authorized users.
- k. Provide and maintain IAGP software and hardware systems for NICS service delivery support to the ESRS to include the following:
 - 1. NSOFS, as defined in PWS section 5.2. *NSOFS Project*, the NICS service fulfillment system that provides interface to the ESRS for routine service ordering (e.g. LAN connections, telephones, mobile radios), bundled routine service ordering (e.g. desktop seats, server seats), and infrastructure service ordering (e.g. high/moderate/low complexity WAN service orders, LAN service orders).
 - 2. NITSM, the Corporate and Mission infrastructure tracking system/customer database that tracks CRQs from creation to closure and correlates to CSO customers.
 - 3. Upgrades to operational NITSM to ensure on-going interoperability with the ESRS, in accordance with Attachment J-1, Appendix A, *Cross Functional Performance Work Statement*. The contractor shall notify ESRS 30 days prior to operational change to NICS service delivery support documentation, scripts, and procedures interface with the ESRS.
- l. Provide configuration updates as a result of any maintenance activity to the IT asset management database.
- m. Provide integration and system administration for COTS software products.
- n. Provide system integration and report generation capabilities for COTS and custom applications.
- o. Perform related Change Request (CRQ) and Design-Cost-Schedule (DCS) development, requirements analysis and design in order to meet customer requirements, minimize impacts of service implementation to the current operational infrastructure, and ensure effective coordination with responsible organizations.
- p. Maintain operational capability and enhance the performance and functionality of log aggregation systems and infrastructure. Provide access to authorized users for log analysis.

- q. Be responsible for Commercial off the Shelf (COTS) tools that support operation and management of systems and services located at the NASA external border / TIC boundary.
- r. Provide and maintain IAGP software and hardware systems for NICS service delivery support for Corporate Mission Connectivity Management and Device Configuration Management.
- s. Provide Windows and Application systems administration in support of the secure Hypersonic Network managed at LaRC to facilitate communications between LaRC, GRC and Other Government Agency (OGA). Be responsible for IAGP software and hardware supporting Windows applications such as Microsoft Exchange, Microsoft SQL Databases, and Sharepoint.
- t. Develop and maintain IAGP software and hardware systems for automated network mapping capability to the generation and maintenance of Corporate network topology maps.
- u. Develop and maintain IAGP software and hardware systems for an integrated business intelligence application providing business and service status dashboards for both Corporate and Mission Services.
- v. Provide Application hosting for NASA's Identify Credential Access Management's (ICAM) application related to Personal Identity Verification (PIV) authentication solution for privileged and unprivileged access accounts that cannot access NCAD related PIV solutions.

3.10.3 CONFIGURATION MANAGEMENT

The contractor shall prepare, implement, and maintain a Configuration Management Plan in accordance with DRD 1294CF-003, *Service Asset and Configuration Management (SACM) Plan*, and other documentation in accordance with DRD 1294MA-005, *Documentation*. The contractor shall also ensure conformance with evolving IT standards and guidelines, using ITIL V3.

The contractor shall maintain the system(s) to manage the end-to-end configuration of assigned network systems to include PWS 5.3, *NICS Consolidated Configuration Management System*, when operational. The contractor shall ensure that the stored configuration information accurately reflects the current system configuration and is verified at least quarterly. Verification shall be by means of an automated tool, where possible. Where automated validation is not possible, the contractor shall audit monthly a randomly selected, statistically significant subset of entries in the system. The contractor shall obtain NASA approval of the verification process. All corrections shall be incorporated within five working days of discovery.

Additionally, the contractor shall:

- a. Maintain and update information systems architectures in accordance with DRD 1294CF-003, *Service Asset and Configuration Management (SACM) Plan*.
- b. Provide an online configuration management capability to document technical configurations, diagrams, architectures and procedures.
- c. Provide electronic and hardcopies of network and facilities drawings.
- d. Utilize applicable Government standards for generating and maintaining documentation and create a records retention plan in accordance with NPD 1440.6, *NASA Records Management*.
- e. Provide documentation support for service definition, service implementation, and service management. The activity shall include retaining and maintaining support documentation, controlling the documentation, and maintaining a document control list, naming convention, and storage control system.
- f. Coordinate with MITS to maintain and update the NISN Sharepoint site and subsites, including maintaining configuration control for site structure and providing access to authorized users.
- g. Maintain an initial set of documentation and drawings that were generated under previous contracts related to the work described in this PWS.
- h. Retain and maintain all documentation and drawings generated under this contract.
- i. Prepare and submit documents for CIO-sponsored user meetings and committees, and provide support for follow-up documentation for these meetings.
- j. Provide additional documentation required by this PWS, to include as a minimum hardware numbers, software revision levels, user interface details, and circuit details, such as circuit numbers, circuit types, originating and terminating locations, installation date, and service request reference number.
- k. Coordinate with the NICS Project Office to develop and maintain change management processes/procedures, to include Configuration Control Boards (CCBs).
- l. Coordinate with Center-specific change management processes/procedures, to include CCBs, and provide NICS-related configuration management data to non-NICS Center-specific configuration management databases.

3.11 STRATEGY GENERATION

The contractor shall provide thought leadership and perform systems analysis and planning activities to assist NASA (i.e. Agency and Centers) in strategy generation in order to effectively maintain and evolve infrastructure systems. Documentation shall be prepared and delivered in accordance with DRD 1294MA-005, *Documentation*. The contractor shall:

- a. Develop special studies, to include trade studies, feasibility studies, trend analyses, business cases, hypothetical investigations, benchmarks, standards migration, and pricing.
- b. Continually assess current network usage to determine large bandwidth consumers and develop strategies for alternative solutions.
- c. Review and assess the future direction of developments in IT to ensure architectures and management structures evolve to take advantage of new product releases (hardware and software), IT innovations, and advances in technology and to retire technologies that are no longer cost effective to operate and maintain.

- d. Review, assess, and determine infrastructure impacts of emerging customer requirements and network expansions.
- e. Develop and document strategic/implementation plans for the services and supporting systems. These plans will establish the direction of change based on evolving technologies and customer requirements.
- f. Assist in the development of the comprehensive *Five Year Integrated Information Technology Plan*, taking into account customer requirements and technology evolution.
- g. Develop decisions packages (e.g. Capital Planning and Investment Control (CPIC), business cases) for the CIO to support funding prioritization of infrastructure improvements resulting from the strategic planning efforts (e.g. refreshes, obsolescence, service improvements, and technical enhancements).
- h. Support development of exhibits, artifacts, and reports required by NASA Headquarters, the Inspector General, General Accountability Organization, and Office of Management and Budget and others.
- i. Implement and document Enterprise Architecture in accordance with OMB mandates, NPR 2830.1, *NASA Enterprise Architecture Procedures*, Attachment J-1, Appendix A, *Cross Functional Performance Work Statement*, and DRD 1294MA-005, *Documentation*, as coordinated with the Agency Enterprise Architects.
- j. Provide technical information concerning any invention, discovery, improvement, or innovation made by the contractor in the performance of work under this contract. Technology Reports shall be prepared in accordance with DRD 1294CD-002, *Technology Reports*.
- k. Assist in the preparation, analysis, and maintenance of a portfolio description of major information systems that support the governance of investments and identifies redundancy of existing or shared IT capabilities. The analysis of the portfolio shall provide information demonstrating the impact of alternative IT investment strategies and funding levels, identify opportunities for sharing resources, and consider the Agency's inventory of information resources.
- l. Support partnerships with industry, academia, and Government agencies to accelerate the use of advanced technologies to meet NASA requirements.
- m. Operate the associated network technology laboratories (e.g., NISN Operations System Lab (NOSL)). This activity shall include asset management, system testing, protocols/standards evaluation, customer requirements documentation and analysis, and technology investigation, as designated/approved by NASA.
- n. Develop and recommend standards for the implementation and feasibility of incorporating new services across the Agency.
- o. Participate in standards and forum boards to influence next generation standards, services, and technology direction.
- p. Support NASA in the review of proposed changes to such things as Agency and Center IT policies, architectures, standards, and procedures and recommend additions, modifications, and deletions as needed to ensure conformity with the NICS contract.
- q. Advise NASA of any adverse impacts to stability, cost, architecture, interoperability, compatibility, or service and recommend mitigation strategies.

- r. Inform the COR of any issues caused by proposed changes to Agency and Center IT policies, architectures, standards, and procedures during the informal or formal review cycles. The contractor shall raise such issues in writing within 10 working days of the notification of proposed change(s).

3.11.1 PREFORMULATION FOR THE AUTOMATED BEHAVIORAL ANALYSIS (AUBA) PILOT

The contractor shall assist NASA in support of the Interagency Agreement (IAA) with Department of Homeland Security (DHS). The purpose of this IAA between DHS and NASA is to acknowledge that DHS has selected NASA to provide application development and computing infrastructure support for the AuBA pilot. In the preformulation of the pilot, the contractor shall:

- a) Draft a Statement of Work for the AuBA
- b) Provide a definitization cost proposal

3.12 CORPORATE IT SECURITY SERVICES

The contractor shall support the Agency CIO's goal to strengthen and improve IT security. This includes intrusion detection/incident response, IT security perimeter, NISN security services and, GSFC IT Security Support Services. Documentation shall be in accordance with DRD 1294MA-005, *Documentation*.

3.12.1 INTRUSION DETECTION/INCIDENT RESPONSE

The contractor shall support a comprehensive intrusion detection/incident response capability, in coordination with the NASA SOC.

Intrusion detection is defined as the full range of activities aimed at detecting attempts to compromise the confidentiality, integrity or availability of NASA's network and information resources. This includes, but is not limited to, examining network traffic, log files or other evidence for signs of intrusions. Incident response includes activities such as preparation, identification, analysis, investigation, containment, eradication, recovery, reporting, and follow-up.

In performance of this effort, the contractor shall:

- a. Provide all necessary assistance and access to the affected systems so that a detailed investigation can be conducted and lessons learned documented. Security logs and audit information shall be handled according to evidence preservation procedures.
- b. Make available logs from any information systems, as requested by the SOC. Electronic raw log data shall be forwarded to the SOC, in accordance with NASA policies, procedures and guidance.
- c. Support NASA incident investigations. This includes providing analysis of the NASA traffic passing through NASA connections to any connections between NASA and its partners, even if they are utilizing NASA address space, including Internet connections.

- d. Utilize network monitoring tools to provide early warning and detection of intrusions into NISN through analysis of network traffic from IP networks, including the Internet and key signatures associated with known vulnerabilities and cyber attacks. Promptly report to the SOC and the appropriate Center ITSM any suspected information security incidents occurring on any systems.
- e. Provide the response mechanism to contain, analyze and report on the number, source and nature of hostile probes coming from the networks, which includes the Internet.
- f. Analyze and be able to project evolving situations based on data collected from vendor-provided managed networks and monitoring devices (e.g. GSA/Networx), as well as NASA-managed networks and monitoring devices.
- g. Provide daily reports and analysis on the nature of the NASA traffic passing through the NASA connections to any connections between NASA and its partners even if they are utilizing NASA address space, including Internet connections.
- h. Support the deployment and maintenance of network monitoring devices, as approved by the appropriate NASA service owner and directed by the SOC, which includes the installation of network taps as required by NASA.
- i. Coordinate intrusion detection/incident response/mitigation activities with the NASA SOC, the Center ITSMs, and their representatives.
- j. Utilize NASA's IT and NISN capabilities to perform the support functions at all field centers and Headquarters.
- k. Provide rapid response and mitigation to any vulnerabilities or security incidents that might occur. This includes responses to threat notification, risk management, network monitoring, centralized database collections, security response tracking and analysis, and forensics in the SOC incident management environment.
- l. Establish and maintain contact with internal and external technical working groups to include IT and IT security professional associations, NASA Centers and component facilities, vendors, other Government agencies, and national/international industry organizations.
- m. Evaluate, develop, and test prototypes of NISN security tools, techniques, and training in coordination with NASA IT security management.
- n. Provide system information to authorized recipients within NASA security and law enforcement agencies as requested to support investigations, audits, personnel actions, and legal proceedings.
- o. Manage and operate the AFRC, GRC, and GSFC local Intrusion Detection Systems (IDS) until the responsibility for local IDS can be transferred to the SOC, share local IDS signatures with the SOC, and coordinate with the SOC for the perimeter IDS system that is maintained by the SOC. During the IDS transition period, ensure that incidents resulting from AFRC, GRC, or GSFC local IDS alerts or other methods are entered into the SOC Incident Management System (IMS).
- p. Coordinate with Agency and Center information systems experts across NASA to perform electronic mapping of non-NICS managed NASA networks and address space.

- q. Support the deployment and maintenance of Intrusion Prevention Systems (IPS) devices, as approved by the appropriate NASA service owner, which includes the installation of network taps.

3.12.2 IT SECURITY PERIMETER

The contractor shall provide support to implement and maintain a secure NISN perimeter. In providing this service, the contractor shall:

- a. Support Denial of Service (DOS) prevention and mitigation at the Internet peering points, NASA Centers, and associated component facilities.
- b. Analyze the traffic passing into and out of the perimeters of the NISN WAN and between each security zone at the Centers and associated component facilities and provide an analysis of the traffic showing, at a minimum, types of services, volume of traffic associated with the services, and connection origination/destination, and make available to SOC, as required.
- c. Provide and maintain out-of-band management of NISN IT security monitoring systems, data analysis engines, firewalls, IPS, and VPN systems.

3.12.3 NISN SECURITY SERVICES

The contractor shall support the Agency CIO's goal of strengthening and improving IT security in accordance with NPR 2810.1, *Security of Information Technology*. In performing these services, the contractor shall:

- a. Implement technology-related recommendations established by the NASA CIO and the SOC.
- b. Perform network asset vulnerability scanning, including unannounced scanning, consistent with the current network scanning architecture and approach. Provide scanning findings and metrics quarterly in accordance with NPR 2810.1, *Security of Information Technology*. Coordinate with each Center's IT Security Manager (ITSM) for use of the scanning tools (e.g. Foundstone).
- c. Provide technical support for NASA vulnerability scans.
- d. Develop, maintain, and test the Contingency and related Disaster Recovery Plans, in accordance with DRD 1294MA-005, *Documentation*, to ensure the orderly recovery from a disaster that may render all or part of information facilities, systems, and equipment inoperable. This plan shall be in accordance with NPR 1040.1, *NASA Continuity of Operations (COOP) Planning Procedural Requirements*.
- e. Coordinate with Agency and Center information systems and disaster recovery experts across NASA to verify integration of procedures and planning techniques.
- f. Execute effective measures to protect all systems equipment and data from potential environmental threats.

3.12.4 GSFC IT SECURITY SUPPORT SERVICES

The contractor shall provide GSFC Information Technology (IT) security support services for the GSFC corporate network. In providing these services, the contractor shall:

- a. Perform for all host vulnerability scanning on the GSFC corporate network.

- b. Maintain a secure website for the tracking of vulnerabilities and distribution of that information to system administrators and responsible organizational IT personnel who have the responsibility for tracking and updating systems that have been flagged as vulnerable.
- c. Operate and maintain the GSFC developed custom tool for ingesting Foundstone (i.e. scanning) information and Patchlink (patch monitoring system) information for use by the network and security teams for the purposes of establishing connectivity blocks for those systems found to be non-compliant.
- d. Manage the GSFC vulnerabilities waiver process.
- e. Respond to IT security incidents in coordination with the GSFC ITSM and GSFC IRM (Incident Response Manager).
- f. Perform forensic analysis on hosts that have been compromised or suspected of compromise.
- g. Prepare and obtain the assessment and authorization for system security plans. This task will consist of process support, analysis support, coordination support, security certification test support, and security documentation support.
- h. Evaluate new security tools for use on the GSFC corporate network.
- i. Transition developed security tools into operations use for the GSFC corporate Network.
- j. Be responsible for the management and configuration of the NASA/Agency mandated and Center approved patch management tools and processes.

3.12.5 AFRC IT SECURITY SUPPORT SERVICES

The contractor shall provide AFRC Information Technology (IT) security support services for the AFRC corporate network. In providing these services, the contractor shall:

- a. Participate with the Armstrong Information Technology Security Office to define, design and implement computer security system policies, procedures, and guidelines across AFRC. In so doing, the contractor shall provide advice to system administrators on guidelines, using various media and techniques including briefings and tutorials.
- b. Define requirements and configuration guidelines for securely configured computer systems in multiple environments, including UNIX, Windows, MacOS, and mobile device platforms.
- c. Proactively assist in the identification, isolation, and development of resolution strategies for anomalous Armstrong Network Security Infrastructure (ANSI) behavior.
- d. Assist the Armstrong IT Security office staff with their lead responsibility in coordination and execution of reporting ITS incidents and suspicious activities to appropriate NASA offices and contractors.
- e. Coordinate the periodic Armstrong IT security audits and assessments for the AFRC computing environment including the network infrastructure and any network connected equipment.
- f. Participate in the design and testing of new or modified systems. Define system requirements, preliminary and critical design, technical specification, review

- presentations and user documentation. Coordinate technical issues with vendors to resolve problems and/or make recommendations regarding system improvements/upgrades.
- g. Conduct periodic audits for deploying software to detect presence of unsecured, misconfigured or unauthorized network access points.
 - h. Test recommended security tools, patches, solutions, and configurations for distribution upgrades that remedy known computer vulnerabilities.
 - i. Develop and coordinate recommendations with system administrators to avoid and eliminate vulnerabilities.
 - j. Ensure that recommended security solutions are implemented and configured in accordance with NASA IT Security guidelines, conducting random audits as required.
 - k. Perform penetration testing as requested by the Armstrong Chief Information Security Officer, and in accordance with established Agency Policies, Handbooks and local procedures.
 - l. Monitor and analyze system logs and network monitoring tool logs. Report all violations to the SOC and notify the local CISO and dCISO.
 - m. Provide requested system logs as required to the CIO and/or the CISO.
 - n. Maintain current skill level on IT security technologies and vulnerabilities. Evaluate new approaches and technologies for the AFRC IT Security program. Prepare cost/impact reports on recommended improvements.
 - o. Maintain current skill level on NASA-supported and AFRC-supported hardware and operating system platforms.
 - p. Provide knowledgeable personnel in the ISC² 10 domains of information security as described in the Certified Information System Security Professional Common Book of Knowledge.
 - q. Work with the CISO and System Administrators to document IT Security System hardware and software configurations. Ensure documentation is updated whenever configurations change.
 - r. Track all AFRC IT System Security Plans (SSP's) and help ensure that they meet the Agency Assessment and Accreditation (A&A) requirements. The contractor shall assist in the development and input of IT SSP's into the Agency database. The contractor shall provide the guidance for information required and, working with the Center's IT Security Office, provide the process needed to ensure that all reviews internal and external are completed. The Contractor shall become familiar with all NASA and NIST documentation that pertains to IT Security.
 - s. Work with NASA in developing all documentation required by NPR 7120.7 NASA Information Technology and Institutional Infrastructure Program and Project Management Requirements.
 - t. Periodically scan AFRC systems to detect and report vulnerabilities as required by the IT Security Office. The vulnerability scans will occur at least once per month.

- u. Maintain the intrusion detection system rule set which entails:
 1. The creation of new rules based on network traffic profile
 2. Updating of existing rules
 3. The determination of which rules should generate an alarm versus just generating a log entry
 4. Tuning rules to minimize false-positives
- v. Review IDS Logs
 1. Conduct initial review and analysis of events triggered by the IDS
 2. Report confirmed incidents to the NASA SOC and the Armstrong Incident Response Manager
- w. Monitor Network Trends
 1. Monitor system and network device behaviors to establish and maintain a baseline of normal patterns and trends for all Armstrong networks
 2. Report network activities that diverge from Armstrong's normal network patterns or trends
- x. Correlate data from other log sources to validate potential intrusions or assess system risk. Examples of relevant log sources include:
 1. Centralized Log System
 2. Patch Status Reporting System
 3. Vulnerability Scanning System
 4. Firewall Logs
 5. Full Packet Capture System
 6. Web Content Filtering System
- y. Assist in periodic administrative investigations as well as IT Security investigations initiated from normal monitoring, auditing, or penetration testing.

3.13 GSA CONTRACT INTEGRATION

For WAN services, NASA purchases telecommunications services (e.g. switched voice, dedicated data, conferencing services) via Government-Wide Acquisition Contracts (GWACs) such as GSA **Telecommunications Services Contracts**, Networx, **Enterprise Infrastructure Solutions (EIS)**, **Washington Interagency Telecommunications Services 3 (WiTS3)** and **Various Local Service Access (LSA)** contracts, when those contracts meet NASA's requirements or can be modified to meet NASA's requirements. Documentation shall be prepared, maintained, and delivered in accordance with DRD 1294MA-005, *Documentation*. The contractor shall:

- a. Match NASA requirements to GSA contract solutions and identify any exceptions where the GSA contract solutions do not meet NASA requirements.
- b. Generate technical designs that include the use of GSA contractor-provided services.
- c. **Support the NASA GSA Telecommunications Services contract(s) Task Order CO(s) and COR(s) in preparing and tracking requests for quotations, performing market research, and evaluating GSA contractor quotations to determine whether the quotations are technically acceptable and represent fair and reasonable pricing.**

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- d. Support the NASA GSA Telecommunications Services contract(s) Task Order CO(s), the COR(s), and GSA in initiating, coordinating, and reviewing quotes for GSA contract modifications and NASA master agreement/delivery order modifications.
- e. Ensure that all NICS contractor personnel supporting this PWS element are properly trained regarding Designated Agency Representative (DAR) responsibilities and that all personnel comply with Federal and NASA procurement regulations relative to the use of GSA telecommunications contracts (for example, performing fair opportunity in accordance with FAR Part 16.505).
- f. As defined by GSA regulations, initiate, prepare, submit, and track service orders on the GSA contracts and escalate any issues related to processing of these orders.
- g. As permitted by GSA regulations, initiate, submit, and track requests for new accounts, deletion of accounts, and changes to GSA Telecommunications Services Contract(s) accounts on contractor business systems and GSA Telecommunications Services contract(s) based services.
- h. Coordinate telecommunications provider service orders and service order issues with the NICS contractor's internal organizations (for example, engineering, operations, business functions) and with NASA.
- i. Support the NASA GSA Telecommunications Services Contract(s) Task Order CO(s) and COR(s) in performing acceptance testing of new services and perform ongoing monitoring of services delivered by the GSA contractors to ensure that the delivered services are in accordance with the requirements specified in the GSA's Telecommunications Services master contracts, NASA's master agreement/delivery orders, and individual service orders.
- j. Monitor GSA contractor(s) performance relative to requirements and analysis of GSA contractor-provided reports and report results to NASA GSA Telecommunications Services Contract(s) Task Order CO(s) and COR(s).
- k. Coordinate network management and operations functions with GSA contractor(s), including but not limited to sharing of network monitoring and problem resolution information and processes, sharing of trouble ticketing information, and maintenance and exercise of escalation processes.
- l. Conduct GSA contractor billing analysis, to include:
 - 1. Maintenance of NASA's Agency Hierarchy Code (AHC) in accordance with NASA's requirements to report usage and billing to multiple accounts.
 - 2. Ensuring that all service orders and associated invoices contain the correct AHC.
 - 3. Reviewing and reporting of all GSA Contractor bills to ensure that the Contractor(s) are billing in accordance with the requirements specified in the GSA master contract, NASA's master agreement/delivery order, and individual service orders per DRD 1294MA-005, *Documentation*.
 - 4. Initiating, documenting, filing, tracking, reporting, reconciliation, and escalation of billing disputes with GSA Contractor(s) and ensuring that billing credits are applied to the correct NASA account per DRD 1294MA-005, *Documentation*.
 - 5. Identifying and reporting to NASA any instances of fraud or abuse of GSA Contractor services.
 - 6. Creating, maintaining, and distributing GSA Telecommunications Services Contract(s) Task Order(s) contractor billing reports and data to report costs by consumer (e.g., center, program/project, user, and account).

- m. Review new/changed/deleted GSA contractor service offerings to determine the impact to NASA users.
- n. Coordinate project management of activities related to transition of any GSA contractor services to new or different contract vehicles or service offerings.
- o. Execute NICS individual nondisclosure agreements and conflict of interest forms for all employees supporting NASA in the placement of orders under the GSA contracted services contracts.

3.13.1 ENTERPRISE INFRASTRUCTURE SOLUTIONS (EIS) INTEGRATED PROCUREMENT TEAM (IPT) SUPPORT

The contractor shall provide support to the Integrated Procurement Team (IPT) for the NASA Task Order(s) against GSA Enterprise Infrastructure Solutions (EIS) contract. This support shall consist of:

- a. Provide technical and business input to the Integrated Procurement Team (IPT)
- b. Review and evaluate technical/business input to the Integrated Procurement Team (IPT)
- c. Review, compile, or utilize sensitive information, including proprietary, business confidential, or financial data of other companies, and Government procurement sensitive information.

3.14 CABLE PLANT SERVICES

The contractor shall provide Cable Plant services which include engineering, design installation, and sustaining engineering of the copper and fiber optic cable plant. This shall include cable management and support for end-to-end configuration/validation tests to meet operational and institutional requirements.

In performance of these services, the contractor shall:

- a. Perform sustaining engineering and capacity management for the cable plant infrastructure, including Uninterruptible Power Supplies (UPS).
- b. Perform services in accordance with applicable duct usage, fiber lease agreements, and other Center-specific documents.
- c. Coordinate cable plant work with network management and monitoring, Center CIO (or designee), and other contractors to avoid disruptions to the Center community and to minimize system(s) downtime.
- d. Maintain specialized cable support equipment.
- e. Calibrate safety and test equipment.
- f. Maintain the cable support infrastructure for both external and intra-facility cable routing and provide support for conveyances to external customers.
- g. Provide technical support for design, installation, and maintenance of communications manholes.
- h. Provide technical and management expertise for the communications pathways including communications manhole and conduit systems, repeaters, cross connects,

- telephone cabinets, main distribution frames, and dedicated communications cable trays.
- i. Provide technical and management expertise for facility premise wiring from the frame to the face plate, frame cross connects, telephone cross connects, circuit protectors, circuit design, and installation.
 - j. Perform design, procurement, and installation of new cabling, equipment, and associated hardware and software to extend or enhance existing services.
 - k. Obtain permits, as necessary, for all building networking penetrations, conduit installations, trenching, boring, flagging, and digging activities.
 - l. Provide trenching and digging services when required to implement new cabling installation, facilitate repair, and enhance existing systems.
 - m. Coordinate with center facility offices to ascertain and mitigate potential impacts to communications services from construction activities and excavations.
 - n. Coordinate and monitor fieldwork for the placement of new underground communications utilities to ensure compliance with communications requirements.
 - o. Monitor activities performed by commercial communication service providers that may affect communications infrastructure and inform center customers of any impact.
 - p. Maintain records for cable plant services including fiber plant, copper plant, coax cabling, fiber conduit paths, manhole/vault/pull box locations, cable labeling, and cable plant drawings.
 - q. Transition and maintain current SOPs and SOMP, as applicable.
 - r. Ensure that the single-mode fiber, multi-mode fiber, copper, and coax cable plant utilized in performance of Cable Plant services adheres to NASA and industry standards.
 - s. Operate calibrated air quality testing equipment to ensure safe working conditions in confined spaces.
 - t. Comply and ensure subcontractor compliance with all Center, Agency and industry codes, standards and regulations, such as Occupational Safety and Health Administration (OSHA), American National Standard Institute (ANSI), National Electric Code (NEC), National Electric Safety Code (NESC), Building Industry Consulting Services International (BICSI) standards and Telecommunications Industry Association (TIA) requirements.
 - u. Ensure that all work, including that which may require exposure to asbestos, is performed in accordance with all Federal, State, Local, and Center-specific safety, health, environment, and fire protection/prevention regulations and procedures, as well as the contractor's Safety and Health Plan per DRD 1294SA-001, *Safety, Health, and Environmental (SHE) Plan*, and each Center's applicable asbestos requirements. The contractor shall also provide safety, training, and protective equipment as required.

3.14.1 AFRC SPECIFIC REQUIREMENTS

In addition to the requirements identified in PWS 3.14, the following unique requirements at AFRC shall be provided:

- a. The contractor shall provide Cable Plant services for the AFRC, Building 703, and AERO Institute campuses.

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- b. Perform design, procurement, and installation of new cabling, equipment, associated hardware, software and miscellaneous items (e.g. antennas, cameras, speakers, etc) as needed, to extend or enhance existing services.
- c. Coordinate with AFRC Facilities to obtain permits and services, as necessary, for all building networking penetrations, conduit installations, trenching, boring, flagging, and digging activities.
- d. Coordinate with facilities for trenching and digging services when required to implement new cabling installation, facilitate repair, and enhance existing systems.
- e. Coordinate with center facility offices to ascertain and mitigate potential impacts to communications services from construction activities, excavations, and utility outages due to installation/demolition or maintenance of facilities systems.
- f. Maintain records for cable plant services including fiber plant, copper plant, coax cabling, fiber conduit paths, manhole/vault/pull box locations, cable labeling, cable test reports, work orders, cable plant drawings including an assessment of the current infrastructure.
- g. Maintain processes/procedures or develop them as needed for all services provided.
- h. Complete small antenna and RF cable installations. This includes connectorizing the RF cables and purchasing or fabricating (or coordinating with local fab shop to produce) mounting hardware as needed to mount the antenna. Typically the antennas are UHF or VHF omnidirectional models used to support communications for projects that are hosted by Armstrong. The cable runs can be very long for systems mounted on hangers. Coordination with facilities and use of personnel high-lifting devices will be required for this work.
- i. The contractor shall provide communication conduit work that includes design, procurement, and installation. Installation of communication conduit must meet National Electric Code (NEC) and NASA building code and standards.

3.14.2 MSFC/MAF SPECIFIC REQUIREMENTS

In addition to the requirements identified in PWS 3.14, the following unique requirements at MSFC and MAF shall be provided:

- a. The contractor shall provide Cable Plant services at MSFC and MAF which include operation, maintenance, engineering, design installation, and sustaining engineering of the copper and fiber optic cable plant. This shall include cable management and support for end-to-end configuration/validation tests to meet operational and institutional requirements.
- b. Maintain a Class 3 Asbestos Crew which shall install various types of wiring (copper and fiber) in buildings with asbestos containing material. The Asbestos Crew is required to undergo annual training to certify ability to work in above ceiling asbestos areas and performed in accordance with the SHE Plan DRD 1292SA-001 and MPR1840.4, Marshall Asbestos Program. This applies only to MSFC, not MAF.

- c. Operate and maintain a central distribution process for voice, video, and data products (incoming and generated).
- d. Provide cable plant support services to commercial tenants at MAF on a case by case basis where the tenant funds the work. For cable plant services to commercial tenants at MAF, the contractor will submit a proposal consistent with its current process. The proposal will include sufficient detail to permit thorough government evaluation of all aspects.

3.15 VOIP / TELEPHONE SERVICES

The contractor shall provide the design, installation, system engineering and sustaining engineering for the VoIP / Telephone systems.

In performance of these services, the contractor shall:

- a. Perform sustaining engineering for both the analog and digital telephone system infrastructure, including call processing systems, voicemail systems, gateways, E911 systems, telephone instruments (IP, analog and digital) and Uninterruptible Power Supplies (UPS).
- b. Design, procure, and install new cabling, equipment, and associated hardware and software to extend and/or enhance existing services.
- c. Provide logging and blocking security services. The contractor shall also review the logs and make security and infrastructure enhancement recommendations to identified NASA telecommunications personnel and implement changes and rule-based policies.
- d. Protect the privacy rights of users of the telephone systems by protecting Private Act Information (PAI).
- e. Provide call detail information in support of security, Office of Inspector General (OIG), Office of Chief Counsel, and other audits and investigations. This information may be required on short notice. Provide call tracing support within the capabilities of the existing COM system.
- f. Provide Telephone Call Detail Reports in accordance with DRD 1294MA-005, *Documentation*. The contractor shall provide close to real-time access to the telephone call detail database to persons specifically designated by the COR. Call detail reports shall include information on long-distance usage.
- g. Supply operating guides that will walk users through routine operations for their instrument, and answer frequently asked questions.
- h. Provide voice mail services, including recorded announcements, audio and visual indicators of messages waiting retrieval, forwarding capability, broadcast (voice mail lists), standard and enhanced message storage as directed, auto dial voice mail caller, auto reply (send message back to voice mail caller), create, delete, and retrieval of messages from any VoIP phone or Dual Tone Multi-Frequency (DTMF) phone (internal or external to Center). Retrieval of messages external to the Center shall be accessible via a local number and a toll-free number provided by the Government.

- i. Ensure that required features are active and available to users and are kept at current supportable revision levels including its underlying release software. These features include call forwarding, transfer, conferencing, camp on, redial, hold, call park, caller Identification (ID), call waiting, message waiting, call pickup, hunt group, speed call, auto dial, caller ID outgoing, and Center-wide calling name delivery.
- j. Procure and manage appropriately sized circuits from the telephone company to provide dial-tone to the Center telephone system.
- k. Install, configure, and maintain small conferencing units for the conference room and office environment as requested.
- l. Configure, operate, and maintain Quality of Service (QoS) on the network to give priority to VoIP traffic.
- m. Install, operate, and maintain UPS equipment on all non-redundant components of the VoIP infrastructure to allow for battery backup in the event of facility power outages.
- n. Utilize where possible the Institute of Electrical and Electronic Engineers (IEEE) standard Power over Ethernet (PoE).
- o. Transfer title to the Government of all telephone system components upon delivery or installation.
- p. Ensure that the E-911 system meets National Emergency Number Association (NENA) standards and protocols.
- q. Provide support to the Government in performance of annual audits of telephone information in support of E-911.
- r. Maintain system baseline documentation such as telephone system drawings, records, configuration templates, and telephone instrument templates.
- s. Ensure all documentation is available upon request by appropriate Government personnel.
- t. Support offerings of various levels of telephone service including basic, standard (full-featured), enhanced (full featured plus multi-line capability), conference, and soft clients for PC's and mobile devices.
- u. Transition and maintain current SOPs and SOMP, as applicable.

3.15.1 ARC SPECIFIC REQUIREMENTS

In addition to the requirements identified in PWS 3.15, the following unique requirements at ARC shall be provided:

- a. Prepare and obtain the assessment and authorization for associated system security plans. This task will consist of process support, analysis support, coordination support, security certification test support, and security documentation support.

3.15.2 GRC SPECIFIC REQUIREMENTS

In addition to the requirements identified in PWS 3.15, the following unique requirements at GRC shall be provided:

- a. On an annual basis, perform a utilization analysis on voice trunk lines (VoIP and POTS alike) and provide a report in accordance with DRD 1294MA-005, Documentation.

- b. Collaborate with ACES and other I3P contracts as needed to ensure necessary client software is supported on all computing devices in the environment.
- c. Assist in the development, upkeep, and execution of policies and processes related to telephone refreshes for end users, scheduling of end users for telephone refreshes, and training for end users receiving telephone refreshes
- d. Operate, maintain, update and perform sustaining engineering for E911 center Voice Recording System services at Lewis Field and Plum Brook Station.

3.15.3 JSC SPECIFIC REQUIREMENTS

In addition to the requirements identified in PWS 3.15, the following unique requirements at JSC shall be provided:

- a. Support and maintain the WSTF 911 Recording System until the capabilities can be provided by the standard VoIP solution at WSTF.
- b. Support the WSTF “Red Phone System” (ring down phones) until the capabilities can be provided by the standard VoIP solution at WSTF.
- c. Provide access to the current data for the Emergency Operations Center (EOC) Automatic Numbering Identification (ANI)/Automatic Location Identification (ALI) database repository (known as Red Sky Database) for JSC E911 services. The data includes building, floor, and closet along with additional information if known. Access to this system is provided to the JSC EOC/Dispatch Center via the EON client.

3.15.4 KSC SPECIFIC REQUIREMENTS

In addition to the requirements identified in PWS 3.15, the following unique requirements at KSC shall be provided:

- a. Maintain E911 switch and ancillary equipment, including ANI/ALI database and its interfaces with the KSC phone systems.
- b. Provide translations and routing for the on-Center cellular 911 calls.
- c. Provide translations and routing for the off-Center VoIP 911 calls.
- d. Provide temporary labor to augment the existing workforce to accelerate completion of the analog telephone service upgrade in remaining KSC facilities with Voice over IP (VoIP) telephone service. Scope includes designing, procuring, testing, and documenting telephone and UPS equipment per KNET standards to support standard IP telephony service in the remaining KSC non-VoIP telephone facilities. Design reviews to be coordinated with the TM. The contractor shall coordinate with the KIAC and the ISC contractors throughout the lifecycle of the project, as required.

3.15.5 NSSC SPECIFIC REQUIREMENTS

In addition to the requirements identified in PWS 3.15, the following unique requirements at NSSC shall be provided:

- a. Provide a System Security Plan and Certification and Accreditation for the VoIP system.

- b. Provide management and coordination of services for backup phone system with SSC local service provider.
- c. Ensure VoIP system and end user devices are IPv6 compliant/capable.
- d. Ensure VoIP system features and end user devices are platform compatible with Windows and Macintosh. Examples include soft phones for end users or other end user functionality/feature.
- e. Provide check-in/check-out notification via email by the technician to government personnel as designated by the NSSC during normal working hours and during on-call when working in an on-call state.
- f. Provide support for FAX lines including but not limited to monitoring, ordering, provisioning lines.
- g. Ensure that the latest version of “NSSC Voice Property and Responsibilities 03272012” is utilized.
- h. The work force optimization product integration O & M will be included with the phone system requirements and be considered as an add-on product to the VoIP system.

3.15.6 SSC SPECIFIC REQUIREMENTS

In addition to the requirements identified in PWS 3.15, the following unique requirements at SSC shall be provided:

- a. Operate, maintain, and perform systems and sustaining engineering for the telephone system firewall.
- b. Operator services shall be available 6:00 a.m. to 6:00 p.m. Monday – Friday.
- c. Provide Telephone Call Detail Reports in accordance with DRD 1294MA-005, Documentation, per request via SSC Form SSC-770. Response due within 24 business hours of request unless otherwise specified.
- d. Maintain E911 switch and ancillary equipment, including ANI/ALI database and its interfaces with the SSC phone system.
- e. Provide translations and routing for the on Center cellular and VoIP 911 calls.
- f. Maintain telecommunications asset inventory and assist in the acquisition of new or replacement components.
- g. Coordinate planned upgrades and outages with the SSC OCIO and SSC customers, including tenants.
- h. Respond to and repair or replace all systems and seat failures.
- i. Update SSC OCIO telephone databases and SSC site drawings in official SSC repositories, including rack elevation drawings required by NCCIPS and SSC.

3.16 ENTERPRISE VIDEO CONTENT DELIVERY NETWORK (EVCDN)

The contractor shall provide systems and sustaining engineering to manage and standardize the Enterprise Video Content Delivery Network (EVCDN) Service across the Agency. Support shall include technical support and management of EVCDN to ensure video content transportation between Centers, Programs, and Projects allow video content sharing to sites and Content Delivery Networks (CDN) external to NASA and ensure that EVCDN supports NASA’s compliance to Federal statutes.

The contractor shall:

- a. Be responsible for transport and delivery of video content via EVCDN to include encoding, decoding and set-top box devices.
- b. Sustain the EVCDN video transportation services, including Internet Protocol Television (IPTV), video streaming, and progressive download video distribution within NASA from where user equipment touches the NASA network to where it leaves NASA network space.
 - Encoding and decoding of EVCDN content
 - Set-top box devices
 - Maintain compliancy with Communication Program (CP) LAN Corporate Technical Architecture (CTA) to include multicast
 - Utilize the latest industry codec to reduce video bandwidth
 - Engineering and coordination support for routine inter-center distribution of video
 - Maintain capability to convert video between formats and data rates.
 - i. Converting multicast to unicast video streams to feed external Content Delivery Networks (CDNs) for public access
 - ii. Converting external unicast video sources to multicast as the feeds enter the NASA network
 - Maintaining the external system interfaces such as authentication and encryption with IT Security and other non-CP systems
- c. Be the Agency's EVCDN Resource/ Knowledge group.
- d. Collaborate with other service offices and commercial vendors for content delivery requirements, and interface with the NASA Imagery Experts Program (NIEP) for standards and best practices.
- e. Ensure compliance with Federal Statutes pertaining to electronic and information technology needs for people with physical, sensory, or cognitive disabilities (508 Compliance).
- f. Ensure compliance with applicable NASA standards.
- g. Test the latest technology to stay current with customer demand and expectations.
- h. Maintain IT Security Plans as applicable for EVCDN.
- i. Lead current and future modernization of the EVCDN architectures that support NASA requirements by organizing, coordinating, and participating in technical working groups and control boards.

4 CENTER AND ASSOCIATED COMPONENT FACILITY SERVICES

The contractor shall provide **the following services as described for each Center listed in this PWS section**. Reserved paragraphs are placeholders for potential future work and will be added by contract modification, if required. Performance specifications for all requirements in PWS 4 are found in Attachment J-1, Appendix C, *Performance Specifications*.

The NICS Project Office and the NASA Center CIOs are responsible for the technical requirements, funding, and governance of services described herein. It is the objective of NASA to manage these services in a consistent fashion; NASA may transition some or all of these functions to Enterprise services as part of Agency transformation. The contractor shall adhere to local Center CIO governance processes for activities that involve design modification/enhancement of these local services.

The contractor shall assist NASA in the update of the **CSD** and ESRS to accurately reflect the services listed in PWS Section 4 as approved by NASA.

The contractor shall ensure, as applicable, that employees are approved at the appropriate position risk designation to work in a Mission Essential Infrastructure (MEI) Facility, in accordance with NPR 1600.1, *NASA Security Program Procedural Requirements*.

The contractor shall provide IT security functions for Center and associated component facility services consistent with the requirements in PWS 2.6 and 3.12. The contractor shall also provide IT support functions consistent with PWS Sections 3.6, 3.9, and 3.10. Documentation for PWS 4 shall be prepared and submitted in accordance with DRD 1294MA-005, *Documentation*.

4.1 AMES RESEARCH CENTER (ARC)

4.1.1 (RESERVED)

4.1.2 EMERGENCY WARNING SYSTEMS (RESERVED)

4.1.3 PUBLIC ADDRESS SYSTEMS (RESERVED)

4.1.4 RADIO SERVICES (RESERVED)

4.1.5 (RESERVED)

4.1.6 (RESERVED)

4.1.7 CABLE TELEVISION SERVICES (RESERVED)

4.2 ARMSTRONG FLIGHT RESEARCH CENTER (AFRC)

4.2.1 (RESERVED)

4.2.2 EMERGENCY WARNING SYSTEM (RESERVED)

4.2.3 PUBLIC ADDRESS SYSTEM

The contractor shall operate, maintain (hardware and software), design, install, and provide sustaining engineering support for the Public Address System at the AFRC and DAOF locations. The contractor shall complete the conversion from the current analog system to an IP-based system (similar to that currently in use at the DAOF). This IP-based system is integrated with the existing VoIP infrastructure so that PA announcements can be transmitted to VoIP phones throughout the facility. The contractor is responsible for programming the system and maintaining the database so that PA announcements can be made campus-wide and/or restricted to particular zones or buildings.

The contractor shall implement public address system service requests and perform trouble ticket resolution within the bands delineated below, and within the estimated/target cost of the contract. These activities are considered within the scope of the PWS and shall not, in general, be construed as changes within the meaning of the *Changes – Cost-Reimbursement – Alternate II* clause of this contract as long as the total number of service requests and trouble tickets per year fall within the following parameters:

AFRC Public Address Systems	Number Per Year
Public Address System Service Requests	10
Public Address System Trouble Tickets	20

4.2.4 RADIO SERVICES (RESERVED)

4.2.5 (RESERVED)

4.2.6 (RESERVED)

4.2.7 CABLE TELEVISION SERVICES (RESERVED)

4.3 GLENN RESEARCH CENTER (GRC)

4.3.1 (RESERVED)

4.3.2 EMERGENCY WARNING SYSTEMS (RESERVED)

4.3.3 PUBLIC ADDRESS SYSTEMS (RESERVED)

4.3.4 RADIO SERVICES

The contractor shall provide radio services required to meet customer requirements. These services include maintenance of existing capabilities, as well as the development or acquisition, and implementation of enhancements.

In providing these services, the contractor shall:

- a. Provide fixed, portable, and mobile radios.
- b. Provide battery exchange for failed batteries.
- c. Provide Radio Frequency (RF) analysis for proposed development, acquisition, and implementation of enhancements.
- d. Coordinate new radio equipment requirements with the Center frequency or spectrum management authority prior to procurement or fielding of new or modified equipment.

The contractor shall implement radio service requests and perform trouble ticket resolution within the bands delineated below, and within the estimated/target cost of the contract. These activities are considered within the scope of the PWS and shall not, in general, be construed as changes within the meaning of the *Changes – Cost-Reimbursement – Alternate II* clause of this contract as long as the total number of service requests and trouble tickets per year fall within the following parameters:

GRC Radio Services	Number Per Year
Radio Service Request MAC	10 - 20
Radio Trouble Tickets	30 - 50

4.3.5 (RESERVED)

4.3.6 (RESERVED)

4.3.7 CABLE TELEVISION SERVICES

The contractor shall operate, maintain, and perform sustaining engineering on the cable television distribution system.

These services shall include:

- a. Operate and maintain the TV control Center including support for all equipment (e.g., recorders, switches, demodulators, monitors, modulators, character generators)

- having to do with manipulating audio, bi-directional video, and data signals for distribution across the broadband Cable Television (CATV) system.
- b. Provide preventative and corrective maintenance and operation on all related equipment, including VHF, UHF, satellite antennas, cable plants, all cable plant hardware, and the Center's TVs and monitors.
 - c. Receive, videotape, and distribute satellite downlinks and TV newscasts and other video programs, for supporting satellite uplinks and other TV broadcasts.
 - d. Monitor all channels to ensure correct programming.
 - e. Review and schedule all requests to broadcast programming.
 - f. Update, maintain, and backup the Video Bulletin Board (VBB).
 - g. Broadcast programming at scheduled times including prerecorded video, live video, and conferencing.
 - h. Test all equipment regularly to comply with the Center's ISO/Quality Management System.
 - i. Coordinate all equipment repairs and maintenance.
 - j. Perform all work in accordance with all applicable safety and electrical codes.
 - k. Relocate and reassign existing video system connections.
 - l. Provide for new video connections to TVs and monitors
 - m. Provide, install, and maintain televisions and monitors.
 - n. Maintain documentation to include an updated environment description and drawings of the head-end and broadband CATV system.
 - o. Operate and maintain a streaming video service for end user consumption on the GRC internal network to include select live television channels, Center events, and on-demand video, as directed." It is mutually agreed that this change is made at no adjustment to the estimated cost and fee of the contract.
 - p. The contractor shall process change requests to the digital sign at the GRC front gate using a terminal or web interface. Final approval, ownership, operations, and maintenance of the digital sign and associated systems is performed by the Office of the Director.
 - q. Manage and operate the GRC digital signage system, for the MIC Building 162, including server and hardware administration (platform support, security planning, displays, and microcomputer players), and administration of the content manager (create screens, schedules, and templates; manage user roles and workgroups; configure new displays; and work with vendors for advanced scripting/features as needed). Design, procure, and deploy new signs to the managed system.
Note: the Contractor is not responsible for the content displayed (created or posted).

The contractor shall implement cable television (CATV) service requests and perform trouble ticket resolution within the bands delineated below, and within the estimated/target cost of the contract. These activities are considered within the scope of the PWS and shall not, in general, be construed as changes within the meaning of the *Changes – Cost-Reimbursement – Alternate II* clause of this contract as long as the total number of service requests and trouble tickets per year fall within the following parameters:

GRC CATV Services	Number Per Year
CATV Service Request MAC	200 - 250
CATV Trouble Tickets	200 - 250

4.4 GODDARD SPACE FLIGHT CENTER (GSFC)

4.4.1 (RESERVED)

4.4.2 EMERGENCY WARNING SYSTEMS

4.4.3 PUBLIC ADDRESS SYSTEMS

4.4.4 RADIO SERVICES

4.4.5 (RESERVED)

4.4.6 (RESERVED)

4.4.7 CABLE TELEVISION SERVICES

The contractor shall operate, maintain and provide sustaining engineering for the WFF ITCD Cable TV Control Center. These services include:

- a. Support for all equipment (e.g., recorders, switches, transmitters, receivers, demodulators, modulators, combiners, character generators, dedicated displays, patch cables, and test equipment) having to do with manipulating audio, bi-directional video, and data signals for distribution across the WFF ITCD Cable TV System.
- b. Receive, videotape, and distribute video sources such as satellite downlinks, camera feeds, computer feeds, TV newscasts, other video programs, and provide video for satellite uplinks and other TV broadcasts.
- c. Maintain a list and monitor all video source inputs to the WFF ITCD Cable TV System for availability and clarity.
- d. Maintain channel assignments and monitor all channel outputs of the WFF ITCD Cable TV System to ensure availability, clarity, and correct programming.
- e. Review and schedule all requests to broadcast programming.
- f. Broadcast programming at scheduled times, including prerecorded video, live video, and conferencing.
- g. Test all equipment regularly to comply with the Center's ISO/Quality Management System.
- h. Provide preventative and corrective maintenance on all system related equipment and patch cabling. Coordinate with the cable plant contractor and customers to resolve other issues related to the customers' connection to the system
- i. Perform all work in accordance with all applicable industry video, American National Standards Institute (ANSI), Federal, and Agency communications standards such as the Federal Communications Commission (FCC)'s National Television Systems Committee (NTSC) for analog, Advanced Television Systems Committee (ATSC) for digital, NASA-STD-2818 for Digital

Television, Occupational Safety and Health Administration (OSHA) for safety, and the National Electrical Code (NEC).

- j. Design, implement, activate, document, and troubleshoot all new video connections to customer-provided cameras, computers, TVs, and monitors. The contractor shall also coordinate the installation of all new customer-funded video connections with the on-site cable plant contractor.
- k. Utilize CSSD, Code 760 configuration management procedures and tools to support NASA in the management and maintenance of all documentation related to the WFF ITCD Cable TV System to include rack elevations, and shall collaborate with the on-site cable plant contractor to document existing circuit connections, request new circuit connections, or delete existing connections. All documentation developed and managed under the terms of this COW shall be available to NASA management via the central, Code 760, online electronic documentation library, i.e., the Code 760 Document Server.
- l. Report all anomalies and the results of all subsequent restorations to NASA management. The contractor shall log all operations and restoration activities.
- m. Perform all activities in accordance with the following Service Level Agreement (SLA). Initial acknowledgement for service requests will be within 2 hours. The response time for a service request will be the next day at close of business. Return to service will be 8 business hours from when the engineer/technician begins work or arrives at the issue site.

4.4.8 WFF ITCD VIDEO TRANSMISSION SYSTEM SUPPORT

The contractor shall operate, maintain and provide sustaining engineering for the WFF ITCD Video Transmission System. These service include:

- a. Support for all equipment (e.g., recorders, switches, transmitters, receivers, splitters, patch cables, and test equipment) having to do with transmitting and receiving bi-directional video, and data signals of all the systems specified above for distribution across the WFF facility to include the mainland and island.
- b. Maintain a list and monitor all video source channel inputs and outputs of the WFF ITCD Video Transmission System for availability and clarity.
- c. Test all equipment regularly to comply with the Center's ISO/Quality Management System.
- d. Provide preventative and corrective maintenance on all system-related equipment and patch cabling. The contractor shall coordinate with the cable plant contractor and customers to resolve other issues related to the customers' connection to the system.
- e. Perform all work in accordance with all applicable industry video, ANSI, Federal, and Agency communications standards such as the FCC's NTSC for analog, ATSC for digital, NASA-STD-2818 for Digital Television, OSHA for safety, and the NEC.
- f. Design, implement, activate, document, and troubleshoot all new video connections to customer-provided cameras, computers, TVs, and monitors. The

contractor shall also coordinate the installation of all new customer-funded video connections with the on-site cable plant contractor.

- g. Utilize CSSD, Code 760 configuration management procedures and tools to support NASA in the management and maintenance of all documentation related to the WFF ITCD Video Transmission System to include rack elevations, and shall collaborate with the on-site cable plant contractor to document existing circuit connections, request new circuit connections, or delete existing connections. All documentation developed and managed under the terms of this COW shall be available to NASA management via the central, Code 760, online electronic documentation library, i.e., the Code 760 Document Server.
- h. Report all anomalies and the results of all subsequent restorations to NASA management. The contractor shall log all operations and restoration activities.
- i. Implement WFF ITCD Cable TV System and the WFF ITCD Video Transmission System service requests and perform trouble ticket resolution within the bands delineated below, and within the estimated/target cost of the contract. These activities are considered within the scope of the Performance Work Statement (PWS) and shall not, in general, be construed as changes within the meaning of the Changes - Cost-Reimbursement - Alternate II clause of this contract as long as the total number of service requests and trouble tickets per year fall within the following parameters:

WFF Fiber Optic Cable TV and Video Transmission Services	Number Per Year
CATV ServiceNideo Transmission Service Request MAC	50 - 75
CATVNideo Transmission Trouble Tickets	50- 75

- j. Perform all activities in accordance with the following Service Level Agreement (SLA):
 - a. Initial acknowledgement/response for service requests will be within 2 hours.
 - b. The response time for a service request will be the next day at close of business.
 - c. Return to service will be 8 business hours from when the engineer/technician begins work or arrives at the issue site.

Additionally the contractor shall provide sustaining engineering and system troubleshooting support for the Enterprise Corporate Video Surveillance System, MEC Video System, and NASA Select TV System.

4.5 HEADQUARTERS (HQ)

4.5.1 (RESERVED)

4.5.2 EMERGENCY WARNING SYSTEM

The contractor shall provide and maintain the Emergency Warning System (EWS). Emergency Warning Systems support shall be provided for disaster/emergency situations such as fire, explosion, accident, bomb threat, civil disturbance, terrorist-related incidents, and weather related emergencies.

The contractor shall implement emergency warning system service requests and perform trouble ticket resolution within the bands delineated below, and within the estimated/target cost of the contract. These activities are considered within the scope of the PWS and shall not, in general, be construed as changes within the meaning of the *Changes – Cost-Reimbursement – Alternate II* clause of this contract as long as the total number of service requests and trouble tickets per year fall within the following parameters:

HQ Emergency Warning Systems	Number Per Year
Emergency Warning System Service Request MAC	10 – 20
Emergency Warning System Trouble Tickets	10 – 20

4.5.3 PUBLIC ADDRESS SYSTEM

The contractor shall operate and maintain the Public Address System.

The contractor shall implement public address system service requests and perform trouble ticket resolution within the bands delineated below, and within the estimated/target cost of the contract. These activities are considered within the scope of the PWS and shall not, in general, be construed as changes within the meaning of the *Changes – Cost-Reimbursement – Alternate II* clause of this contract as long as the total number of service requests and trouble tickets per year fall within the following parameters:

HQ Public Address Systems		Number Per Year
Public Address System Service Request MAC		10 - 20
Public Address System Trouble Tickets		10 - 20

4.5.4 RADIO SERVICES (RESERVED)

4.5.5 (RESERVED)

4.5.6 (RESERVED)

4.5.7 CABLE TELEVISION SERVICES

The contractor shall operate, maintain, and perform sustaining engineering on the cable television distribution system.

These services shall include:

- a. Operate and maintain the TV control Center including support for all equipment (e.g., recorders, switches, demodulators, monitors, modulators, character generators) having to do with manipulating audio, bi-directional video, and data signals for distribution across the broadband Cable Television (CATV) system.
- b. Provide preventative and corrective maintenance and operation on all related equipment, including VHF, UHF, satellite antennas, cable plants, all cable plant hardware, and the Center's TVs and monitors.
- c. Receive, videotape, and distribute satellite downlinks and TV newscasts and other video programs, for supporting satellite uplinks and other TV broadcasts.
- d. Monitor all channels to ensure correct programming.
- e. Review and schedule all requests to broadcast programming.
- f. Update, maintain, and backup the Video Bulletin Board (VBB).
- g. Broadcast programming at scheduled times including prerecorded video, live video, and conferencing.
- h. Test all equipment regularly to comply with the Center's ISO/Quality Management System.
- i. Coordinate all equipment repairs and maintenance.
- j. Perform all work in accordance with all applicable safety and electrical codes.
- k. Relocate and reassign existing video system connections.
- l. Provide for new video connections to TVs and monitors.
- m. Provide, install, and maintain televisions and monitors.
- n. Maintain documentation to include an updated environment description and drawings of the head-end and broadband CATV system.

The contractor shall implement cable television (CATV) service requests and perform trouble ticket resolution within the bands delineated below, and within the estimated/target cost of the contract. These activities are considered within the scope of the PWS and shall not, in general, be construed as changes within the meaning of the *Changes – Cost-Reimbursement – Alternate II* clause of this contract as long as the total number of service requests and trouble tickets per year fall within the following parameters:

HQ CATV Services	Number Per Year
CATV Service Request MAC	30 - 50
CATV Trouble Tickets	20 - 40

4.6 JET PROPULSION LABORATORY (JPL) (RESERVED)

4.6.1 (RESERVED)

4.6.2 EMERGENCY WARNING SYSTEMS

4.6.3 PUBLIC ADDRESS SYSTEMS

4.6.4 RADIO SERVICES

4.6.5 (RESERVED)

4.6.6 (RESERVED)

4.6.7 CABLE TELEVISION SERVICES

4.7 JOHNSON SPACE CENTER (JSC)

4.7.1 (RESERVED)

4.7.2 EMERGENCY WARNING SYSTEMS (RESERVED)

4.7.3 PUBLIC ADDRESS SYSTEMS

The contractor shall operate and maintain the Public Address System at WSTF. The site-wide WSTF Public Address System will be used in the event the Incident Commander needs immediate dissemination of emergency information during an incident.

The contractor shall implement public address system service requests and perform trouble ticket resolution within the bands delineated below, and within the estimated/target cost of the contract. These activities are considered within the scope of the PWS and shall not, in general, be construed as changes within the meaning of the *Changes – Cost-Reimbursement – Alternate II* clause of this contract as long as the total number of service requests and trouble tickets per year fall within the following parameters:

WSTF Public Address Systems	Number Per Year
Public Address System Service Requests	10
Public Address System Trouble Tickets	60

4.7.4 RADIO SERVICES

The contractor shall provide radio services required to meet customer requirements at WSTF. These services include maintenance of existing capabilities, as well as the development or acquisition, and implementation of enhancements.

In providing these services, the contractor shall:

- a. Provide fixed, portable, and mobile radios.
- b. Provide battery exchange for failed batteries.
- c. Provide Radio Frequency (RF) analysis for proposed development, acquisition, and implementation of enhancements.
- d. Coordinate new radio equipment requirements with the Center frequency or spectrum management authority prior to procurement or fielding of new or modified equipment.

The contractor shall implement radio service requests and perform trouble ticket resolution within the bands delineated below, and within the estimated/target cost of the contract. These activities are considered within the scope of the PWS and shall not, in general, be construed as changes within the meaning of the *Changes – Cost-Reimbursement – Alternate II* clause of this contract as long as the total number of service requests and trouble tickets per year fall within the following parameters:

WSTF Radio Services	Number Per Year
Radio Service Requests	240
Radio Trouble Tickets	800

Unique to the WSTF Radio Services support environment is the Radio Paging System which is required to warn employees in remote areas of hazardous material/waste spill. This paging system is a one-way VHF multi-site system used to contact personnel away from radios, phones, overhead public address systems and secure areas that do not allow RF transmissions. The contractor shall implement WSTF Radio Paging System service requests and perform trouble ticket resolution within the bands delineated below, and within the estimated/target cost of the contract. These activities are considered within the scope of the PWS and shall not, in general, be construed as changes within the meaning of the *Changes – Cost-Reimbursement – Alternate II* clause of this contract as long as the total number of service requests and trouble tickets per year fall within the following parameters:

WSTF Radio Paging Systems	Number Per Year
Radio Paging System Service Requests	360
Radio Paging System Trouble Tickets	1,200

4.7.5 (RESERVED)

4.7.6 (RESERVED)

4.7.7 CABLE TELEVISION SERVICES

4.8 KENNEDY SPACE CENTER (KSC)

4.8.1 (RESERVED)

4.8.2 EMERGENCY WARNING SYSTEMS (RESERVED)

4.8.3 PUBLIC ADDRESS SYSTEMS (RESERVED)

4.8.4 RADIO SERVICES (RESERVED)

4.8.5 (RESERVED)

4.8.6 (RESERVED)

4.8.7 CABLE TELEVISION SERVICES (RESERVED)

4.9 LANGELY RESEARCH CENTER (LaRC)

4.9.1 (RESERVED)

4.9.2 EMERGENCY WARNING SYSTEMS (RESERVED)

4.9.3 PUBLIC ADDRESS SYSTEMS (RESERVED)

4.9.4 RADIO SERVICES (RESERVED)

4.9.5 (RESERVED)

4.9.6 (RESERVED)

4.9.7 CABLE TELEVISION SERVICES

The contractor shall operate, maintain, and perform sustaining engineering on the cable television distribution system.

These services shall include:

- a. Operate and maintain the TV control Center including support for all equipment (e.g., recorders, switches, demodulators, monitors, modulators, character generators) having to do with manipulating audio, bi-directional video, and data signals for distribution across the broadband Cable Television (CATV) system.
- b. Provide preventative and corrective maintenance and operation on all related equipment, including VHF, UHF, satellite antennas, cable plants, all cable plant hardware, and the Center's TVs and monitors.
- c. Receive, videotape, and distribute satellite downlinks and TV newscasts and other video programs, for supporting satellite uplinks and other TV broadcasts.
- d. Monitor all channels to ensure correct programming.
- e. Review and schedule all requests to broadcast programming.
- f. Update, maintain, and backup the Video Bulletin Board (VBB).
- g. Broadcast programming at scheduled times including prerecorded video, live video, and conferencing.
- h. Test all equipment regularly to comply with the Center's ISO/Quality Management System.
- i. Coordinate all equipment repairs and maintenance.
- j. Perform all work in accordance with all applicable safety and electrical codes.
- k. Relocate and reassign existing video system connections.
- l. Provide for new video connections to TVs and monitors.
- m. Provide, install, and maintain televisions and monitors.
- n. Maintain documentation to include an updated environment description and drawings of the head-end and broadband CATV system.

The contractor shall implement cable television (CATV) service requests and perform trouble ticket resolution within the bands delineated below, and within the estimated/target cost of the

contract. These activities are considered within the scope of the PWS and shall not, in general, be construed as changes within the meaning of the *Changes – Cost-Reimbursement – Alternate II* clause of this contract as long as the total number of service requests and trouble tickets per year fall within the following parameters:

LARC CATV Services	Number Per Year
CATV Service Request MAC	30 - 50
CATV Trouble Tickets	15 - 25

4.10 MARSHALL SPACE FLIGHT CENTER (MSFC)

4.10.1 (RESERVED)

4.10.2 EMERGENCY WARNING SYSTEMS

The contractor shall provide services to maintain the Emergency Warning Systems (EWS) at MSFC and MAF. Emergency Warning Systems support shall be provided for disaster/emergency situations such as fire, explosion, accident, bomb threat, civil disturbance, terrorist-related incidents, and weather related emergencies.

The contractor shall provide an interactive audio system that provides both prerecorded and live announcements to MSFC and MAF facilities. The system shall be capable of delivering live, recorded, and prerecorded announcements across the MSFC and MAF campuses and shall deliver repetitive playback of recorded and prerecorded announcements. The contractor shall operate and maintain the on-site internal EWS, the on-site external EWS, and the auxiliary, off-site, building paging system.

The contractor shall implement emergency warning system service requests and perform trouble ticket resolution within the bands delineated below, and within the estimated/target cost of the contract. These activities are considered within the scope of the PWS and shall not, in general, be construed as changes within the meaning of the *Changes – Cost-Reimbursement – Alternate II* clause of this contract as long as the total number of service requests and trouble tickets per year fall within the following parameters:

MSFC Emergency Warning Systems	Number Per Year
Emergency Warning System Service Request MAC	25-50
Emergency Warning System Trouble Tickets	60-100
MAF Emergency Warning Systems	Number Per Year
Emergency Warning System Service Request MAC	5-10
Emergency Warning System Trouble Tickets	5-20

4.10.3 PUBLIC ADDRESS SYSTEMS

The contractor shall operate and maintain the Public Address System at MSFC. This service is not applicable to MAF.

The contractor shall implement public address system service requests and perform trouble ticket resolution within the bands delineated below, and within the estimated/target cost of the contract. These activities are considered within the scope of the PWS and shall not, in general, be construed as changes within the meaning of the *Changes – Cost-Reimbursement – Alternate II* clause of this contract as long as the total number of service requests and trouble tickets per year fall within the following parameters:

MSFC Public Address Systems	Number Per Year
Public Address System Service Requests	5 - 10
Public Address System Trouble Tickets	10-20

MAF Public Address Systems	Number Per Year
Public Address System Service Requests MAC	N/A
Public Address System Trouble Tickets	N/A

4.10.4 RADIO SERVICES

The contractor shall provide radio services required to meet customer requirements at MSFC and MAF. These services include maintenance of existing capabilities, as well as the development or acquisition, and implementation of enhancements.

In providing these services, the contractor shall:

- a. Provide fixed, portable, and mobile radios.
- b. Provide battery exchange for failed batteries.
- c. Provide Radio Frequency (RF) analysis for proposed development, acquisition, and implementation of enhancements.
- d. Coordinate new radio equipment requirements with the Center frequency or spectrum management authority prior to procurement or fielding of new or modified equipment.

The contractor shall implement radio service requests and perform trouble ticket resolution within the bands delineated below, and within the estimated/target cost of the contract. These activities are considered within the scope of the PWS and shall not, in general, be construed as changes within the meaning of the *Changes – Cost-Reimbursement – Alternate II* clause of this contract as long as the total number of service requests and trouble tickets per year fall within the following parameters:

MSFC Radio Services	Number Per Year
Radio Service Requests	300-500
Radio Trouble Tickets	80-100
MAF Radio Services	Number Per Year
Radio Service Requests MAC	25-40
Radio Trouble Tickets	35-50

4.10.5 (RESERVED)

4.10.6 (RESERVED)

4.10.7 CABLE TELEVISION SERVICES (RESERVED)

4.10.8 (RESERVED)

4.10.9 MSFC AND MAF PHYSICAL ACCESS CONTROL SYSTEMS

The contractor shall provide Physical Access Control Systems (PACS) services for MSFC and MAF.

a. Physical Access Control Systems

1. Interior and exterior electronic door systems: The contractor shall provide badge readers, electronic lock control equipment, crash bars, sensors, emergency bypass per life safety code, connecting wiring, and preventative and trouble-oriented maintenance.
2. Vehicle gate (fence, rolling, crash barrier and swing-arm) and pedestrian turnstile systems: ~~At MSFC only, the contractor shall provide gate and turnstile equipment, installation,~~ badge readers, electronic lock control equipment, traffic sensors, emergency bypass per life safety code, connecting wiring, and preventative and trouble-oriented maintenance. At MSFC only, the contractor shall **provide gate and turnstile equipment, installation,** replace gate operators, and replace turnstile components and will consult with outside vendor to replace physical gate, turnstile, or other components when necessary.

b. Duress alarms, door contacts, sensors

The contractor shall provide duress alarms, contact and sensor equipment, installation, connecting wiring, preventative and trouble-oriented maintenance.

c. Video Surveillance System

1. Interior and Exterior Surveillance Cameras: The contractor shall provide cameras, camera-supporting equipment, interconnecting wiring, installation of interior and exterior cameras, interface with Enterprise Physical Access Control System (EPACS) and preventative and trouble-oriented maintenance.
2. Digital Video Recorders (DVR): The contractor shall provide DVR equipment, installation, interconnecting wiring, interface with EPACS, preventative and trouble-oriented maintenance of DVR's to capture and store surveillance video.
3. Video Surveillance Support: The contractor shall provide video surveillance support to Protective Services Office investigations.
4. **Video Surveillance Service: Conduct daily preventative maintenance checks to ensure full system functionality.**

d. Regional Administration

1. The contractor shall provide equipment, installation, interconnecting wiring, interface with the EPACS, preventative and trouble-oriented maintenance for all Center Premise Equipment (CPE) which includes, but is not limited to, card readers, cameras, DVR's, input boards, reader interfaces, Communication Servers, terminal server, archive server, PELCO matrix switcher, duress alarms, contact alarms, and additional security devices that will be required to meet future NASA and Federal physical security guidelines. Contractor shall maintain and patch all PACS related servers.
2. The contractor shall develop, update, and maintain the CPE Information Technology (IT) systems security plan in accordance with NASA and Federal directives and policies.
3. The contractor shall install, maintain, and troubleshoot all Personnel Identification Verification (PIV) badging workstations. The contractor will install the security client on all PIV enrollment and associated workstations and provide continual troubleshooting and maintenance.

4. The contractor shall provide security reports in support of the Protective Services Office (PSO) operations, and obtain and transmit video footage in support of PSO operations.
5. The contractor shall grant access to badges and provision access approvals in NASA's designated access approval system.
6. The contractor shall maintain all Personnel Identification Information (PIV) related equipment and peripherals.

e. General Support

1. In support of Physical Security Systems Engineering Support the contractor shall:
 - a. Assist PSO Physical Security Specialists (PSS) during evaluation of new and existing facilities to determine appropriate methods for safely securing those facilities utilizing PACS equipment.
 - b. Design, document, and procure all equipment, circuits, installation labor, and warranty support required to provide the systems to support the methods prescribed by PSO PSS.
 - c. Coordinate with the Facilities Office, regarding PACS installation and design on all building construction projects.
 - d. The contractor shall provide support to the PSO Mobile Command Center to include but not limited to, camera, radio and network support,
 - e. The contractor shall maintain metal detectors at MSFC and MAF and obtain service from the vendor for repairs.
 - f. The contractor shall maintain mail scanners at MSFC and obtain service from the vendor for repairs.
 - g. The contractor shall maintain Sensitive Compartmented Information Facilities (SCIF) at MSFC.
2. In support of Cable installation the contractor shall:
 - a. Be responsible for cable installation on all activities, to include those in areas identified as containing asbestos.
 - b. Participate in asbestos installations at MSFC and work in conjunction with the Center asbestos team.
3. PSST Additional Requirements
 - a. The contractor shall attend Lenel Emerald certification training to maintain existing and new certifications required to maintain, upgrade, and repair the PACS.
 - b. The contractor shall participate in meetings and teleconferences as required.
 - c. The contractor shall maintain regular interface with MSFC PSO PACS Lead regarding all PACS activities.
 - d. The contractor shall maintain regular interface with the NASA Enterprise Applications Competency Center (NEACC).
 - e. The contractor shall maintain an on-hand inventory of PACS equipment for maintenance and repairs, which will be migrated into an MSFC production inventory system.

- f. The contractor shall provide all vehicles to include specialty vehicles and tools required to perform all PACS operations.
- g. The contractor shall incorporate and support the integration of emerging technologies into the PACS.
- h. The contractor shall obtain and maintain the appropriate level background investigation required for their designated position.

4.10.10 EMERGENCY TELECOMMUNICATIONS

The contractor shall provide emergency telecommunications to MSFC and MAF. These services shall include maintenance of existing equipment, development or acquisition, and implementation of enhancements in support of emergency telecommunications, including EWS support, and operations support services during disaster/ emergency situations such as, but not limited to, fire, explosion, accident, bomb threat, civil disturbance, terrorist-related incidents, flood, ice, snow, and tornadoes.

The contractor shall provide active project management, design, engineering, planning, installation, and maintenance for the technical infrastructure of the MSFC Joint 911 Emergency Dispatch Center (J911) and the MAF dispatch center. In providing these services, the contractor shall:

1. Support the current J911 technical infrastructure (including workstations, servers, modems, trunk gateways and interfaces) for the following:

- a. Digital Logging System – an integrated system that digitally records all radio and telephone communication that takes place within J911 to be used for immediate playback as well as investigative and service quality research
Radio Control System – an integrated system that connects any dispatch location with any radios needed to communicate with NASA and Army agencies served by J911 as well as mutual aid communications with surrounding agencies
- b. Call Handling System – an integrated system that accepts emergency and administrative calls from the 84200 NASA, Army, and commercial telephone lines served by J911, integrates with the telephone system to automate call control functions, stores and delivers automatic location information (ALI) for the calling telephone number, and assists dispatchers with call bridging with other response agencies (outside of Redstone Arsenal)
- c. Incident Management – an application system component of the MSFC Protective Services Office application suite that captures and processes incident details about responding agencies, resources, and times of response

2. At MAF, the contractor shall provide support for the MAF E-911 Center technical infrastructure as described above for J911, excluding the Radio Control System.

3. At MSFC the contractor shall provide project management, design, engineering, planning, installation, and maintenance of the J911 Next Generation Upgrade (J911NGU) which will substantially enhance the capabilities of the J911 center by replacing the

technical infrastructure with industry-standard and state-network compliant Call Handling and Incident Management systems. J911NGU will be implemented using a geo-diverse redundant architecture with resilient core equipment locations allowing for diverse dispatch centers at any Redstone Arsenal location (NASA or Army).

4. At MSFC the contractor shall provide support, reports, and recommendations to the J911 Council, a joint NASA/Army management council that guides operational direction for the policy, operation, and technical elements of the MSFC Joint 911 Emergency Dispatch Center.

4.10.11 FACSIMILE SERVICES

The contractor shall provide facsimile services at MSFC and MAF. In providing this service, the contractor shall provide best effort to maintain the existing facsimile service. The existing facsimiles are die on the vine. A set of old facsimile machines are kept in storage and this service includes replacing failing machines with an old facsimile from the existing supply as a best effort to restore service. Any time a new facsimile is required, the customer will purchase.

4.11 NASA SHARED SERVICES CENTER (NSSC)

4.11.1 (RESERVED)

4.11.2 EMERGENCY WARNING SYSTEMS (RESERVED)

4.11.3 PUBLIC ADDRESS SYSTEMS (RESERVED)

4.11.4 RADIO SERVICES (RESERVED)

4.11.5 (RESERVED)

4.11.6 (RESERVED)

4.11.7 CABLE TELEVISION SERVICES (RESERVED)

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4.12 STENNIS SPACE CENTER (SSC)

4.12.1 (RESERVED)

4.12.2 EMERGENCY WARNING SYSTEMS (RESERVED)

4.12.3 PUBLIC ADDRESS SYSTEMS (RESERVED)

4.12.4 RADIO SERVICES (RESERVED)

4.12.5 (RESERVED)

4.12.6 (RESERVED)

4.12.7 CABLE TELEVISION SERVICES (RESERVED)

5 INFRASTRUCTURE PROJECTS

NASA has established a strategic approach to the management of IT projects that is documented in NPR 7120.7, *NASA Information Technology and Institutional Infrastructure Program and Project Management Requirements*. This PWS includes NICS projects that have been approved, by the I³P governance process to transform the NASA communications infrastructure. These projects, which have a defined start and completion timeline, shall be performed in compliance with the NPR 7120.7 life cycle; including formulation, implementation, and transition to operation. The definition of a project, as stated in NPR 7120.7, is as follows:

- a. The project includes the development of new IT systems or capabilities and is \$500K or greater for the total development and implementation cost or affects more than one Center.
- b. The project includes the modification to or enhancement of existing IT systems or capabilities and is \$500K or greater for the total modification/enhancement cost, regardless of how many Centers are affected.

In performing these projects, the contractor shall provide the labor, materials, travel, and Other Direct Costs (ODC) required to complete the projects. Additionally, the contractor shall provide for an over-arching project and technical management methodology in compliance with NPR 7120.7.

The contractor shall provide project management support to the designated NASA project manager(s). Specifically, the contractor shall provide:

- a. Experienced project manager(s) to organize and manage the project(s) throughout their life cycle.
- b. Industry-acceptable certification of project managers within 18 months of contract start.
- c. Coordination of project baselines with I³P to include as a minimum cost, schedule and technical.
- d. Periodic project performance status and reviews to assess quality, schedule, cost, technical, and risk.
- e. Project cost reporting to include all direct and indirect labor, subcontracts, materials, travel, hardware, software and other direct costs necessary to complete the project.
- f. Project scheduling, budget, and cost tracking support.
- g. An Infrastructure Project Plan for each project in accordance with DRD 1294MA-002, *Infrastructure Project Plan*.
- h. Participation in the improvement of NASA project management methods, processes, templates, and tools.

The contractor shall provide the technical leadership to accomplish the project milestones. Additionally, this leadership shall execute the project(s) in accordance with:

- a. NPR 2830.1, *NASA Enterprise Architecture Procedures*
- b. NPR 2810.1, *Security of Information Technology*
- c. NPR 7123.1, *NASA Systems Engineering Processes and Requirements*

- d. NPR 7150.2, *NASA Software Engineering Requirements*
- e. ITIL V3 IT Service Management
- f. Applicable industry technical standards
- g. Applicable NASA technical standards (RFP Attachment J-10, *Applicable Regulations and Procedures*)

5.1 NICS INCIDENT TRACKING SYSTEM (NITS) PROJECT

The NITS project is responsible for the formulation, implementation and transition to operations of a consolidated NICS incident tracking system (NITS) in support of the NICS services described in PWS sections 3, 4, and 6.1. The NITS shall consist of the servers, database and tools that will facilitate the ITIL processes and procedures for incident management. The NITS shall interoperate with the NSSC ESD Tier 0/1 system while meeting the vision, objectives and requirements of Appendix A, *Cross Functional Performance Work Statement*. Additionally, NITS shall interoperate with Center helpdesks as required to coordinate the passing of tickets to and from NICS.

Key stakeholders in the NITS project are the Communications Program Executive, NICS Service Owners, and representatives from the I³P Office, NSSC ESD, and Centers.

The contractor shall support NASA in the NITS project activities of formulation, implementation and transition to operations.

The contractor shall start NITS on the effective date of the contract and finish in no later than six months.

Attachment J-1, Appendix D-1 delineates the requirements for NITS.

5.2 NICS SERVICE ORDER FULFILLMENT SYSTEM (NSOFS) PROJECT

The NSOFS project is responsible for the formulation, implementation and transition to operations of a consolidated Corporate Services and Center and Associated Facility Services NICS order fulfillment system (NSOFS) in support of the NICS services described in PWS sections 3 (i.e Corporate only) and 4. The NSOFS shall consist of the servers, database and tools that will facilitate the ITIL processes and procedures for order fulfillment management. The NSOFS shall interoperate with the NSSC ESRS system while meeting the vision, objectives and requirements of Appendix A, *Cross Functional Performance Work Statement*. Additionally, NSOFS shall interoperate with NIIS as required.

Key stakeholders in the NSOFS project are the Communications Program Executive, NICS Service Owners, and representatives from the I³P Office, NIIS, NSSC ESRS, and Centers.

The contractor shall support NASA in the NSOFS project activities of formulation, implementation and transition to operations.

The contractor shall start NSOFS on the effective date of the contract and finish in no later than six months.

Attachment J-1, Appendix D-2 delineates the requirements for NSOFS.

5.3 NICS CONSOLIDATED CONFIGURATION MANAGEMENT SYSTEM (NC²MS) PROJECT

The NC²MS project is responsible for the formulation, implementation and transition to operations a consolidated NICS configuration management system (NCMS) in support of the NICS services described in this PWS. The NCMS shall consist of the servers, database and tools that will facilitate ITIL processes and procedures. Additionally the NCMS will interoperate with the NSSC NASA Enterprise Service Request System (ESRS) and NSSC ESD/ESRS systems while meeting the vision, objectives and requirements of Appendix A, *Cross Functional Performance Work Statement*.

Additionally the NCMS shall interoperate with the NISN Incident Tracking System (NITS) and the NISN Service Order Fulfillment System (NSOFS). It is the NSOFS and the NITS which interface respectively with NSSC Enterprise Service Request System (ESRS), NSSC Enterprise Service Desk (ESD) systems while meeting the vision, objectives and requirements of Attachment J-1, Appendix A, *Cross Functional Performance Work Statement*.

Additionally the NCMS shall interoperate with the NITS, NSOFS and NSSC NASA Enterprise Service Request System (ESRS) and NSSC ESD systems while meeting the vision, objectives and requirements of Appendix A, *Cross Functional Performance Work Statement*.

Key stakeholders in the NC²MS project are the Communications Program Executive, NICS Service Owners, and representatives from the I³P Office, NSSC ESD, NITS, ENMC, NSOFS and Centers.

The contractor shall support NASA in the NC²MS project activities of formulation, implementation and transition to operations.

The contractor shall start NC²MS as defined in the approved project plan and finish no later than the end of the base period.

Attachment J-1, Appendix D-3 delineates the requirements for NC²MS.

5.4 CONSOLIDATED CORPORATE NETWORK OPERATIONS CENTER (C²NOC) PROJECT

The C²NOC project is responsible for the formulation, implementation and transition to operations an integrated Corporate Network Operations Center (CNOC) which expands upon the NISN Enterprise Network Management Center (ENMC) and recently updated NISN Enterprise Network Management System (ENMS) to build a seamless, integrated network operations system and operations processes capable of managing the NISN corporate end-to-end network. The objectives of the C²NOC project are to:

- a. Reduce the cost and complexity to manage NICS communications services through the elimination of duplicate network operations centers and management systems
- b. Establish an end to end operations and management structure

- c. Create an Corporate Enterprise Network Management Systems (CENMS) that is scalable to support future growth
- d. Facilitate the transition of operational processes to an ITIL compliant service model

Additionally the CENMS shall interoperate with the NISN Incident Tracking System (NITS) and the NISN Service Order Fulfillment System (NSOFS). It is the NSOFS and the NITS which interface respectively with NSSC Enterprise Service Request System (ESRS), NSSC Enterprise Service Desk (ESD) systems while meeting the vision, objectives and requirements of Attachment J-1, Appendix A *Cross Functional Performance Work Statement*.

Additionally the CENMS shall interoperate with the NSSC ESRS, NSSC ESD, NITS, NSOFS, and NICS Configuration Management System (NCMS). The CNOC will align with the ITIL processes as defined in Attachment J-1, Appendix A, *Cross Functional Performance Work Statement*.

Key stakeholders in the C²NOC project are the Communications Program Executive, NICS Service Owners, and representatives from the I³P Office, NSSC ESD, NITS, ENMC, NSOFS and Centers.

The contractor shall start C²NOC as defined in the approved project plan and finish no later than the end of the base period.

Attachment J-1, Appendix D-4 delineates the requirements for C²NOC.

5.5 RESERVED FOR FUTURE INDEFINITE DELIVERY INDEFINITE QUANTITY (IDIQ) PROJECTS

5.6 MISSION BACKBONE TRansition (MBT) PrOJECT

The MBT project is responsible for the formulation, design, implementation, testing and transition of Mission Services to the Mission next generation Architecture (MngA), extending connectivity as required and taking advantage of the CSO Backbone.

5.6.1 PROJECT FORMULATION THROUGH SYSTEM REQUIREMENTS REVIEW (SRR)

During formulation, the NICS MBT project team will perform detailed analysis, requirements definition, and planning to determine all requirements, policies, standards, strategies, and operating procedures to be developed to maximize convergence of existing Mission services to the new Mission next generation Architecture (MngA). At a minimum, the MBT project will transition current Mission Routed Data Services to the MngA. The proposed scope and associated goals, objectives, milestones, and concepts will be reviewed and approved at the System Concept Review (SCR). Detailed requirements, enterprise architecture service assessments, and refined project management deliverables will be reviewed and approved at the System requirements Review (SRR).

5.6.2 POST FORMULATION

The contractor shall provide systems, design, sustaining engineering, and operations support to transition Mission Routed Data Services and any other identified mission backbone services to the MngA. The MBT project will follow NASA Interim Directive (NID) 7120.99, an enhancement of NASA Procedural Requirement (NPR) 7120.7, throughout the project life cycle. The contractor shall:

- a. Provide design modifications to MngA to support the detailed requirements and present the design changes at PDR and CDR for approval. This design must:
 1. Reduce overall annual CSO circuit costs
 2. Insure that all current Mission Service SLAs are maintained
 3. Insure compliance with all applicable Federal and Agency Security policies
- b. Provide any changes to the current Enterprise Architecture (EA) for review and approval.
- c. Identify key stakeholders for this transition
- d. Provide a communications plan to convey information to NASA management and stakeholders.
- e. Maintain and operate the Mission backbone system 24x7x365. The contractor shall provide any additional operations support identified during the MBT reviews
- f. Develop operations concepts and policies to support the Mission Backbone systems throughout the MBT project. This concept shall address the NMOC (Communications Manager) interactions with the current Mission carriers, future WAN carriers, and the CNOC (NASA backbone carrier)
- g. Identify and be responsible for all operational tools required to support the transition and sustaining operations.
- h. Perform related Network Service Request (NSR) analysis and design to meet customer requirements, minimize impacts of service implementation to the current operational infrastructure, and coordinate with responsible organizations as necessary.

5.7 IN-HOUSE VOICE CONFERENCING (IHVOC) PROJECT

The IHVoC project is responsible for the formulation, building, testing, implementation, and transition to operations of an In-House Voice Conferencing service, within the Communications Service Office (CSO).

5.7.1 PROJECT FORMULATION THROUGH SYSTEM REQUIREMENTS REVIEW (SRR)

During formulation, the NICS IHVoC project team will perform detailed analysis, requirements definition, and planning to determine all requirements, policies, standards, strategies, and operating procedures to be developed to support a transition to the new Instant Meeting service. Preliminary objectives, milestones, and concepts will be reviewed and approved at the System Concept Review (SCR). Detailed requirements, enterprise architecture service assessments, and refined project management deliverables will be reviewed and approved at the System Requirements Review (SRR).

5.8 ENTERPRISE EXTERNAL BORDER

The contractor shall implement an improved network security border for the NASA network. The contractor shall:

- a. Deploy a perimeter Firewall solution between NASA's internal networks and non-NASA external networks
- b. Implement a common agency-wide rule set that consistently allows or denies network traffic between NASA and external networks.
- c. Establish Extranet connectivity for external NASA business partners.
- d. Deploy a Web Content Filtering solution to include Web Content Filters between NASA's internal networks and non-NASA websites.
- e. Implement a common agency website filter that consistently allows or denies website traffic between NASA and external websites.
- f. Deploy a perimeter VPN/Remote Access solution and transition Center Corporate VPNs to the Enterprise VPN service.
- g. Reduce reliance on Center Virtual Private Networks (VPNs) systems.
- h. Deploy an External Border Intrusion Prevention System (IPS) solution.
- i. Support SOC TIC IDS/IPS monitoring.
- j. Deploy a Web Application Firewall (WAF) at NASA's Trusted Internet Connection (TIC) points to be used for Center hosted NASA public-facing web applications. West-Prime hosted web applications are excluded.

5.9 ENTERPRISE INTERNAL BORDER

The contractor shall implement a network-based device authentication capability and zoned architecture for the NASA network following 7120.99 project management methodologies. The contractor is also responsible for identifying and supporting NASA in completion of project dependencies, such as defining a common zoned architecture for all Centers, creation of a network policy, and developing plans and schedules for transition of Center networks to a Dynamic-Dynamic Host Configuration Protocol (D-DHCP), necessary for successful implementation of the Enterprise Internal Border project. Specifically, the contractor shall:

- a. Deploy an agency-wide Network Access Control (NAC) solution to provide authentication of computing and network assets attempting to connect to a NASA network.
- b. Implement common agency-wide network zoned architecture.
- c. Implement a common, agency-wide NAC policy solution such that network-attached devices are automatically placed into a network zone commensurate with the device's security credentials.
- d. Transition existing network-based authentication systems to the Agency NAC solution.
- e. Develop external system interfaces such as data imports/exports with IT Security and other non-CSO databases and systems.

5.10 SERVICE MANAGEMENT IMPROVEMENTS (SMi) PROJECT

SMI Project is responsible for providing efficiency for conducting CSO business relationship management with its customers (e.g. Corporate and Mission). These responsibilities are primarily in three areas: Identity Credentials Access Management – Modernization (ICAM-M) ITSM/Yurbi Compliance; Service Level Management and Service Catalog; and AOPNS/MONS replacement.

The contractor shall provide support to the following areas:

- a. Update related tools to comply with ICAM-M Authorization compliance mandate (NPR 2841.1)
- b. Provide the framework for establishment of Service Level Agreements between CSO/NICS and Customers along with associated performance tracking and reporting.
- c. Establish framework for business and technical catalogs.
- d. Modernize activity/outage notification tool and improve automation.

5.11 SERVICE DELIVERY ENHANCEMENTS (SDe)

The SDe is responsible for developing processes, frameworks and tools to improve the efficiency and automation for tier-2 staff delivery of services to CSO customers. These responsibilities are primarily in following six areas:

Cable Plant Management; Functional Service Management/Release & Deployment; Device Configuration Management; NITSM Mobile Interface; Knowledge Management; and NITSM Interface to NICS Procurement/Supplier Management.

The contractor shall provide support to the following areas:

- a. Provide framework for tracking and reporting related cable plant assets.
- b. Provide framework for tracking, managing, and reporting related work activities with the Enterprise and or Center level.
- c. Provide a more standard/efficient tool for managing and deploying heterogeneous devices.
- d. Provide interface for the internal border protection and external border protection.
- e. Provide smartphone interface to NITSM/CMDB; NITSM work from anywhere; inventory support.
- f. Provide framework for centralized repository for CSO/NICS knowledge sharing.
- g. Automate the correlation of suppliers with procurement and receipt of assets.
- h. Establish the correlation of incidents, changes, and underpinning contracts with suppliers.

5.12 INTERNET PROTOCOL TELEVISION (IPTV) PROJECT

The contractor shall implement a network-based Enterprise Video Content Delivery Network (EVCDN) for NASA following 7120.99 project management methodologies. The contractor is also responsible for identifying and supporting NASA in completion of project dependencies, such as: Establishing an enterprise managed access portal for all online video content at NASA; Defining a common network-based video sharing transportation architecture for all Centers, Programs, and Projects to reduce operational/sustaining cost through a single infrastructure; Provide secure video transport and access; Develop public social media integration; Develop a workflow for vetting video content to enable NASA community video content sharing; Develop the ability to convert external video sources coming into NASA; Develop Audio Metadata

Discovery; and developing plans and schedules to facilitate the transition of legacy video content delivery systems to the Enterprise solution, necessary for successful implementation of the Internet Protocol Television (IPTV) project. Specifically, the contractor shall:

- a. Establish an enterprise managed access portal for all online video content at NASA.
- b. Provide enterprise content sharing capability between NASA end users at all NASA locations
 1. Develop and deploy the common agency-wide EVCDN solution to provide IT infrastructure for video content transportation, distribution, and consumption on the NASA network, where content may be from External, Center-specific, Program-specific, or other sources, as defined by the project.
- c. Provide syndicated television content to all NASA sites.
- d. Secure video content transportation and access
 1. Develop external system interfaces such as authentication and encryption with IT Security and other non-CP systems to secure video content.
- e. Reduce operational/sustaining cost through single infrastructure.
 1. Facilitate the transition of existing video content delivery systems to the EVCDN solution
 2. Develop EVCDN service capabilities for location specific content filtering, public social media integration, and the video vetting workflow for NASA community video content sharing.
 3. Develop Auto Metadata Discovery and the ability to convert external video sources coming into the NASA network.
- f. Ensure compliance with Federal Statutes pertaining to electronic and information technology needs for people with physical, sensory, or cognitive disabilities (508 Compliance).
- g. Ensure compliance with applicable NASA standards.

6 UNIQUE SERVICES

The contractor shall provide unique services that are not previously described elsewhere in this PWS, including but not limited to Russia IT Services, NASA National Security Systems (NSS) Service IT Support, and Digital Television (DTV) Engineering Services. The contractor shall also perform related Network Service Request (NSR) analysis and design to meet customer requirements, minimize impacts of service implementation to the current operational infrastructure, and coordinate with responsible organizations as necessary.

Documentation for these services shall be in accordance with DRD 1294MA-005, *Documentation*.

6.1 RUSSIA IT SERVICES

The contractor shall provide video, voice, data and mission operations services for approved NASA Program and Project requirements in Russia. These services require the coordination, engineering, implementation, operation and enhancement of WAN, LAN, end-user and IT security infrastructure equipment and software. The infrastructure shall be modular and scalable in design in order to be expanded, changed and/or upgraded as requirements dictate. In addition, the contractor shall provide support functions such as shipping, asset management, and project reporting.

6.1.1 RUSSIA IT WIDE AREA NETWORK (WAN)

The contractor shall provide WAN connectivity, equipment, and operational support at designated locations in Russia. The contractor shall ensure interoperability of Russian services with domestic services. The contractor shall:

- a. Provide a centralized hub at Synterra Center for distribution/processing of all telecommunications between NASA networks and the designated locations in Russia.
- b. Provide a dedicated (mission) voice loops to designated locations in Russia and in the United States.
- c. Provide Switched Voice services between the MSFC telephone system, JSC telephone system, and designated locations in Russia (Synterra, GCTC and RSC-E); local and long distance voice traffic shall be directed to the Public Switched Telephone Network (PSTN) from the MSFC and JSC telephone systems.
- d. Provide Routed (mission) data services consistent with mission-critical routed data service requirements in PWS section 3.7.3.
- e. Provide Routed (administrative) data services consistent with standard and premium routed data service requirements in PWS section 3.4.1.
- f. Provide Video Conferencing (ViTS) services consistent with PWS section 3.5.1.
- g. Provide Portable video conferencing services consistent with PWS section 3.5.1.
- h. Provide Facsimile services.
- i. Provide Voice over IP (VoIP) services between MSFC and Moscow.
- j. Provide Backup Command and Control Center services between the Mission Control Center – Moscow and the MSFC Mission Operations Laboratory.
- k. Assist NASA to ensure diversity in its network design in order to maximize network survivability.
- l. Maintain configuration management on all components of Russia IT services.

- m. Provide a *Russia IT Services WAN Route Management Document*, DRD 1294MA-005 *Documentation*, which identifies routes, facilities, and equipment used to deliver service to NASA. A detailed Route Management Plan, including network drawings, is required to document the Contractor's process to ensure routes are not changed without NASA notice and approval.

6.1.2 RUSSIA IT LOCAL AREA NETWORK (LAN)

The contractor shall provide LAN support at designated locations in Russia. The contractor shall provide the services in conformance with NASA standards and policies and ensure interoperability with corresponding systems at the NASA Centers. These services shall include:

- a. Electronic Mail/SMTP gateway
- b. Anti-Virus protection
- c. Onboard Procedure Viewer (iPV)
- d. Local Replistor servers for Mission support systems
- e. Internet access/SMTP gateway
- f. Domain Name Services (DNS)
- g. Data Transport (Telnet/FTP)
- h. Data storage/retrieval
- i. Backup and recovery systems
- j. Wireless LAN

6.1.3 RUSSIA IT END USER SUPPORT

The contractor shall provide end-user support at designated locations in Russia. These services shall include sustaining software versions consistent with Agency standards and maintaining compatibility with vendors. Usage of Patchlink and Agency reporting procedures is mandatory. These services shall include:

- a. Desktop Workstations
- b. Laptops
- c. Printers
- d. Telephones
- e. Conference Room Services

6.1.4 RUSSIA IT SECURITY

The contractor shall provide IT security functions for Russian services consistent with requirements in PWS 2.6 and 3.12, and documentation in accordance with DRD 1294MA-005, *Documentation*. **The contractor shall provide the federally required collection of information regarding hardware/software inventory, status, and condition, as well as the capacity to actively manage those hardware/software resources in conjunction with Agency Security Controls and approved by the ISS Program Office, as applicable.**

- a. Services specific to Russia shall include firewall management, **intrusion detection**, network metrics, web trending reporting, and incident response.
- b. The contractor shall provide encryption technology according to U.S. Export laws and Russian telecommunication laws.

- c. The contractor shall provide installation support, management, operational support, and reporting for federally required IT Security tools supporting Continuous Diagnostic and Mitigation (CDM) components (such as Forescout, BigFix, RES, NESSUS, Splunk). The CDM components will report to the existing Federal Dashboard for IT management, and E3A/Einstein, or other security control capabilities required by NASA in support of federal guidelines.

6.1.5 TECHNOLOGY SHIPPING, EXPORT CONTROL, AND EQUIPMENT INVENTORY

The contractor shall provide shipping capability for sending designated and approved Government equipment to Russia in support of NASA operations. Shipments shall follow standard MSFC procedures for export control. The contractor shall also comply with NASA Equipment Inventory procedures and locally keep accurate records of equipment in Russia or Kazakhstan for which information can be instantaneously and securely accessed online.

6.1.6 BI-ANNUAL CONGRESSIONAL REPORTING

The contractor shall provide a bi-annual report to the International Space Station (ISS) Program Office of all expenditures to foreign entities. This report is mandatory and the information is used to support NASA's spending report to Congress in compliance with the Iran North Korea Syria Nonproliferation Act.

6.1.7 TIER 1 SERVICE DESK SUPPORT

The contractor shall provide Tier 1 Service Desk support for Russian WAN, LAN, and end-user and IT security services utilizing the NICS Incident Tracking System (NITS) or alternate incident management system as directed by NASA.

6.2 NASA NATIONAL SECURITY SYSTEMS (NSS) SERVICE IT SUPPORT

The contractor shall provide IT support for HQ's Office of Protective Services (OPS), NSS Service. NSS IT Support includes engineering, operations, sustainment and property management of all network, Community of Practice secure hosted document sharing, and desktop infrastructure for the NSS. The OPS NSS service provides for a secure communication service between NASA Centers and with other Federal Government organizations. The purpose of NSS is to provide timely distribution of threat information and coordinate disaster response. NSS IT Support monthly status reports shall be in accordance with DRD 1294MA-005, Documentation. Additionally, the contractor shall provide the NSS "As Built" documentation and the NSS Operations Plan in accordance with DRD 1294MA-005, Documentation.

All changes to the NSS must be pre-approved by the OPS.

6.3 DIGITAL TELEVISION (DTV) ENGINEERING SERVICES

The contractor shall provide systems and sustaining engineering and capacity management in support of the NASA DTV Program. Support to the program shall include project management, design and engineering of video and motion imagery systems, operations, inter-Center and intra-Center coordination, and implementation directly related to the DTV Program. In providing this service, the contractor shall:

- a. Provide sustaining engineering for the multi-channel digital NASA TV system (MCDTV).
- b. Assist in preparation and maintenance of the MCDTV IT Security Plan in accordance with NPD 2810.1, *NASA Information Security Policy*.
- c. Assist in the preparation, implementation, and maintenance of transition and implementation plans.
- d. Manage complex video and television implementation projects.
- e. Operate and maintain a laboratory to test equipment, interfaces, and processes.
- f. Provide a technical interface with commercial equipment and technology vendors and cable and broadcast television operators.
- g. Provide engineering support for distribution of audio and video between NASA Centers, within the Centers, to the media and public, and to other space agencies.
- h. Coordinate and facilitate Agency DTV implementation.
- i. Coordinate, organize, and participate in technical working groups and control boards.
- j. Support DTV human space flight projects, **including support of the development of imaging technologies for the Gateway.**
- k. Provide close coordination with other NICS services required for DTV implementation, including IT Security, procurement, and logistics.
- l. Provide satellite services, master control and live/special event support for NASA TV channels.
- m. **Support development of video imaging requirements, architecture and concepts for the Lunar Outpost Gateway.**

6.4 PILOT AUTOMATED BEHAVIORAL ANALYSIS (AUBA) SYSTEM

The contractor shall assist NASA in support of the Interagency Agreement (IAA) HSHQDC-14-X- 00191 with Department of Homeland Security (DHS). The purpose of this Interagency Agreement (IAA) between DHS and NASA is to acknowledge that DHS has selected NASA to provide application development and computing infrastructure support for the Automated Behavior Analysis System (AuBA) pilot. In performance of the pilot, the contractor shall:

- a. procure, operate and maintain all AuBA hardware and software necessary for this pilot effort
- b. provide IT technical and systems leadership and related technical project management/leadership
- c. work with the pilot solution contractor to resolve system malfunctions and shortcomings in the government-hosted environment in a timely manner
- d. work with DHS as part of a joint IPT performing the functions of joint operational planning, coordination, synchronization, requirement translation, and other NASA mission support for cybersecurity
- e. Coordinate the development and implementation of relevant NASA pilot use cases and associated metrics. Provide support to the implementation of DHS pilot use cases
- f. document the outcomes, results, conclusions, and lessons learned from NASA pilot use cases and provide this documentation to DHS
- g. provide DHS the ability to observe the real time output of the pilot system
- h. Facilitate interaction with existing NASA SOC syslog servers and security monitoring equipment

6.5 CONTINUOUS DIAGNOSTICS & MITIGATION (CDM) AND CYBERSECURITY & POLICY DIVISION (CSPD) SUPPORT

The contractor shall assist NASA in the coordination of IT security policy requirements as well as deployment and operation of CDM components in the NASA Corporate network environment. In support of CDM and CSPD, the contractor shall:

- a. Provide network engineering and operations support to the NASA CDM project team in the design and deployment of ForeScout appliances and Gigamon taps on NASA Corporate LANs.
- b. Provide network engineering and operations support to the NASA CDM project team in the sustainment of ForeScout appliances and Gigamon taps deployed under CDM Phase I on NASA Corporate LANs to include monitoring, configuration change, and move/add/change support.
- c. Provide systems engineering and operational support for the Agency Logging Solution (ALS) to include systems architecture, Splunk application administration, and server systems administration.
- d. Provide direct support to the Cybersecurity and Policy Division (CSPD) Security Architect by assisting in the coordination of IT security policy requirements to ensure Federal mandates and NASA enterprise security policy is enforced where capabilities exist on CSO/NICS managed devices. Provide technical expertise in IT project management, cloud security, Software as a Service (SaaS), and network infrastructure security services. Assist in the identification of any gaps in Enterprise capabilities required to achieve desired policy and directives as well as developing integrated IT Security roadmaps, touch points and dependencies between multiple service lines and I3P contracts. Participate in Agency project reviews to ensure CSPD and CSO interests are represented.

6.6 UNIQUE VIDEO SERVICES

The contractor shall provide systems and sustaining engineering to Unique Video Services (UVS) for video services across NASA in support of content developers in targeting enterprise video applicable modernization or other unique video services. These services include: providing 508 Compliance solutions for NASA Imagery, Video and Audio content; Technical video support for live/special events; Operate and maintain a lab; Provide technical video expertise related to future emerging video; And sustainment of the Video Captioning Services contract to support NASA's compliance to Federal statutes.

The contractor shall:

- a. Sustain and manage the contract for Video Closed Captioning Services to support both live events and file-based video programming.
- b. Provide and sustain 508 compliancy solutions for NASA Imagery, video, and Audio content.
 - Ensure compliance with Federal Statutes pertaining to electronic and information technology needs for people with physical, sensory, or cognitive disabilities (508 Compliance) for NASA Imagery, video, and audio content.
- c. Operate and maintain a laboratory to test equipment, interfaces, and processes.

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- Test the latest technology to stay current with customer demand and expectations
- d. Be the Agency's UVS Resource/ Knowledge group.
 - Provide technical expertise to Centers for live/special IP streaming events
- e. Collaborate with other service offices and commercial vendors for content delivery requirements, and interface with the NASA Imagery Experts Program (NIEP) for standards and best practices.
 - Ensure compliance with applicable NASA standards.
 - Support IT Security Plans as applicable for UVS
- f. Collaborate with the different Video Groups across NASA and the NASA Imagery Expert Group (NIEG) to develop standardize enterprise solutions to common requirements.
 - Lead current and future UVS architectures that support NASA requirements by organizing, coordinating, and participating in technical working groups and control boards

6.7 CONTINUOUS DIAGNOSTICS & MITIGATION (CDM) - MISSION SUPPORT

The contractor shall assist NASA in the deployment and operation of CDM Phase 1 project in the NASA NASCOM Mission network environment. In support of CDM Phase 1, the contractor shall:

- a. Provide network security, engineering, system administration and operations support to the NASA CDM project team in the design and deployment of ForeScout appliances, Gigamon taps, and the CDM-LM (Large Mission) infrastructure including servers and virtual machines provisioning BigFix, RES, Splunk, and ITSEC-EDW DCS capabilities to the NASA NASCOM Mission Network.
- b. Provide network security, engineering, systems administration and operations support to the NASA CDM project team in the sustainment of ForeScout appliances, Gigamon taps, and the CDM-LM (Large Mission) infrastructure including servers and virtual machines provisioning BigFix, RES, and Splunk capabilities to the CSO NASCOM Mission Network to include host-center hands-on touch support, monitoring, configuration change, and move/add/change support.