

Task Statement of Work (SOW)

Date: December 1, 2015
Task: NCCS Operations
Task Order: 6062/0
Task Monitor: 

I. Summary of Work

The task order covers Operations within the NASA Center for Climate Simulation (NCCS).

II. Period of Performance

The period during which the work for this task shall be performed is between March 1, 2016 and February 28, 2017.

III. Task Description***Area 1: Computing and Network Administration***

The contractor shall be responsible for:

- a. Supporting and maintaining high-end computing equipment, high-end computing support equipment, data publication equipment, mass storage equipment, networking equipment, and services within the NCCS, including but not limited to, servers, disk subsystems, other storage devices, storage servers, networking, and related hardware, software and infrastructure.
- b. Performing operational system administration duties on IT equipment and software to achieve high levels of availability and functionality, including the installation and testing of software, configuration management, monitoring, metrics gathering and tuning, problem solving and user support.
- c. Providing and maintaining 24x7 automated monitoring of all equipment and services. The contractor shall automatically monitor all critical elements (those impacting user capabilities in real-time) and those elements less critical but whose prolonged outage would impact critical elements and degrade user functionality.
- d. Addressing system issues quickly and promptly. In the event of an unscheduled outage, the contractor shall return the systems to full service as soon as possible. The contractor shall provide a root cause analysis for the system outage and lessons learned that might improve standard operating procedures or future architectural designs and mitigate additional failures. The contractor shall coordinate with relevant vendors, if necessary, to understand the root cause for failures and acquire vendor solutions to prevent or mitigate future failures.
- e. Planning, proposing, and supporting upgrades to the system hardware and software stack as needed. The contractor shall track vendor hardware and software requirements and propose upgrades to the Government as needed to maintain systems in accordance with maintenance contracts or industry best practices.
- f. Supporting the planning, implementation, integration, and acceptance of new systems and services or modifications of existing systems and services for the NCCS. The contractor shall support the retirement and de-installation of systems and services for the NCCS.

- g. Addressing user requests and keeping users up to date on progress toward a solution to the user's issue. The contractor shall track their response to the user request through the NCCS ticketing system. The contractor shall provide general trouble shooting for system and low-level hardware and software related issues, coordinate solutions to user problems with vendors if necessary, and track to completion all assigned user problems and issues.
- h. Performing system analysis and performance monitoring in support of user applications. The contractor shall be a part of a closely coordinated team of experts to address specific user application issues.
- i. Supporting capacity planning and metrics gathering. The contractor shall gather and propose metrics to be gathered to track usage for reporting and capacity planning.
- j. Documenting all system related information for computing systems and services. The contractor shall document all Standard Operating Procedures (SOPs), the system design as built and implemented, provide best practices information to users, update web site information, and frequently asked questions. The contractor shall maintain these documents in a shared environment within the NCCS.
- k. Working with the Networks and IT Security (606.1) on the Scientific Engineering Network (SEN), Communications and Security Services Division (760) on the Center Network Environment (CNE), and the NASA Integrated Services Network (NISN) in order to maintain high quality network connectivity to NASA and beyond.
- l. Maintaining and operating all systems and services according to FISMA/NIST and NASA IT security guidelines.

Area 2: Security

The contractor shall be responsible for:

- a. Developing and maintaining FISMA NIST security plans as required by Federal Law. In addition, the contractor will maintain knowledge of NASA guidance, procedures, and requirements for IT security.
- b. Supporting the IT Security infrastructure including firewalls, security services, time hosts, log hosts, LDAP servers, disk subsystems, other storage devices, networking, and related hardware, software, and infrastructure.
- c. Performing system administration duties on IT Security infrastructure equipment and software. The contractor shall install and test software, provide configuration management of all security systems, monitor, gather metrics, tune, problem solve, and provide user support where appropriate.
- d. Maintaining and operating all systems and services according to FISMA/NIST and NASA IT security guidelines. The contractor shall maintain the security configuration "checklists" (i.e., configuration guidelines and best practices).

Travel and Training

At a minimum, travel and training shall include trips to relevant industry conferences and vendor user groups.

IV. Deliverable Items and Schedule

In addition to the day-to-day work described in section III, the following deliverables will be completed:

Number	Area	Deliverable	Due Date
OP4-1	1	SEN Coordination At a minimum, hold quarterly meetings with the Scientific and Engineering Network team to discuss operations and advanced technology. The minutes must be documented and a draft supplied to the Government within five business days of the meeting. The final minutes shall be delivered within seven business days of the meeting.	At least quarterly meetings.
OP4-2	1	Configuration Management Analysis Perform and document an analysis to upgrade the NCCS Puppet infrastructure.	Ongoing; as needed
OP4-3	1	Configuration Management Upgrade Implement into operations the agreed upon changes to the NCCS Puppet infrastructure based on the analysis.	Ongoing; as needed
OP4-4	1	NCCS Email Service Upgrade Implement into operations the agreed upon changes to the NCCS email service based on the analysis.	Ongoing; as needed
OP4-5	1	Enhance Resource Management Capabilities Expand the Slurm scheduling regime to maximize utilization of newer, very-high-core-count architectures. Accommodate mission critical scheduling requirements. Provide ongoing feedback to SchedMD regarding new features and issues as they are relevant to the NCCS environment.	Ongoing; as needed
OP4-6	1	Discover Major Software Stack Upgrade Plan, prepare, test, and implement a major software stack upgrade on the Discover cluster.	Ongoing; as needed
OP4-7	1	Implement Puppet on Discover Convert from cfengine to puppet on the discover system and investigate what puppet infrastructure to use.	Ongoing; as needed
OP4-8	1	MSS Software Stack Upgrade Plan, prepare, test, and implement an upgrade to the production archive to SGI ISSP 3.X.	Ongoing; as needed
OP4-9	1	Data Portal Puppet Implementation Re-Architect a new Dataportal Puppet structure and classes onto the puppet3 servers, and use the puppet3 model for class layout and design.	Ongoing; as needed
OP4-10	1	Stateless Nodes on Discover Investigate the implementation of stateless nodes on the discover system.	Ongoing; as needed
OP4-11	1	Security Switch Upgrades Implement the agreed upon upgrades outlines in CY3's OP16 deliverable.	Ongoing; as needed
OP4-12	1	NCCS Edge Switch Upgrades Implement the agreed upon upgrades outlines in CY3's OP19 deliverable.	Ongoing; as needed
OP4-13	1	Implement Centralized License Service	May 27, 2016

Number	Area	Deliverable	Due Date
		Based on the analysis, concept of operations, and recommended architecture, configure and integrate into operations an NCCS centralized license service.	
OP4-14	1	Confluence Implementation Plan Provide a Confluence Implementation Plan that covers both installation and documentation movement off of Foswiki.	April 29, 2016
OP4-15	1	Paging Alternatives Investigate alternatives to the current paging infrastructure.	July 1, 2016
OP4-16	1	Linux Based SCADA Management Plan Perform an alternatives analysis and provide a plan to support SCADA on Linux based systems	July 1, 2016
OP4-17	1	IT Infrastructure Monitoring Analysis Perform a comparison analysis between Nagios, Icinga, and other products to determine which is the better solution for the NCCS.	July 29, 2016
OP4-18	1	Linux Based SCADA Management Implementation Implement plan to support SCADA on Linux based systems	September 1, 2016
OP4-19	1	HPC Support Hypervisor Implementation Convert the Windows based HPC Support hypervisors to be Linux based.	September 1, 2016
OP4-20	1	Confluence Implementation Perform the installation of the Confluence Service.	October 31, 2016
OP4-21	1	Replace Mass Storage Hardware As funding is available, replace the aging IS220 Mass Storage Disk Subsystems with new equipment. Determine which servers and ancillary Mass Storage equipment should be replaced and implement the replacements if funding is available.	October 31, 2016
OP4-22	1	IT Infrastructure Monitoring Upgrade Implement into operations the recommendation from the IT Infrastructure Monitoring analysis and include high availability servers.	November 30, 2016
OP4-23	1	Code and Building Email List Update Update the cblast tool to include new requirements.	February 28, 2017
OP4-24	1	Migrate Foswiki Pages to Confluence Once the Confluence service is put into production, the various teams need to setup their portion of Confluence, move pages from Foswiki, and add new documentation.	February 28, 2017
OP4-25	2	Windows Authentication Work with the GSFC ICAM team to implement an ADAPT Windows VM authentication strategy.	Ongoing; as needed
OP4-26	2	TACACS+ Implementation Setup TACACS+ for authentication and authorization for NCCS network devices.	April 29, 2016
OP4-27	2	PIV-based Authentication on NCCS Websites Implement eAuth for all NCCS Websites that require authentication.	May 1, 2016

Number	Area	Deliverable	Due Date
OP4-28	2	(lower)Kace Implementation Implement (lower)Kace on all NCCS system to fulfill the agency asset inventory function.	June 30, 2016
OP4-29	2	SELinux Policies and Impacts Develop SELinux policies and assess their impact on all NCCS systems. Also provide a rollout plan to the NCCS systems.	August 31, 2016
OP4-30	2	SELinux Implementation Implement the proposed SELinux policies as indicated in the rollout plan.	February 28, 2017

V. Travel

The contractor is expected to propose travel as necessary to perform this task. As part of the contractor's Task Order response, a spreadsheet of proposed travel shall be provided to the Government that outlines the proposed travel during the contract year. It is expected that travel plans will change throughout the contract year. Therefore, travel plans shall be updated and forwarded to the Government on a monthly basis.

Travel may include (but not be limited to):

- Attend conferences relevant to support this task.
- Travel to other centers as required.
- Attend technical meetings as required.
- Travel to training locations.
- Trips to Goddard in support of deliverable activities.

After the completion of the travel, the Contractor shall provide to the Task Monitor and Contract Management a Trip Report for both domestic and foreign travel that includes:

- Name of Traveler
- Trip Itinerary
- Task Name and Number
- Purpose of Trip
- Contact(s) and Summary of Discussion(s)
- Summary of Presentation(s)/Talk(s)
- Copy of Presented Material, if applicable

In addition to the above, the following information shall be included in all Trip Reports for foreign travel:

- Statement of and Date of Threat Vulnerability Briefing
- Statement of and Date of Threat Vulnerability Debriefing (including the date the debriefing questionnaire was mailed to the Threat Vulnerability office. If no formal debriefing was required, so state)
- Statement of and Date of Export Compliance Briefing (if not applicable, so state and provide date of approval for 1676 package)

Approvals of all travel (conferences, meetings, or training; domestic or international) must adhere to all relevant NASA directives and to the CISTO Travel Approval process.

VI. Training

It is expected that the contractor personnel assigned to this work have the necessary training at the beginning of this task to complete all deliverables. The contractor may propose training beyond what is typically expected of the proposed labor categories that they deem necessary in support of their technical approach to meet the deliverables. Training plans must be updated and forwarded to the Government on a monthly basis to include, but not limited to, the following information: training completed, upcoming training, and proposed modifications to the training plans.

Training may include (but not be limited to):

- Conferences tutorials or workshops relevant to support this task.
- Cross training at other centers as required.
- On-line training.

The Contractor shall provide to the Task Requester and Contract Management a Report for all training that includes:

- Name of Person Attending Training
- Training Content/Agenda/Overview
- Task Name and Number
- Purpose of Training
- Summary of Training/Presentation(s)/Talk(s)
- Contact(s) and Summary of Discussion(s)
- Copy of Training Material, if applicable

VII. Work Location

This work shall be performed primarily on-site at the Goddard Space Flight Center, but the contractor may be required to perform some work at the contractor's facility.

VIII. Reporting Requirements

The contractor shall:

- (B.1.2) Monthly Status Reports (MSR) shall be submitted on or before the 8th calendar day of each month for the previous month or as jointly determined following contract award. There should be one MSR per month that covers all task orders under the contract. The MSR shall be distributed electronically to the Contracting Officer (CO), Contracting Officer's Representative (COR), and all Task Monitors.
- (B.1.4) All White Papers or Reports outlined in the Deliverable Schedule shall be provided electronically to the COR and Task Monitor as specified.
- (B.1.5) Provide an electronic copy of a Monthly Highlights Report (MHR) to the COR and Task Monitors by the last business day on or before the 4th calendar day of each month. There should be one MHR per month that covers all task orders under the contract. The highlights will be incorporated into the Monthly NCCS report written by Government personnel to the High-End Computing Portfolio Manager.

- (B.1.8) Provide a final task order report within 30 days after completion in electronic form to the Contracting Officer (CO) (letter transmittal only), Contracting Officer's Representative (COR), and Task Monitor.
- (B.1.9) Travel reports shall be included in the next MSR.
- (B.1.10) Provide an electronic copy of the NASA Form 533 for this task 10 days after the close of the Contractor's accounting period and Quarterly in accordance with Attachment. Send the 533 to Contracting Officer (CO), Contracting Officer's Representative (COR), Resource Analyst (Code 603), and Finance Office (Code 155).
- (B.1.12) The annual Financial Report of NASA Property in the Custody of Contractors (NASA Form 1018) is due October 15. This shall be submitted through the NF 1018 Electronic Submission System (NESS).
- (B.1.13) An electronic copy of the New Technology Reports is due to the Contracting Officer (CO) and New Technology Representative if one is required by any of the task orders under the contract.
- (B.1.15) Electronic monthly and annual Safety & Health Reports (S&HR) shall be submitted to Contracting Officer (CO) and Code 350. There should be one S&HR per month that covers all task orders under the contract.
- (B.1.16) An electronic Personal Identity Verification (PIV) Report shall be provided to the Contracting Officer (CO), Contracting Officer's Representative (COR), and Code 240 monthly. There should be one report per month that covers all task orders under the contract.
- Provide Monthly Operational Analysis with the Monthly Status Report.
- Meet with the Contracting Officer's Representative (COR) and technical and financial Government representatives monthly to discuss financial status. Topics covered shall include: Funding provided by NASA, Funding planned to be provided by NASA, Funding obligated to the Task Order, Status of subcontracts for Tools and ODCs, Expenses invoiced, Funds available on the Task Order (not expensed or obligated on subcontracts), and Expected monthly labor expenses.

IX. Security Requirements

This task shall comply with IT security requirements as documented in the NCCS IT Security Plan and 600 IT Security Plan as applicable.