VIRGINIA IT AGENCY

Exhibit 2.1 Description of Services

Server, Storage, and Data Center Services

VA-180815-UC - <mark>**MODIFICATION 23**</mark>

COMMONWEALTH OF VIRGINIA
VIRGINIA IT AGENCY (VITA)
SUPPLIER STRATEGY AND PERFORMANCE DIVISION

7325 BEAUFONT SPRINGS DRIVE
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1.0   Introduction

This **Description of Services** sets forth the Services that Supplier will provide, as of the Commencement Date unless otherwise specified. Further, this Description of Servicessetsforthe processes andsystemsthat Supplier will provide anddescribes Supplier'sobligationstowork with the other Suppliers to deliver integrated end-to-end Services to Customers.

Supplier confirmsthat unlessotherwise specificallystated, itwill provide asolutionthatsupportsallofthe business processes describedinthis Description of Services and its Exhibits, and that all Services, unless otherwise specifically stated, are included within the Base Charges described in **Exhibit 4 (Pricing and Financial Provisions)**. Accordingly, Supplier also confirms that Customers will not incur any other charges in relation to the Services described in this Description of Services.

The primary goals of this RFP are to:

- Assume all services for Server-based compute, Storage and facilities currently provided by Commonwealth's Incumbent Supplier, Northrop Grumman Services Corporation under the Commonwealth Infrastructure Agreement (CIA) including:
  o Operations and maintenance of the Commonwealth Enterprise Solution Center (CESC) Data Center facility
  o Operations and support for all Servers and associated Storage used by VITA and its Customers regardless of physical location
  o Operations and maintenance of the Commonwealth (COV) Directory Services Service andits associated Active Directory Domains
  o Operations and maintenance of the CESC Data Center LAN
  o Projects (e.g. refresh, service improvement, service requests) in progress as of Supplier's Service Commencement date
- Ensure integrity of Disaster Recovery (DR) services
- Mitigate risk and document the Services environment
  o Comprehensive review and detailed documentation of the Server and Storage Services at CESC and supported sites
  o Analyze and address technologies and systems which comprise those Services to ensure that the environment complies with all VITA Rules
- Evolve the current environment to improve performance and efficiencies; enable and/or transition to next generations of methods for Server-based computing and Storage Services; take advantage of the ever-changing technology landscape while decreasing costs to VITA and VITA Customers.
- Provide Services that are flexible, rapidly provisioned, cost effective, transparent, and elastic to meet VITA and Customer needs while preserving enterprise requirements such as Security and compliance management.
- Provide detailed plans, assumptions and dependencies to VITA, VITA Customers, other suppliers or Services, and any other stakeholders for any migrations, transformations, new or enhanced technology adoption.
- Provide new Data Center Services to meet the future needs of VITA and VITA Customers.

The Commonwealth is interested in mitigating implementation, operational, and transitional risk associated with these Services. Suppliers should not feel obligated to only propose like for like Server and Storage solutions utilized by the Commonwealth but all existing scope should be included in the proposal.

Supplier will integrate with the MSI Supplier during the development, implementation and execution of its own Service Management Processes to ensure consistency and integration across all Suppliers. Supplier will work together with the MSI Supplier delivering integrated Services and will share Service Level responsibilities as defined in **Exhibit 3.1 (Service Level Matrix).**

Ref#	Requirement	Comply (Y/N)	Supplier Response
R1.	**2.0 Common Services**		
R2.	*Common Services are meant to apply to all sections of this document.* *The Supplier's responsibilities common to all platforms are described in this Exhibit, which include:*		
R3.	1. Adhere to and perform the Cross Functional requirements contained in **Exhibit 2.2 (Description of Services - Cross Functional)**.	Y	
R4.	2. Supplier will provide VITA and its Customers Services in a multi-tier Support Level environment with escalating levels of performance.	Y	
R5.	3. Provide 24x7x365 operations, including Staffing the Facilities with personnel to provide 24x7x365 monitoring and enabling access of authorized personnel into such Facilities.	Y	
R6.	**2.1 General**		
R7.	*Supplier's responsibilities include:*		
R8.	1. Provide feedback regarding the impact of potential Architecture and design Changes in accordance with the procedures and processes defined in the Service Management Manual (SMM).	Y	
R9.	2. Perform Project Management as directed by the MSI of technology Refresh activities, including planning, coordination withstakeholders, managing executionand conductingcommunications to stakeholders.	Y	
R10.	3. Track lifecycle of all Software and Hardware used to deliver Services in the Service Management System (SMS) provided by the MSI. Generate and maintain technology roadmaps toinclude Refresh schedule, Software Upgrades, andnew technology to ensure Supplier service offerings stay current per the Service Management Manual (SMM) defined schedule.	Y	
R11.	4. Analyze performance metrics and respond proactively to potential issues.	Y	
R12.	5. Provide and describe the capability for disentanglement and retention of any Intellectual Property owned by the Commonwealth (i.e., any Cloud domain established on behalf of the Commonwealth becomes property of the Commonwealth at the end of the contract).	Y	
R13.	6. Ensure that the environment is secure and in compliance with VITA Rules: https://vita.virginia.gov/default.aspx?id=6442475453	Y	
R14.	7. Implement all Systems, Services, and Hardware such that the Commonwealth will maintain system administrative access to all dedicated Systems, Services, and Hardware that contain Commonwealth Data, or if a multi-tenant environment, accessto the section that contains Commonwealth Data, if such access to Commonwealth Data can be specifically limited to such data. Forthe purposes of this access, Commonwealth Data shall not include data generated	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
	by Unisys for administrative purposes.		
R15.	8. Provide the Chief Information Officer or the Chief Information Security Officer for the Commonwealth of Virginia with credentials required to gain system administrative access to all dedicated Systems, Services, and Hardware that contain Commonwealth Data, or if a multi-tenant environment, access to the section that contains Commonwealth Data, if such access to Commonwealth Data can be specifically limited to such data. For the purposes of this access, Commonwealth Data shall not include data generated by Unisys for administrative purposes.	Y	
R16.	9. Ensure that all Devices and Enterprise Supported Software in the environment (Physical and Virtual) are Patched and maintained (e.g., Operating System Security Patches, performance Patches, firmware, service packs, versions) in accordance with VITA Rules and the SMM.	Y	
R17.	10. Work with the MSI to schedule maintenance windows.	Y	
R18.	11. Work with the MSI to schedule monthly Patch cycles allowing VITA Customers to schedule multiple standing Patch windows inside the approved maintenance windows (e.g., Production, Test, Development).	Y	
R19.	12. Maintain Security practices to secure data and Applications from threats outside the service center as well as other Customers Colocated within the same service center. Supplier to provide for their personnel and Services delivered:	Y	
R20.	12.1. Provide multifactor authentication.	Y	
R21.	12.2. Log all Customer changes and provisioning actions.	Y	
R22.	12.3. Log all administrative access.	Y	
R23.	12.4. Retain and provide logs for VITA and VITA Customer specified retention periods.	Y	
R24.	12.5. Issue administrative credentials only in a secure fashion.	Y	
R25.	12.6. Support for both encryption in transit and encryption at rest.	Y	
R26.	12.6.1. Encryption at rest must Support the forensic acquisition processes and Software utilized by the Managed Security Supplier.	Y	
R27.	13. Ensure data confidentiality standards and practices are in place to prevent the exposure of data to unauthorized personnel, as well as to manage and review access that administrators and Users have to stored data. Such standards and practices will be documented in the SMM as approved by VITA.	Y	
R28.	14. Document in the SMM and provide when requested, logging processes that include the types of Services and Devices logged, the Event types logged, and the information fields.	Y	
R29.	15. Provide Security controls, both physical and virtual Zones of Control Architectures (ZOCA), used to isolate hosted Servers.	Y	
R30.	16. Deploy standard encryptiontechnologies andoptionstoprotect sensitivedata (while intransit or at rest), appropriate to the service models provided.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R31.	17. Meet Recovery Point Objectives (RPO) and Recovery Time Objectives (RTO).	Y	
R32.	18. Apply legal retention periods and disposition according to VITA Rules or VITA's Customer policy and/or legal requirements.	Y	
R33.	19. Provide billing transparency, flexibility, and accuracy at the VITA and VITA Customers level for Services consumed.	Y	
R34.	20. Cooperate withthe MSIinthedevelopment of SMM sections related to Supplier and Supplier's Services.	Y	
R35.	21. Maintain technical currency for all Services while providing new features as approved by VITA and in accordance with the SMM.	Y	
R36.	22. Ensure that all Hardware and Software is properly maintained and under manufacturer or similar Support.	Y	
R37.	23. Maintain operations regardless of weather or holiday.	Y	
R38.	24. Perform systems administration activities including:	Y	
R39.	24.1. Analyzing system logs and identifying potential issues with computer systems.	Y	
R40.	24.2. Introducing and integrating new technologies into existing Data Center environments.	Y	
R41.	24.3. Performing routine audit of systems and Software.	Y	
R42.	24.4. Applying Operating System Updates, Patches, and Configuration Changes.	Y	
R43.	24.5. Installing and Configuring new Hardware and Software.	Y	
R44.	24.6. Adding, removing, or Updating User account information, resetting passwords, etc.	Y	
R45.	24.7. Answering technical queries and assisting Users.	Y	
R46.	24.8. Responsibility for Security.	Y	
R47.	24.9. Responsibility for documenting the Configuration of the system.	Y	
R48.	24.10. Troubleshooting any reported Problems.	Y	
R49.	24.11. System performance tuning.	Y	
R50.	24.12. Ensuring that the Network infrastructure for Server/Storage is up and running	Y	
R51.	24.13. Configuring, adding, and deleting file systems.	Y	
R52.	**2.2 Architecture and Engineering**		
R53.	*Supplier's responsibilities include:*		
R54.	1. Provide Architecture that is fault tolerant, redundant, Secure, durable, highly scalable, and supports Service Continuity where required.	Y	
R55.	2. Provide Support for heterogeneous platforms in various geographic locations within the continental Unites States and interface with Cloud or premise-based systems.	Y	
R56.	3. Provide hybridArchitecturethat enables all Servicestointeract regardlessof whereandhow	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
	they are hosted.		
R57.	4. Provide the Architecture, design, strategies, and planning processes for the development and Installation of Services that satisfies VITA and VITA Customer requirements.	Y	
R58.	5. Coordinate all Architecture, design, strategy, and planning activities with MSI, VITA and VITA Customers (including business units and Project managers as necessary).	Y	
R59.	6. Provide a robust and highly available infrastructure and, when commercially reasonable and approved by VITA, Update the infrastructure to leverage new tools and technologies that would improve VITA and VITA Customers business processes and performance in accordance with ITISP Governance processes and procedures as defined in the SMM.	Y	
R60.	7. Educate and train the operational staff in the use of analysis tools and processes where appropriate.	Y	
R61.	8. Manage Supplier relationships and provide a technical interface to MSI, VITA, VITA Customers, other Service Tower Suppliers (STS) and Third Party Vendors.	Y	
R62.	9. Establish and maintain the alerting mechanisms and monitoring systems which apply to platforms and Solutions for the Services.	Y	
R63.	10. Create documentation, training, diagnostic scripts, and operational procedures for the operations group.	Y	
R64.	11. Implement performance and Configuration tuning of infrastructure in conjunction with Capacity Management and Change Management processes as defined in the SMM.	Y	
R65.	12. Establish system tuning and performance processes where necessary and Upgrade and tune Services Infrastructure to meet Capacity changes in accordance with the SMM.	Y	
R66.	13. Design Services to allow for the monitoring and measurement of Service Levels and other metrics and the addition/modification of objects being measured and monitored.	Y	
R67.	14. Provide appropriate Security measures (e.g. physical, information) for the Service infrastructure.	Y	
R68.	15. Provide engineered solution to allow for choices in hosted geographic data locations as to optimize throughput and remove risk of latency due to Network constraints.	Y	
R69.	16. Provide Equipment of the quality and revision levels required by VITA Rules or VITA Customers.	Y	
R70.	17. Test and determine that all Equipment isin compliance with VITA Rules orthe SMM and free of defects.	Y	
R71.	18. Provide a sparing strategy for parts critical for the operation of the Equipment to meet defined Service Levels.	Y	
R72.	19. Bring all parts that are repaired up to the current revision level before returning them to the inventory of spare parts.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R73.	20. Replace defective parts with parts that are at the current revision level.	Y	
R74.	21. Ensure all Equipment is under vendor or VITA and VITA Customer approved maintenance providers.	Y	
R75.	**2.3 Operations, Maintenance, and Monitoring**		
R76.	*Supplier's responsibilities include:*		
R77.	1. Control all In-Scope computer platforms and associated infrastructure throughout the organization.	Y	
R78.	2. Assume the responsibility for and perform all operations functions:	Y	
R79.	2.1. Monitor all processing.	Y	
R80.	2.2. Monitor the environment, alarm systems and environmental controls, and the transmission and reception of polling information from outside organizations.	Y	
R81.	3. Provide performance and Availability monitoring, tuning, and reporting, including:	Y	
R82.	3.1. Monitor all phases of Systems performance using appropriate real-time and historical data performance Databases.	Y	
R83.	3.2. Provide performance monitoring and tuning of Supported Equipment.	Y	
R84.	4. Monitor the performance of online interactive traffic and take appropriate action to resolve online-system-related Incidents, including escalating (as appropriate) the Incident in accordance with the SMM.	Y	
R85.	5. Support, monitor, and log the transmission of files within internal COV Sites and between internal COV Sites and any external Sites as designated by VITA Customers consistent with commercial or VITA Rules.	Y	
R86.	6. Provide end-to-end visibility to MSI and VITA-approved Users or VITA Customers to view performance statistics (real-time and historical) on all Infrastructure Devices.	Y	
R87.	7. Manage, maintain, monitor, and control online and batch processes, both scheduled and unscheduled (including on-request processing).	Y	
R88.	8. Complete VITA Customer defined batch processing and backups in the correct sequence and within the time periods designated by VITA Customer.	Y	
R89.	9. Where practical, provide for automated scheduling of batch and asynchronous task processes including backups.	Y	
R90.	10. On an ongoing basis, enhance processing capabilities and efficiencies through system tuning and other run-time improvements.	Y	
R91.	11. Perform continuous monitoring of utilization needs and efficiencies, and report on tuning initiatives in accordance with the SMM.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R92.	12. Perform and resolve predictive failure trend analysis and report to MSI in accordance with the SMM.	Y	
R93.	13. Produce trend reportsto highlight production issues and establish predetermined action and escalation procedures when batch window issues are encountered.	Y	
R94.	14. Monitor, verify, and make appropriate adjustments to Support proper Applications executions.	Y	
R95.	15. Notify the appropriate stakeholders in accordance with the SMM in the event that Applications do not execute properly.	Y	
R96.	16. Perform periodic and emergency systems maintenance in accordance with SMM to minimize the impact to VITA and VITA Customers.	Y	
R97.	17. Perform computer shutdowns and restarts, as required, and execute customary utility functions.	Y	
R98.	18. Cycle power (i.e., switching Equipment off and on) when requested by VITA or authorized designee.	Y	
R99.	19. Respond to media mount requests as needed for the Equipment and Colocation Services.	Y	
R100.	20. Maintain, administer, and provide necessary automated tools and processes for systems management to the extent available in the tool suite jointly agreed by the Supplier and VITA.	Y	
R101.	21. Maintain tables, calendars, parameters, and definitions for tools used to automate manual procedures or to automate and improve the quality of the operations.	Y	
R102.	22. Provide remote monitoring and management of Servers, Storage Equipment, and associated Devices not located at the Data Centers as indicated in **Exhibit 4.6 (Equipment Assets)**.	Y	
R103.	23. Run or terminate utilities and processes depending upon the impact to Users/Systems and only with the appropriate VITA or Customer Approvals.	Y	
R104.	24. Proactively monitor and report to MSI on resource shortages, and report utilization statistics and trends in accordance with the SMM.	Y	
R105.	25. Perform Equipment Refreshes, Installations and Retirement in accordance with the Refresh and Currency Plans and schedules established by MSI, VITA and ITISP Governance.	Y	
R106.	26. Collect knowledge of processing requirements, remote operational Support, and Support for transitional Services in Support of Data Center migrations and business acquisitions and divestitures.	Y	
R107.	27. Perform preventive maintenance	Y	
R108.	28. Perform all maintenance according to the manufacturer's specifications.	Y	
R109.	28.1. Provide documentation to the MSI to verify that preventive maintenance has been completed.	Y	
R110.	28.2. Automate preventive maintenance tasks.	Y	
R111.	28.3. Run maintenance routines prior to each business day in accordance with the SMM.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R112.	28.4. Perform all activities in compliance with Change Management in the SMM.	Y	
R113.	29. Perform and Support Security audits and Configuration parameters reviews, and make password changes on all systems as directed by the MSI in coordination with the MSS.	Y	
R114.	30. Perform or coordinate all high-risk maintenance that impacts Users on all Services per the schedule and processes defined in the SMM.	Y	
R115.	31. Assist MSI, VITA and VITA Customers, other VITA Suppliers, or Third Party Vendors in resolving End-User Problems and ongoing Application Support.	Y	
R116.	32. Assist MSI, VITA and VITA Customers, other VITA Suppliers, or Third Party Vendors with ongoing application support.	Y	
R117.	33. Report any potential system Problems in accordance with the SMM.	Y	
R118.	34. Perform daily backups of Configurations in order to recover/restore Services.	Y	
R119.	35. Perform Configuration restores as directed by the MSI.	Y	
R120.	36. Perform or coordinate all warranty work on all Equipment with appropriate parties as defined in the SMM.	Y	
R121.	37. Support transitional Services in Support of Data Center migrations and business acquisitions and divestitures.	Y	
R122.	**2.4 Patch Management**		
R123.	*Supplier's responsibilities include:*		
R124.	1. Patch systems in accordance with the SMM.	Y	
R125.	2. Supplier shall provide reports on the status of Patching every 30 days and upon request in accordance with the SMM.	Y	
R126.	3. Supplier shall Patch enterprise Equipment, Systems, Software, and other Devices that are part of infrastructure Services. Use the approved central Software deployment tool and deploy Patches to Servers and clients per Customer's policies as defined in the SMM.	Y	
R127.	4. Supplier shall include the results of Patch management piloting process to the MSI, impacted Customers and VITA within 24 hours of Patching activities.	Y	
R128.	5. In the event that the Patch process disrupts Customer operations the Supplier shall roll back the changes made in accordance with the SMM.	Y	
R129.	6. Apply Patches to Devices within the timeframe guidelines in accordance with Customer's Security policies and the SMM.	Y	
R130.	7. Communicate with and/or alert the Customer IT Security team when Patches are not Installed within the designated timeframe.	Y	
R131.	8. Integrate and have the ability to export Patch data associated will all Customer Devices.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R132.	**2.5 Production Control and Scheduling (Batch)**		
R133.	*Supplier's responsibilities include:*		
R134.	1. Assume responsibility for all production control and scheduling functions.	Y	
R135.	2. Integrate and document in the SMM all production control and schedule functions in accordance with VITA and VITA Customer requirements.	Y	
R136.	3. Establish, document, and maintain standards for production jobs, batch files and scripts in accordance with the SMM and VITA Rules.	Y	
R137.	4. Identify job dependencies, and create and maintain job and task dependencies on the master scheduling Database.	Y	
R138.	5. Develop, distribute, and obtain Approval of schedules prior to implementation in accordance with the SMM.	Y	
R139.	6. Coordinate and modify schedules for special requests and comply with MSI, VITA and VITA Customers priorities.	Y	
R140.	7. Resolve scheduling conflicts.	Y	
R141.	8. Provide schedule status updates.	Y	
R142.	9. Proactively prepare for User deadlines per custom User requirements.	Y	
R143.	10. Respond expeditiously to requests from MSI, VITA and VITA Customers for priority job and task execution.	Y	
R144.	11. Promptly notify MSI if special requests will affect the timely completion of other tasks.	Y	
R145.	12. Prioritize and schedule batch jobs, tasks, scripts and report distribution (in accordance with the SMM) to optimize the use of processing windows and the scheduled Availability of online Applications that are dependent on batch or task processing, while verifying that batch completion times are met.	Y	
R146.	13. Take any other necessary steps to prepare Application job streams and scripts for production scheduling and execution.	Y	
R147.	14. Enter program control specifications (parameters) into Application job streams as directed by VITA-approved Users.	Y	
R148.	15. Maintain system job streams and scripts, including indicating file usages, job dependencies/priorities, and program options available.	Y	
R149.	16. Perform documentation control functions as defined in the SMM.	Y	
R150.	17. Move programs and documentation to production libraries.	Y	
R151.	18. Manage, maintain, monitor, and control batch processes, both scheduled and unscheduled, including tasks and scripts.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R152.	19. Start jobs, tasks and scripts manually where automated processes do not exist.	Y	
R153.	20. Investigate and report on all jobs, tasks and scripts that end abnormally if operations procedures require.	Y	
R154.	21. Restart jobs, tasks and scripts that end abnormally.	Y	
R155.	22. Resolve interruptions caused by conditions external to production programs (e.g., disk, tape).	Y	
R156.	23. Execute re-runs to restart jobs, tasks and scripts according to SMM.	Y	
R157.	24. Complete VITA Customer defined batch processing and backups and restores in the correct sequence and within the time periods designated by VITA and its Customers.	Y	
R158.	25. Schedule batch jobs within VITA and its Customer's defined windows to achieve maximum performance as long as required batch completion times are met.	Y	
R159.	26. Provide for automated scheduling of batch work and processes including backups in accordance with the SMM.	Y	
R160.	**2.6 Technical Support**		
R161.	*Supplier's responsibilities include:*		
R162.	1. Provide all technical Support in accordance with SMM for operations including:	Y	
R163.	1.1. Server administration	Y	
R164.	1.2. Storage management	Y	
R165.	1.3. System administration	Y	
R166.	1.4. Networking Support for Servers and Storage for Primary and DR data centers only	Y	
R167.	1.5. Physical and Virtual Server Support	Y	
R168.	1.6. Install/Move/Add/Change (IMAC)	Y	
R169.	1.7. Capacity planning	Y	
R170.	1.8. Performance tuning	Y	
R171.	1.9. Problem resolution and Root Cause Analysis	Y	
R172.	1.10. Configuration Management	Y	
R173.	2. Install and maintain all System Software products in accordance with the SMM.	Y	
R174.	3. Provide monitoring consistent with Service Level requirements and reporting of system performance, utilization, and efficiency in accordance with the SMM.	Y	
R175.	4. Provide technical advice and Support to the MSI, VITA, VITA Customer and other Supplier Application development and maintenance staffs as required.	Y	
R176.	5. Provide appropriate response to Incidents and continued troubleshooting Support through resolution, as required, to meet the Service Levels in accordance with the SMM.	Y	
R177.	6. Provide technical advice and Support to the Application Development & Maintenance (ADM)	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
	and Database Administration (DBA) staffs as required.		
R178.	7. Participate in Change Management process and groups implementing Changes in accordance with the SMM.	Y	
R179.	8. Monitor Customers' data Storage media and processor utilization and requirements.	Y	
R180.	9. Adhere to documentation standards in accordance with the SMM and VITA Rules.	Y	
R181.	10. Develop, where appropriate, and Install productivity tools/utilities, as well as performing all required operational modifications for the efficient and proper delivery of the Services.	Y	
R182.	11. Develop and maintain technical and functional specifications and requirements for all environments and related interfaces.	Y	
R183.	12. Provide product research, Project Support, and advice on Equipment tuning and efficiency improvements.	Y	
R184.	13. Install, tailor, maintain and provide ongoing Support for System Software products in accordance with the SMM	Y	
R185.	14. Install Software according to the Applications' specifications, the SMM and VITA Rules.	Y	
R186.	15. Distribute Software electronically where possible.	Y	
R187.	16. Manage, prioritize, and coordinate all preventive and remedial maintenance Patches and Updates for System Software and Equipment (e.g., firmware) as required by the SMM and VITA Rules.	Y	
R188.	17. Coordinate Software Upgrades and Updates with MSI, VITA and VITA Customers.	Y	
R189.	18. Report generally available performance data and resource utilization statistics related to System Software release-level Upgrades.	Y	
R190.	19. Provide Support regarding VITA and/or VITA Customer Requests (e.g., product research, Project Support, and advice on Equipment tuning and efficiency improvements, as well as on Applications tuning and efficiency improvements.)	Y	
R191.	20. Perform operator tasks, such as system power on reset (POR), for Customers' Devices.	Y	
R192.	21. Troubleshoot and perform Equipment Repairs and manage spare parts.	Y	
R193.	**2.7 Capacity Management**		
R194.	*Supplier's responsibilities include:*		
R195.	1. Perform activities required for monitoring and optimizing performance in order to reduce costs or improve Service Levels.	Y	
R196.	2. Provide systems performance reviews and advice per SMM.	Y	
R197.	3. Conduct system performance testing when required.	Y	
R198.	4. Perform Infrastructure Upgrades asrequiredtoprovide effective capacityand tomeet VITA,	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
	VITA Customer, and Software architectural requirements.		
R199.	5. Coordinate with business partners, Third Party Vendors, other vendors as appropriate, and VITA and VITA Customers on Projects to Install and Upgrade Infrastructure Devices.	Y	
R200.	**2.8 User Support**		
R201.	*Supplier's responsibilities include:*		
R202.	1. Provide Support, advice, and assistance to VITA Users in accordance with SMM.	Y	
R203.	2. Perform analysis to provide optimal use of production resources.	Y	
R204.	3. Perform changes for programmers and Users as requested by an authorized VITA or VITA Customer representative in accordance with the SMM.	Y	
R205.	4. Provide technical Support and administration for various products and Application rollouts to VITA and VITA Customers in accordance with the SMM.	Y	
R206.	**2.9 Integration**		
R207.	*Supplier's responsibilities include:*		
R208.	1. Integrate monitoring consoles with the MSI to allow the MSI and VITA Customers the ability to establish notifications and set thresholds.	Y	
R209.	2. Integrate all system and Application logging with MSI.	Y	
R210.	3. Isolate VITA and VITA Customer environments as required to meet VITA Rules.	Y	
R211.	4. Support integration of the MSI-provided Cloud Service Broker (CSB) solution and Hybrid Cloud Management Tool with the following Services:	Y	
R212.	4.1. Physical and Virtual x86 based commodity Servers.	Y	
R213.	4.2. Traditional non-Cloud Storage	Y	
R214.	4.3. Appliances as appropriate	Y	
R215.	4.4. Supplier provided Cloud-based Services	Y	
R216.	4.5. Other platforms as appropriate	Y	
R217.	**2.10 Personnel/Clearance Management**		
R218.	*Supplier's responsibilities include:*		
R219.	1. Grant VITA approval rights for key personnel interfacing with VITA and VITA Customers and the right to review qualifications for any-and-all staff servicing VITA and- VITA Customers.	Y	
R220.	2. Grant VITA Customers rights to review qualifications for any-and-all staff servicing that Customer.	Y	
R221.	3. Provide controls and ensure that advanced Security operations functions and escalation roles	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
	must be performed by senior staff cleared to conduct those functions and roles.		
R222.	4. Provide controls and ensure that personnel complete all mandatory training in accordance with the SMM.	Y	
R223.	5. Personnel shall disclose any changes that may impact their background check results in accordance with VITA Rules.	Y	
R224.	**3.0 Assume Operations and Management of Existing Services**		
R225.	*The Commonwealth currently utilizes the Commonwealth Enterprise Solutions Center (CESC) in Chester, Virginia as the primary centralized Data Center hosting the majority of Server, Storage, Directory Services, and Data Center LAN Services as described in the **Exhibit 2.7 (Sites)** and EO Appendix C (Data Center environment overview) documents.* *VITA and its Customers prefer to maintain operations at CESC to allow for a planned and successful migration. VITA has a desire to modernize its operations and is excited to take advantage of emerging technologies so long as the migration does not impact VITA's core mission to serve the Citizens of the Commonwealth.* *Supplier is expected to provide Commonwealth Server and Storage Services from CESC until VITA makes the determination to relocate all Server and Storage Services to a to be determined location.*		
R226.	**3.1 CESC-Based Services**		
R227.	*3.1.1 Intentionally Left Blank*		
R228.	**3.1.2 CESC Building Operations, Management, and Maintenance**		
R229.	*Supplier's responsibilities include:*		
R230.	1. Maintain the CESC Facility to Uptime Tier 3 standards.	Y	
R231.	2. Perform all required maintenance for the facility (e.g., generators, fuel system, UPS, cable plant, life safety, vending machines).	Y	
R232.	3. Perform facilities maintenance to keep the office space usable (e.g., cleaning the office areas, stock restroom supplies, clearing snow and mud slides, grass cutting).	Y	
R233.	**3.1.3 Server and Platform Services resident at CESC**		
R234.	*Supplier's responsibilities include:*		
R235.	1. Assume the operation, management, and maintenance of all Server and platform Services	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
	located at CESC in accordance with the SMM.		
R236.	2. Complete all Projects initiated by the incumbent Server and platform services provider in accordance with the Customer's approved Project schedule and the SMM.	Y	
R237.	3. Provide new Server and platform assets and Services in coordination with the MSI as requested by the Customer.	Y	
R238.	**3.1.4 Storage Services resident at CESC**		
R239.	*Supplier's responsibilities include:*		
R240.	1. Assume the operation, management, and maintenance of all Storage Services located at CESC in accordance with the SMM.	Y	
R241.	2. Complete all Projects initiated by the incumbent Storage services provider in accordance with the Customer's approved Project schedule and the SMM.	Y	
R242.	3. Provide new Storage assets and Services in coordination with the MSI as requested by the Customer.	Y	
R243.	**3.1.5 Directory Services resident at CESC**		
R244.	*Supplier's responsibilities include:*		
R245.	1. Assume the operation, management, and maintenance of all Directory Services located at CESC in accordance with the SMM.	Y	
R246.	2. Complete all Projects initiated by the incumbent Directory Services services provider in accordance with the Customer's approved Project schedule and the SMM.	Y	
R247.	3. Provide new Directory Service add/move/change/deletion(s) in coordination with the MSI as requested by the Customer.	Y	
R248.	**3.1.6 Network Services resident at CESC**		
R249.	*Supplier's responsibilities include:*		
R250.	1. Assume the operation, management, and maintenance of all Local Area Network Services located in the CESC Data Center in accordance with the SMM.	Y	
R251.	2. Complete all Projects initiated by the incumbent Network Services provider for the CESC Data Center in accordance with the Customer's approved Project schedule and the SMM.	Y	
R252.	3. Provide new Network assets and Services used in the CESC Data Center in coordination with the MSI as requested by the Customer.	Y	
R253.	**3.2 Agency-Based Services**		

Ref#	Requirement	Comply (Y/N)	Supplier Response
R254.	**3.2.1 Server and Platform Services resident at Agency Sites**		
R255.	*Supplier's responsibilities include:*		
R256.	1. Assume the operation, management, and maintenance of all Server and platform Services located at Agency Sites in accordance with the SMM.	Y	
R257.	2. Complete all Projects initiated by the incumbent Server and platform services provider in accordance with the Customer's approved Project schedule and the SMM.	Y	
R258.	3. Provide new Server and platform assets and Services in coordination with the MSI as requested by the Customer.	Y	
R259.	**3.2.2 Storage Services resident at Agency Sites**		
R260.	*Supplier's responsibilities include:*		
R261.	1. Assume the operation, management, and maintenance of all Storage Services located at Agency Sites in accordance with the SMM.	Y	
R262.	2. Complete all Projects initiated by the incumbent Storage Services provider in accordance with the Customer's approved Project schedule and the SMM.	Y	
R263.	3. Provide new Storage assets and Services in coordination with the MSI as requested by the Customer.	Y	
R264.	***3.2.3 Intentionally Left Blank***		
R265.	**3.3 Secondary Data Center – based Services**		
R266.	*The current Disaster Recovery service of the Commonwealth requires the State CIO to declare a disaster. Approximately 8% of Commonwealth Systems currently subscribe to one or more the available five tiers of service that correspond to various RTO/RPO requirements. To facilitate a smooth transition of Services between Suppliers, the expectation is that the Supplier will provide Infrastructure/platforms supporting existing Disaster Recovery Services and any other non-DR services hosted at the secondary data center as part of takeover in place.* *The Supplier is responsible for providing DR Infrastructure Services but the MSI will provide the management, planning, strategy, and testing coordination Services associates with Service Continuity Planning.*		
R267.	**3.3.1 At VITA's request, provide replacement facility to host Secondary Data Center – based services**		This will be scoped and priced as a Solution Request at the time of VITA's request.
R268.	*VITA will need a Secondary Data Center to fulfill its mission to the citizens of the Commonwealth. As*		

Ref#	Requirement	Comply (Y/N)	Supplier Response
	such, VITA will need a facility or facilities to host the Disaster Recovery and other non-DR services. Supplier's responsibilities include:		
R269.	1. Provide a facility or facilities to host the Physical and Virtual Servers, Storage, and associated Network Services for existing disaster recovery and non-DR services.	Y	
R270.	2. Ensure that the replacement facility(s) is located in the continental United States.	Y	
R271.	3. Transfer the Physical and Virtual Server, Storage, and associated Network Services and other non-DR services to the new facility/facilities.	Y	
R271A	4. Secondary data center can be used for production purposes.	Y	
R271B	5. Support High Availability (HA) service across both data centers: 4a Active - Active Applications / Servers 4b Active - Passive Applications / Servers	Y	
E271C	6. Provide equivalent technologies at both data centers.	Y	
R271D	7. Provide Disaster Recovery Services for DR subscribed workloads in the primary data center at the secondary data center.	Y	
R271E	8. Provide Disaster Recovery Services for DR subscribed workloads in secondary data center at the primary data center.	Y	
R271F	9. Provide cloud connectivity if either data center is offline.	Y	
R271G	10. Provide disaster recovery testing without extended interruptions to replication.	Y	
R271H	11. Provide capability to support hybrid Cloud.	Y	
R272.	**3.3.2 Operate, Manage, and Maintain existing Secondary Data Center – based services**		
R273.	Supplier's responsibilities include:		
R274.	4. Provide new Server and platform assets and Services in coordination with the MSI as requested by the Customer.	Y	
R275.	5. Assume the operation, management, and maintenance of the existing Secondary Data Center – based services in accordance with the SMM.	Y	

R276.	6. Complete all Projects initiated by the incumbent Secondary Data Center services provider in accordance with the Customer's approved Project schedule and the SMM.	Y	
R277.	**4.0　Directory Services with Identity and Access Management**		
R278.	*Supplier will be responsible to provide Directory Services for VITA and its Customers in accordance with applicable VITA Rules and in addition to the Common Services described in Section 2.0 above.* *The Commonwealth utilizes an integrated Domain that provides multiple Services to VITA and VITA Customers (e.g., Authentication, Single Sign On, End-User entitlements, distribution lists, Security Groups, Group Policies, Certificate Management).* *Identity and Access Management seeks to grant Users (e.g., employees, contractors, vendors, other stakeholders) the right to use a service (e.g., on premise, Cloud-based), while preventing access to non-authorized Users.* *This section covers Directory Services, Federated Identity Management, Delegated Authority, Certificate Authority, multi-factor authentication Service, and Domain Name Services (DNS).*		

Ref#	Requirement	Comply (Y/N)	Supplier Response
R279.	**4.1 Directory Services**		
R280.	*Supplier's responsibilities include:*		
R281.	1. Provide latest-version Lightweight Directory Access Protocol (LDAP) Directory Services, including all Hardware, Software, and personnel necessary to Support its operation.	Y	
R282.	2. Provide authentication for all directory-provided Services such as file and print, mail Services (via federation), Applications, desktop, etc.	Y	
R283.	3. Provide and manage trust relationships among Business Unit domains.	Y	
R284.	4. Provide direction for creation and management of Directory organizational unit, group policy, distribution list, Directory Services, and rights management.	Y	
R285.	5. Provide technical capabilities to create Group Policy and Login scripts at the direction of VITA, VITA Customers, or other Integrated Suppliers.	Y	
R286.	6. Remove objects (such as disabled accounts, groups, and containers) from the directory as requested by VITA and other Customers or as required by policy.	Y	
R287.	7. Provide DHCP Services:	Y	
R288.	7.1. Variable lease reservations	Y	
R289.	7.2. Reserved addresses	Y	
R290.	7.3. DNS aging and scavenging	Y	
R291.	8. Perform Change Management activities for the Directory Services Environment in accordance with the SMM and, including:	Y	
R292.	8.1. Implement Change Management procedures, tools and processes to prevent unauthorized and untested Changes to the Directory Services Environment. Customers will have access to the Change Management tools to create reports and track the Change Management process as needed. Furthermore, Supplier will have access to the tools to create new changes as well as update current changes status.	Y	
R293.	8.2. Recover inadvertent Changes to Directory Services in a timely fashion.	Y	
R294.	8.3. Test Changes to Directory Services in a test or lab Environment, especially as they relate to schema Changes, and ensure schema and other Changes are tested by major Directory Services stakeholders (such as DNS, Exchange, Users, etc.). All schema Changes shall be subject to VITA and other Customer approval.	Y	
R295.	8.4. Provide proxy-based administration tool that provides an audit trail for every Change in Directory Services objects and that ensures that only approved Business Processes are used when managing the Directory Services.	Y	
R296.	8.5. Automatically alert MSI, MSS and VITA regarding Changes in administrator status for Directory Services, and log all such Events.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R297.	8.6. Perform all Configuration Changes to Support additional Sites, locations, and programs in accordance with the Service Levels and the processes defined in the SMM.	Y	
R298.	9. Monitor Directory Services replication in a manner that ensures timely and complete replication, while balancing Network replication load.	Y	
R299.	10. Integrate Event logging into the Commonwealth SIEM tools.	Y	
R300.	11. Tune Directory Services Environment in accordance with industry best practices.	Y	
R301.	12. Continually ensure that all Directory Services objects are in the proper domain and Organizational Unit (OU).	Y	
R302.	13. Continually improve operational efficiency by leveraging new technology in accordance with the SMM.	Y	
R303.	14. Allow integration with systems in the current COV Environment, including Microsoft Windows, Red Hat Linux, Oracle Linux, IBM AIX, Sun Solaris, HP-UX, and Apple OSX. See current environment documentation for full listing of systems and versions.	Y	
R304.	15. Directory Services must Support token/certificate authentication such as NTLM, Kerberos, SAML 2.0, X.500, and X.509.	Y	
R305.	16. Limit access or visibility to objects in the domain based on concept of least privilege (i.e., Agencies should only have access to objects it their sub domain/OU)	Y	
R306.	17. Provide authentication Servicesfor non COV Domain Usersto connect to systems inthe COV Domain and federated Domain. (i.e. AUTH Domain)	Y	
R307.	18. Perform real-time Monitoring for missing objects, Server availability, and data consistency.	Y	
R308.	19. Provide approved VITA and other Customer staff appropriate "read" access to sub domain/OU and the domain information.	Y	
R309.	20. Ensure all Directory Services administration accounts have the most restrictive access level to perform the work (i.e., least privilege).	Y	
R310.	21. Provide rights management Services as may be required by specific Customers, Users, or data types to limit or prevent inappropriate use or release of data.	Y	
R311.	22. Migrate current directories throughout the COV Environment (both enterprise and agency-specific directories) to include the following activities:	Y	
R312.	22.1. Establish trusts between Application domains and the VITA and other Customer domains supported by Supplier.	Y	
R313.	22.2. Assist VITA and other Customers to create, maintain and validate such trusts where the VITA and other Customer domains are supported by VITA, other Customers, or a Third Party. These trustsaretoallow Userstoaccess Applications in domains not associated with the VITA and other Customer sub domains.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R314.	22.3. Transfer User Access Control Lists (ACLs) in the legacy Application domain into the VITA and other Customers' sub domains as required.	Y	
R315.	23. Perform password management, including:	Y	
R316.	23.1. Provide Web-based password reset Site.	Y	
R317.	23.2. Provide self-service password reset and account unlock.	Y	
R318.	23.3. Provide extranet secure Directory Services password reset capability for Users working remotely.	Y	
R319.	23.4. Notify Third Party personnel, Users, and non-VITA and Customer entities of impending password expiration.	Y	
R320.	23.5. Provide User ID / password only (i.e., shell account) for VITA and other Customer personnel who are not using the standard desktop in the appropriate domain.	Y	
R321.	24. Monitor Directory Services integrated specific Domain Name System (DNS) to maintain proper functionality.	Y	
R322.	25. Maintain Directory Services synchronization interface to VITA and other Customers' SMTP recipient verification directory.	Y	
R323.	26. Maintain and develop synchronization interfaces to VITA and other Customers' human resources systems or other systems as required to ensure accurate and authoritative data.	Y	
R324.	27. Perform IT Service Continuity management functions for the Directory Services Environment, including:	Y	
R325.	27.1. Provide IT Service Continuity/Business Continuity Services for Access Management Infrastructure, and perform authoritative Database restores as required.	Y	
R326.	27.2. Document the Directory Services IT Service Continuity Plan and process, and perform a periodic test or after any major Software or design Change for forest and domains. This must include recovery from schema / data corruption. This test will be performed in an isolated Environment.	Y	
R327.	28. Maintain UNIX and Linux authentication Infrastructure.	Y	
R328.	29. Unless otherwise directed by VITA, provide and support Software under Supplier's operational responsibility at the N or N-1 Release Level.	Y	
R329.	30. Provide Support for VITA and other Customer-developed and purchased Lightweight Directory Access Protocol (LDAP) enabled Applications.	Y	
R330.	31. Provide Web service interface for authentication.	Y	
R331.	32. Provide full Support including local region authentication for Users traveling to any other VITA and VITA Customer regions.	Y	
R332.	33. Provide options for external Users and authentication mechanisms (i.e., from outside the COV Network, typically for ad hoc, periodic, or non-employee Users).	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R333.	34. Provide 24x7x365 Incident and Problem resolution and remediation and restoration of Active Directory Services.	Y	
R334.	35. Update Directory Services Sites and Servicesin accordance with VITA and VITA Customer's standards.	Y	
R335.	36. Allow Configuration of the environment via deployment of system-specific or group policies.	Y	
R336.	37. Provide control over all directory objects (e.g., individual accounts, computers, policies, groups).	Y	
R337.	38. Provide the capability for User impersonation by VITA–approved Users.	Y	
R338.	39. Allow each VITA Customer to control the attributes within the Customer's organization while ensuring that VITA rules are applied to all containers.	Y	
R339.	40. Maintain the Active Directory Domain Controller (DC) Environment, including:	Y	
R340.	40.1. Perform all technical Support activities required for the Installation, Configuration, Support, and monitoring of the Directory Services and DNS on all Domain Controllers, including schema and replication.	Y	
R341.	40.2. Maintain all Domain Controller (DC) Software.	Y	
R342.	40.3. Monitor Domain Controller Uptime, utilization, performance, and Software currency.	Y	
R343.	40.4. Provide a Change Management process for adding/deleting/moving Domain Controllers.	Y	
R344.	40.5. Ensure that all Servers are replaced at the end of their useful life as determined by VITA and other Customer, and in accordance with the appropriate VITA and other Customer processes.	Y	
R345.	40.6. Perform Domain Controller backup and restore functions by performing backups as required by VITA or Customers.	Y	
R346.	40.7. Maintain a backup of the existing Directory Services to Support Customers DR plan.	Y	
R347.	41. Perform reporting and audit functions for the Directory Services Environment, including:	Y	
R348.	41.1. Ensure that all Directory Services domains fully conform to VITA and other Customer standards through quarterly audits and provide VITA and other Customers with the findings and the associated remediation plans.	Y	
R349.	41.2. Perform quarterly audits of Directory Services Configurations against the current VITA and other Customer-approved Architecture.	Y	
R350.	41.3. Provide audit findings and associated remediation plans for VITA and other Customer approval.	Y	
R351.	41.4. Provide weekly Capacity reports for all Domain Controllers in the VITA and other Customer Environments.	Y	
R352.	41.5. Provide VITA and other Customer personnel with ad hoc Security reporting	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
	capabilities.		
R353.	41.6. Provide an electronic, up-to-date report on User, computer, OU, and GPO objects types, per business unit and domain on an ongoing basis.	Y	
R354.	41.7. Provide audit log collection facility and exception base reporting.	Y	
R355.	42. Directory Services must be accessible and operational on the COV Network, even in event of an Internet outage; Support On Premise replication to key Customer Sites.	Y	
R356.	43. Provide ability to federate identify management with single sign on (no reduced sign on). Provide Customers with the capability to exercise authority for approval of all data and System access requirements.	Y	
R357.	44. Create, change, delete, and assign rights to User accounts as requested and approved by VITA or other Customers.	Y	
R358.	45. Notify the Customers regarding the entities and personnel to be granted access to Supplier-operated Systems and the level of Security access granted to each.	Y	
R359.	46. Follow Customer's instructions and procedures regarding such access as designated by Customers.	Y	
R360.	47. Maintain Security rules and access rights according to VITA Rules and Customer requirements.	Y	
R361.	48. Provide for policies and processes that prefer a least-privilege approach to granting access.	Y	
R362.	49. Provide a periodic review of access that has been granted with VITA and Customers at least on a quarterly basis.	Y	
R363.	50. Monitor, report, and address access management exceptions and violations.	Y	
R364.	51. Establish procedures, forms, and approval levels for assigning, resetting, and disabling access by Users, subject to Customer's IT Security department review and approval, as directed by the Service Integrator.	Y	
R365.	52. Provide capability for account management for all platforms (e.g., Windows, Unix, Linux, Network).	Y	
R366.	53. Maintain a secure online Database of all access requests, access rights, and approval authorities.	Y	
R367.	54. Ensure that access privileges for Supplier personnel are promptly removed upon departure from the VITA Program (i.e., to another role within Supplier or exit from Supplier altogether).	Y	
R368.	55. Enable VITA to authorize Customers to grant or remove access privileges as required for onboarding or off-boarding; provide priority in cases of emergency.	Y	
R369.	56. Automate account provisioning to include request, approvals and execution processes.	Y	
R370.	57. Provide capability for Users to update contact information as appropriate.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R371.	**4.2 Federated Identity Management**		
R372.	*The Commonwealth expects the Supplier to implement and deploy a Federated Identity Management solution that will allow both COV and external entities to authenticate against Commonwealth Services. The current environment uses multiple tools that will be replaced by this integrated solution.* *Supplier's responsibilities include:*		
R373.	1. Maintain current federated Services (e.g., Forefront Identity Management (FIM), Quest ARS, Okta)and continually extend the integration of Directory Servicesto additional internal and external environments and Applications (in accordance with VITA Rules) to Support single-sign-on until replacement Services are available.	Y	
R374.	2. Provide and maintain modern (e.g., SAML 2.0 compliant, OAUTH) federated authentication Services for integration with additional environments.	Y	
R375.	3. Integrate with the MSI to enable their toolsets to manage accounts and identities.	Y	
R376.	4. Architect, implement, and deploy a VITA approved Federated Identity Management solution that will allow both COV and external entities to authenticate against Commonwealth Services.	Y	
R377.	5. Migrate current Federated Services to the new VITA approved environment in accordance with the VITA approved Project Plan.	Y	
R378.	**4.3 Delegated Authority**		
R379.	*Delegated Authority provides functionality for VITA-approved Users (typically VITA Customer IT personnel) to manage User accounts within Directory Services.* *Supplier's responsibilities include:*		
R380.	1. Provide functionality, incompliance with VITA Rules, for VITA-approved Userstohave delegated rights to create, change, disable, or delete accounts or Customer-specific groups within their own domains.	Y	
R381.	2. Create and maintain documentation describing the VITA-approved Users with delegated authority.	Y	
R382.	3. Provide training materials for Users with delegated authority.	Y	
R383.	**4.4 Certificate Authority**		
R384.	*Supplier's responsibilities include:*		
R385.	1. Public / Internet-Facing Services:	Y	
R386.	1.1. Assume control of the issuance of public certificates for *.virginia.gov and *.state.va.us	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
	at the direction of VITA.		
R387.	1.2. Monitor the expiration of each issued certificate and notify the certificate owner of the upcoming expiration 90-days prior to expiration using the MSS-provided tool.	Y	
R388.	2. COV Internal Services:	Y	
R389.	2.1. Assume control of the internal (self-signed) root certificate for *.virginia.gov and *.state.va.us	Y	
R390.	2.2. Issue internal usage (self-signed) certificates to COV agencies at the direction of VITA.	Y	
R391.	3. Monitor the expiration of each issued certificate and notify the certificate owner of the upcoming expiration 90-days, 60-days, and 30-days prior to expiration using the MSS-provided tool.	Y	
R392.	4. Ensure that Vendors/Customers have the ability and access to Install new certificates including internal and external certificates.	Y	
R393.	**4.5 Multi-Factor Authentication Service**		
R394.	*Supplier's responsibilities include:*		
R395.	1. Provide multiple tiers of Services to enforce multi-factor authentication for COV Users.	Y	
R396.	2. Provide a mechanism to enforce multi-factor authentication (e.g., One-time Password, time synchronized token codes) for COV vendors, contractors, and business partners.	Y	
R397.	3. Ensure that the Service will be Operating System independent as well as platform independent.	Y	
R398.	4. Ensure the Service will allow authentication for multiple End-User Services. (e.g., E-mail, Collaboration Services, web Services).	Y	
R399.	4.1. Ensure the Service will generate a secondary authentication object that will be ingested by the systems and Services in use by the Customer.	Y	
R400.	5. Continue to provide Support for existing multi-factor authentication infrastructure (i.e. RSA physical and soft tokens) until replaced by new Supplier solution.	Y	
R401.	5.1. Issue soft-tokens for use with the existing multi-factor authentication infrastructure as requested by VITA.	Y	
R402.	5.2. Issue physical tokens for use with the existing multi-factor authentication infrastructure as requested by VITA.	Y	
R403.	5.3. Migrate the entity information in the existing multi-factor authentication system to the Supplier's solution in accordance with the VITA approved Project Plan.	Y	
R404.	**4.6 Domain Name System (DNS) Services**		
R405.	*VITA has been assigned the authority and responsibility for the Internet domains "state.va.us" and "virginia.gov." Any state or local entity that subscribes to VITA Telecommunications (Telco) facilities,*		

Ref#	Requirement	Comply (Y/N)	Supplier Response
	and uses either VITA-assigned IP addresses, or has their own IP address block, can be a part of the "state.va.us" and/or "virginia.gov" domains (e.g., "tax.virginia.gov," "dmv.virginia.gov," "dmv.state.va.us" and "vita.virginia.gov") *VITA Domain Name Service can be requested today by VITA-approved Users via the Service Desk. State agencies are encouraged primarily to utilize "virginia.gov" domains.* *Supplier's responsibilities include:*		
R406.	1. Internal Zones		
R407.	1.1. Install, Configure, maintain the internal COV Domain Name Service.	Y	
R408.	1.2. Establish a primary Server for the internal COV Domain Name Service for *.virginia.gov, *.state.va.us and other domains at the direction and approval of VITA.	Y	
R409.	1.3. Establish multiple secondary Servers for the internal COV Domain Name Service for *.virginia.gov, *.state.va.us and other domains at the direction and approval of VITA.	Y	
R410.	1.4. Limit zone transfers for all Supported domains to the authorized DNS Servers.	Y	
R411.	1.5. Provide recursive DNS resolution for authorized clients.	Y	
R412.	1.6. Maintain Start-Of-Authority records for each COV domain per VITA's instructions.	Y	
R413.	1.7. Maintain individual entries in each domain per VITA's instructions (change to the default TTL).	Y	
R414.	1.8. Provide DHCP Services.	Y	
R415.	1.9. Provide active DNS registration and scavenging.	Y	
R416.	1.10. Provide DNS/DHCP integration.	Y	
R417.	1.11. Perform DNS / mail relay as requested by VITA or VITA's Customers.	Y	
R418.	1.12. Allow Customers to create internal DNS as needed.	Y	
R419.	2. External Zones		
R420.	2.1. Install, Configure, maintain the external COV Domain Name Service.	Y	
R421.	2.2. Establish the required DNSSEC Configuration for all external domains associated with Virginia.	Y	
R422.	2.3. Establish a primary Server for the external COV Domain Name Service for *.virginia.gov, *.state.va.us and other domains at the direction and approval of VITA.	Y	
R423.	2.4. Establish multiple secondary Servers for the external COV Domain Name Service for *.virginia.gov, *.state.va.us and other domains at the direction and approval of VITA.	Y	
R424.	2.5. Limit zone transfers for all Supported domains to the authorized DNS Servers.	Y	
R425.	2.6. Provide recursive DNS resolution for authorized clients.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R426.	2.7. Maintain Start-of-Authority records for each COV domain per VITA's instructions.	Y	
R427.	2.8. Maintain individual entries in each domain per VITA's instructions (change to the default TTL).	Y	
R428.	2.9. Forward all abuse notification documents to VITA.	Y	
R429.	3. Allow Customers to host non- *.virginia.gov domain (e.g., .org, .com) in the new environment.	Y	
R430.	**4.7 DNS Filtering**		
R431.	*This section identifies requirements for DNS filtering in the environment to prevent access to inappropriate Sites regardless of Device ownership, including Updates and Support. Supplier will be responsible for managing the DNS filtering system.* *Supplier's responsibilities include:*		
R432.	1. Provide, and as required Install, Update, Upgrade, Patch, operate, and maintain the DNS filtering system in accordance with Security requirements and the SMM.	Y	
R433.	2. Provide documentation required by the external audit and proof of DNS filtering coverage. On-site representation for audit reviews might be necessary.	Y	
R434.	3. Maintain up to date DNS filtering deployment locations, version identification, policy Configuration, and status overview and make that information available.	Y	
R435.	4. Install DNS filtering Updates and make Configuration changes that address known vulnerabilities or risks to the DNS filtering systems; as such Updates are identified by the vendor of the DNS filtering systems, suggested in accordance with industry best practices, or as required to maintain compliance with Customer Security requirements and the SMM.	Y	
R436.	5. Provide DNS filtering capability that:	Y	
R437.	5.1. Checks DNS queries against a list of malicious, known bad, VITA/Customer requested domains, or domains that demonstrate anomalous behavior (e.g., multiple NX responses, large size requests and responses, strange time of day activity), redirecting Users to a sinkhole page when they attempt to visit one of the blocked domains.	Y	
R438.	5.2. Includes automated Updates of malicious, known bad, or VITA/Customer requested domains and the ability to enter additional blocked domains.	Y	
R439.	5.3. Includes a process to Support Users reporting false positives.	Y	
R440.	5.4. Integrate DNS filtering results into SIEM and MSS tools.	Y	
R441.	**4.8 Network Access Services**		
R442.	*The Commonwealth currently uses RADIUS/TACACS+ infrastructure to Support Network Device*		

Ref#	Requirement	Comply (Y/N)	Supplier Response
	authentication. The Supplier will Support existing Services and coordinate with the VITA approved Network vendor to implement any new features or enhancements. Supplier's responsibilities include:		
R443.	1. Support and maintain the existing Network Access Service (RADIUS/TACACS+) used to authenticate access to all Network and Security Hardware.	Y	
R444.	2. Provide an integration point with the MSI to allow the MSI to add/modify/disable entities defined in the existing Network Access Service.	Y	
R445.	3. Provide a modern, industry-standard Network Access Service (RADIUS/TACACS+) used to authenticate access to all Network and Security Hardware.	Y	
R446.	4. Provide an integration point with the MSI to allow the MSI to add/modify/disable entities defined in the modern, industry-standard Network Access Service.	Y	
R447.	**5.0 Documentation, Analysis, and Evolution**		
R448.	VITA and its Customers provide essential services to the citizens of Virginia. Many of these essential services depend on a stable computing environment providing Server, Storage, and Directory Services. VITA and its Customer Agencies have taken a very conservative approach to technology over the last decade and are now interested in exploring the performance and efficiency improvements that are available via new and emerging technologies such as Software Defined Networks and hyper-converged environment. The Commonwealth wants to migrate the current (as-is) Server/Storage Service platforms and Data Centers to an updated (to-be) state. VITA would like the Supplier to document and analyze the existing Server, Storage, and Network Services and provide guidance and implementation plans to evolve the environment to improve services to the citizens of Virginia and remain compliant with regulatory requirements. The Commonwealth is also interested in utilizing state-of-the-art Data Centers and facilities to host its Services. The current Data Centers have limited leases and may not be optimal for the Commonwealth's future needs.		
R449.	**5.1 Documentation, Analysis, and Remediation**		
R450.	Supplier's responsibilities include:		
R451.	1. Perform a comprehensive review of the operation and maintenance of the Server, Storage, and	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
	Network Services in use by VITA and VITA Customers at CESC (including facility) and Agency locations in accordance with VITA Rules and the SMM.		
R452.	1.1. Deploy a discovery tool or some other method to identify issues with the hardware and software infrastructure that supports Server/Storage, and Network Services at all Sites	Y	
R453.	1.2. Prepare a report to VITA and the MSI based on the discovery tool or other method on the issues identified and recommended actions to address	Y	
R454.	2. Document the existing Server, Storage, and Network environment to include:	Y	
R455.	2.1. Inventory of all Server, Storage, and Network components to include:	Y	
R456.	2.1.1. Operating System Software version	Y	
R457.	2.1.2. Physical/virtual status	Y	
R458.	2.1.3. Assigned Agency	Y	
R459.	2.1.4. Name and type of applications installed	Y	
R460.	2.1.5. Projected End-of-Life date for all components installed on the instance	Y	
R461.	2.1.1. Recommended version number for all components installed on the instance	Y	
R462.	2.2. Physical location of all Server, Storage, and Network devices to include:	Y	
R463.	2.2.1. Building	Y	
R464.	2.2.2. Floor	Y	
R465.	2.2.3. Room Number	Y	
R466.	2.3. Physical cable plant connecting Server to Storage and Network to include:	Y	
R467.	2.3.1. System Network Interface Card MAC	Y	
R468.	2.3.2. Network patch panel (If physical)	Y	
R469.	2.3.3. Network switch port (if physical)	Y	
R470.	2.4. CESC facility operations	Y	
R471.	3. Analyze the existing Compute and Storage environment to provide:	Y	
R472.	3.1. Compute/Storage utilization per instance	Y	
R473.	3.2. Hypervisor utilization	Y	
R474.	3.3. Configuration issues leading to sub-optimal operations	Y	
R475.	3.4. Points of congestion within processor, memory, Storage, or Network Configurations	Y	
R476.	4. Analyze the existing Network environment to include:	Y	
R477.	4.1. End-Node Device utilization	Y	
R478.	4.2. Segment utilization	Y	
R479.	4.3. Building utilization	Y	
R480.	4.4. Protocol utilization	Y	
R481.	4.5. Configuration issues leading to sub-optimal operations	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R482.	4.6. Points of congestion within processor, memory, storage, or Network Configurations	Y	
R483.	5. Analyze CESC facility operations to include:	Y	
R484.	5.1. Power utilization	Y	
R485.	5.2. Cooling/HVAC	Y	
R486.	5.3. Floor space utilization	Y	
R487.	6. Provide a remediation plan to replace any end-of-life systems uncovered during the documentation and analysis efforts	Y	
R488.	6.1. Implement the remediation plan upon approval by VITA and in accordance with the SMM.	Y	
R489.	7. Provide a remediation plan to update the system Configurations to ensure the systems comply with VITA Rules and associated regulatory requirements	Y	
R490.	7.1. Implement the remediation plan upon approval by VITA and in accordance with the SMM.	Y	
R491.	**5.2 Services Evolution**		
R492.	*The Commonwealth is interested in newer technical Services solutions which may include technical and/or physical changes (e.g. hyper-converged, converged, Software Defined Network (SDN), solid-state Storage, Data Center Services).* *Supplier's responsibilities include:*		
R493.	1. Provide recommendations to VITA on the modernization of the systems and Services at the platform and/or technology level offered from the CESC Data Center and supporting agency locations.	Y	
R494.	1.1. Supplier will deliver Implementation Plan to address the relocation of all current and evolved Services at the platform and/or technology level.	Y	
R495.	1.2. Supplier will deliver Migration model to be used by the Agencies to estimate the number of hours per resource type needed to migrate an application. The model is expected to address: ▪ Defined agency resource roles ▪ Hours needed by resource role taking into consideration complexity of application and the Services that need to be migrated ▪ Hours needed to test, migrate data, etc	Y	
R496.	2. Provide Data Center Services to replace the existing CESC Data Center.	Y	
R497.	2.1. Ensure that any Data Center used to house Commonwealth data is located in the continental United States.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R498.	2.2. Provide a migration plan to transition Services from CESC to new Data Center Services.	Y	
R499.	3. Implement the migration plan to transition Services upon approval by VITA and in accordance with the SMM.	Y	
R500.	**6.0 Facility Management and Operations**		
R501.	**6.1 General Services**		
R502.	*Supplier's responsibilities for CESC and Supplier provided data centers include:*		
R503.	1. Monitor the environments, alarm systems and environmental controls, and the transmission and reception of polling information related to the Data Center Services environment(s) from outside and/or internal organizations.	Y	
R504.	2. Provide 24x7x365 operations, including staffing the facilities with personnel to provide 24x7x365 monitoring and enabling access of authorized personnel into such facilities.	Y	
R505.	3. Provide and maintain sufficient environmental systems - temperature and humidity-controlled Environment that conforms to Server, Disk, Tape and peripheral Equipment specifications for VITA Equipment in accordance with VITA Rules and the SMM.	Y	
R506.	4. Maintain Data Center Servicestomeet orexceed UptimeInstitute Tier 3orhigher standards.	Y	
R507.	5. Provide sufficient cooling and maintain cooling systems (e.g. CRAC, HVAC).	Y	
R508.	6. Provide sufficient power, and Install power whips and power distribution as required, to Support operations, implementations, Projects in accordance with the SMM.	Y	
R509.	7. Maintain documentation and drawings of Supplier's Configuration and physical layout of the space including the electrical and environmental systems.	Y	
R510.	8. Notify the MSI or other authorized VITA designee immediately upon the awareness of any System Incident or issue at Supplier Data Center facility.	Y	
R511.	9. Provide 24x7x365 on-site Support for System failure assistance, backup media handling, directing information inquiries to VITA, escorting VITA Authorized Third Party Vendors, and proactive notifications:	Y	
R512.	9.1. Respond to VITA or its designee's request for assistance during an Incident related to VITA Equipment at Supplier's Data Center facilities.	Y	
R513.	9.2. Provide details as to the current state of the system, such as reading information on an attached screen, error messages or describing the color of any indicator lights.	Y	
R514.	9.3. Escort VITA's or VITA's Supplier's authorized Hardware Support technician tothe malfunctioning system.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R515.	9.4. Provide on-site staff to manage access and to respond to physical, power, and environmental alerts.	Y	
R516.	10. Provide feedback to the MSI and VITA regarding the impact of potential Data Center Architecture and design changes.	Y	
R517.	11. Provide and maintain operational standards in the SMM.	Y	
R518.	12. Proactively monitor and Report to the MSI on resource shortages, and Report utilization statistics and trends in accordance with the SMM.	Y	
R519.	13. Analyze performance metrics and respond proactively to potential Problem areas.	Y	
R520.	14. Install VITA and VITA Customer Equipment (e.g. Servers, Appliances, gateways, tape, disk, backup systems and other Equipment) or Third Party provided Colocation Equipment as required to maintain the Support level necessary to meet ongoing Customer business requirements.	Y	
R521.	15. Physically powering up or down Equipment component(s) in compliance with procedures as defined in the SMM.	Y	
R522.	16. Clean and maintain floor space and Equipment to minimize Problems and outages, at intervals established with VITA or in compliance with stated and written specifications.	Y	
R523.	17. Properly manage, coordinate, and oversee (and inform the MSI and VITA of the results of) all maintenance, testing, and monitoring of facilities systems, air handlers and uninterruptible power supply systems at the Data Centers, which include:	Y	
R524.	17.1. Perform or coordinate all activities during Equipment Installations, Project implementations, routine maintenance, Problem and crisis management including interfacing with facilities and technology groups, Third Party Vendor(s) and other relevant groups.	Y	
R525.	17.2. Establish and document in the SMM, available Site times for Equipment Installation and de-Installation by Service component providers, VITA and VITA Customer or Third Party in compliance with Change Management and physical Security guidelines.	Y	
R526.	18. Monitor, maintain, calibrate, and test the entire HVAC systems as part of a maintenance plan defined and documented in the SMM. At a minimum, the Supplier will be responsible for establishing and maintaining a calendar-based maintenance plan based upon the manufacturer suggested plan.	Y	
R527.	19. Perform a weekly test of the HVAC components will include water quality checks, air flow, air pressure, and fail-over. Results of all tests will include risk assessment and repair / remediation plans.	Y	
R528.	20. Perform and communicate all fail-over activities under close supervision with fully trained staff to VITA and VITA Customers.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R529.	21. Monitor and maintain all fire suppression and monitoring systems including fire alarm (panels, piping, fire extinguishers, sprinklers, access control Equipment and end to end, etc.). Conduct a full flow test on the fire pumps as dictated by local and State codes.	Y	
R530.	22. Establish and maintain a calendar-based maintenance plan based upon the manufacturer suggested plan. Document the results of all tests including recommendations, risk assessment and repair / remediation plans.	Y	
R531.	23. Perform preventative maintenance on all fire alerting and suppression systems according to manufacturer's specifications and as required by Fire Marshal and State and Local codes.	Y	
R532.	24. Perform any enhancements or break/fix repairs needed to maintain the fire alerting and suppression systems.	Y	
R533.	25. Provide any and all communication Connectivity and capability (data, voice, video, or other) that is required at Supplier-owned facilities (or between Supplier-owned facilities and the Data Centers) in order to provide the Services.	Y	
R534.	26. Create, update, and maintain complete documentation of the Equipment that is located in Data Center(s) (for example inventories, Wiring, Cabling, and Installed Equipment diagrams) using computer-aided drafting (CAD) Software tools for changes to existing documentation and newly created documentation.	Y	
R535.	26.1. Provide access to documentation via the Document Data Store.	Y	
R536.	27. Provide physical access procedures and standards for the Data Center(s).	Y	
R537.	28. At Data Centers, initiate and track requests for space, power, and other facility modifications in Support of Equipment and Colocation Equipment Installations.	Y	
R538.	29. Coordinate with VITA and provide for physical access and facilitate inspections by government authorities with statutory authority for auditing the conduct of government business.	Y	
R539.	30. Integrate its facilities management process with VITA's, VITA Customers', and other Service Component Providers' facilities management processes, where the processes interact.	Y	
R540.	31. Integrate its facilities management process with Service Management processes, especially Change Management, Incident Management, Service Continuity Management and Availability management.	Y	
R541.	32. Provide raised floor space or overhead cable trays and low-latency Connectivity to VITA's Network in Supplier's Data Center Services facilities to house Systems, Servers and other Equipment for VITA.	Y	
R542.	33. Provide dedicated space for VITA Servers in Supplier Facility.	Y	
R543.	34. Provide initial adequate space requirements in the form of contiguous space to meet current needs and granting VITA the right of first refusal for up to twenty-five percent (25%) additional space at each Data Center Services facility that is contiguous with the initial space	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
	requirements for each such facility.		
R544.	35. Provide the ability to increase and decrease floor space as required by VITA.	Y	
R545.	36. Allow VITA, MSI, or its authorized designee to ship or receive VITA Equipment to the loading dock at any Data Center Services Facilities, contacting MSI and VITA upon arrival of such Equipment and providing temporary Storage for VITA Equipment until VITA or its authorized designee Installs such Equipment.	Y	
R546.	37. Promptly inform VITA of any breaches in Security or potential breaches in Security (e.g. physical, information) at Data Center Services facilities.	Y	
R547.	38. Tothe extent that Supplier locations used todeliver the Data Center Services are shared with or accessible by a Third Party, maintain a process, subject to MSI and VITA's review, to restrict access in any such shared environment to VITA's Confidential Information so that such Third Party or Supplier personnel not involved in providing the Services do not have access to VITA's Confidential Information.	Y	
R548.	39. Design and configure power feeds and distribution units to maximize Availability of power to the VITA Equipment.	Y	
R549.	40. Provide power conditioning to prevent spikesfrom primary or secondary power sourcesfrom impacting the Data Center Services environment, monitoring capabilities, or the ability of key personnel to gain access to operations areas.	Y	
R550.	41. Provide UPS and sufficient generator capacity to sustain operations in the event of a power outage at the Data Center Services facilities.	Y	
R551.	42. Test the fail-over to generator power on at least a semi-annual basis.	Y	
R552.	43. Implement and test (on a periodic basis, and at least once per quarter) environmental Security systems (such as water supply systems, fire detection, water detection, and alarm systems).	Y	
R553.	44. Provide a Supplier contact(s) to receive requests for and/or to escort VITA authorized Hardware technicians to access the VITA Equipment at Supplier Data Center Services facilities.	Y	
R554.	45. On a quarterly basis, Supplier will provide an update of the Equipment (e.g. racks, Servers, peripherals) including the floor space location and identification of any additions or deletions for the preceding three-month period.	Y	
R555.	46. Supplier will not expand the Data Center Services without prior written approval by VITA.	Y	
R556.	47. Provide transition assistance as part of the Services to any VITA Customers receiving Data Center Services that may transition to fully managed Services under the Agreement.	Y	
R557.	48. At the request of VITA, provide additional Data Center Services to new Customers that qualify as VITA Customers.	Y	
R558.	49. Upon VITA's written request for the provisioning of Data Center Services for a new or existing	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
	VITA Customer, Supplier will respond to VITA within 45 days with a final proposal.		
R559.	49.1. Assist VITA, MSI, and VITA Customers with continuity of service if the VITA IT Infrastructure management transfers from one Third Party to another Third Party; including the following:	Y	
R560.	49.2. Assist VITA and VITA Customer or Third Party with any required transfer of asset inventory for Equipment.	Y	
R561.	49.3. Assist VITAand VITA Customer or Third Party with knowledgetransferrelatedtothe Equipment.	Y	
R562.	49.4. Assist VITA, MSI, or Third Party with process and procedure transfer related to the Equipment.	Y	
R563.	49.5. Update the SMM to contain processes and procedures changed as a result of the transfer.	Y	
R564.	50. Provide migration Support Services during moves or installations to VITA, MSI, and VITA Customers which includes the following:	Y	
R565.	50.1. Assist the VITA, MSI, or VITA Authorized Third Party with the planning activities for the relocation or Installation of Equipment.	Y	
R566.	50.2. Provide required electrical power connections, including power drops to Equipment.	Y	
R567.	50.3. Provide Wiring (e.g. WAN, LAN, SAN) Installation for the Equipment.	Y	
R568.	50.4. Assist the VITA, MSI, or VITA Authorized Third Party with the receipt and unpacking of Equipment.	Y	
R569.	50.5. Install Equipment cabinets	Y	
R570.	50.6. Assist VITA and VITA Customer or VITA Authorized Third Party with test and start-up of Equipment.	Y	
R571.	50.7. Provide on-site Support for activities relative to Colocation Equipment received and check-out, testing of utilities provided at the Data Center(s).	Y	
R572.	51. Assist VITA, MSI, or VITA Authorized Third Party with de-installation of Colocation Equipment that is to be removed from the Data Center(s).	Y	
R573.	52. Coordinate with VITA, MSI, or VITA Authorized Third Party to provide new media or to replace worn or damaged media.	Y	
R574.	**6.2 Cabling and Wiring Services**		
R575.	*Supplier's responsibilities include:*		
R576.	1. Plan, procure, Install, operate, administer, maintain, and manage the cable and wiring within Supplier physical demarcation boundaries.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R577.	2. Manage Cabling and Wiring Installations, repairs, and removal using a Software-based cable plant management system where applicable.	Y	
R578.	3. Document changes to the cable and wiring plans in the Site survey records, and all changes thereto in the Asset Inventory System.	Y	
R579.	4. Comply with VITA Cabling and Wiring standards.	Y	
R580.	4.1. In the absence of a VITA standard, use industry standards that meet or exceed local code or other requirements of applicable authorities as approved by VITA.	Y	
R581.	5. Document, label, and map cable and wire runs in the appropriate Site survey records.	Y	
R582.	6. Use VITA approved and certified cable and wire Installers to perform Cabling and Wiring Services.	Y	
R583.	7. Maintain up-to-date cable records in communications closets, wiring distribution rooms, and other areas where a high concentration of cable and wire exists.	Y	
R584.	8. Audit and certify cable and wire as required by VITA.	Y	
R585.	9. Maintain a secure, clean, well-lit, clutter-free cabling and wiring environment in all telecommunications closets and cable plant area.	Y	
R586.	## 6.3 Security Administration		
R587.	*Supplier's responsibilities include:*		
R588.	1. Communicate the physical and logical Security management processes to Supplier personnel and each Service component provider.	Y	
R589.	2. Implement the physical and logical Security functions in accordance with VITA Rules and the SMM.	Y	
R590.	3. Ensure that proper segregation of duties exists in accordance with VITA Rules and the SMM.	Y	
R591.	4. During the implementation of changes or management of crises where it is not feasible to observe a proper segregation of duties, immediately inform VITA and the MSI of this fact and keep a record of all actions performed.	Y	
R592.	5. Inform VITA and the MSI immediately if Supplier becomes aware of any vulnerability or weakness in the Services, and recommend a solution or mitigation.	Y	
R593.	6. Provide Reports, on at least a weekly basis, to VITA and VITA Customers to identify the physical access right that should be removed from VITA and VITA Customer locations.	Y	
R594.	7. Integrate the physical Security administration process with SMM processes.	Y	
R595.	## 6.4 Biometric Authentication		
R596.	*Supplier's responsibilities include:*		

Ref#	Requirement	Comply (Y/N)	Supplier Response
R597.	1. Enroll and verify the identity of all persons using biometric identifiers (e.g., fingerprints, retina, and iris).	Y	
R598.	2. Provide a solution that is compatible with Software and Hardware to capture retinal, iris, and/or facial recognition data in addition to fingerprints when required.	Y	
R599.	3. Provide a solution that is capable of capturing the biometric data of a broad range of persons with a wide variety of ages, abilities, disabilities and backgrounds.	Y	
R600.	4. Ensue the solution provides enrollment and registration to be conducted in a manner that is fast, accurate, effective, and non-invasive.	Y	
R601.	5. Provide a solution that conforms to industry best practice principles and standards for capture, Storage, verification and transmission of biometric andelectronic data and best practice principles for User access, Security and fraud prevention.	Y	
R602.	6. Provide a solution that is scalable such that it can be implemented in phases and subsequently grow and adapt with the needs of the Customer and the changes in the biometric marketplace.	Y	
R603.	7. Provide a solution that is non-proprietary and vendor agnostic.	Y	
R604.	8. Provide a solution that is customizable to meet future Customer needs such as the issuance of "smart cards" capturing individual biometric data.	Y	
R605.	9. Ensure the solution can capture biometric data from persons from a variety of locations, occupations, and physical Configurations. It is expected that a person encountered may have particularly abraded fingerprints, a higher than typical instance of missing fingers or other such factorsthat may make collecting fingerprint biometric data Problematic. The Supplier will provide details of what features of the Solution address these issues and the impact of these features.	Y	
R606.	10. Store the biometric data captured by the solution as a biometric record.	Y	
R607.	10.1. Ensure that the same biometric data cannot be stored against two different biometric records.	Y	
R608.	10.2. If biometric templates are generated, ensure that the solution will be capable of capturing and storing images in addition to templates.	Y	
R609.	11. Where the solution utilizes multiple different Biometric Capture Devices (e.g., fingerprint scanner and iris capture), ensure the solution will store both sets of biometric data against the same biometric record.	Y	
R610.	12. Ensure that the fingerprint biometric capture Device will be capable of capturing not less than four fingerprints simultaneously. If the Supplier believes that the quality Requirements can be met by capturing a reduced number of fingers, this should be explained with supporting evidence.	Y	
R611.	13. If biometric data iscapturedfrom the iris, ensure that the Biometric Capture Device will capture	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
	both irises simultaneously.		
R612.	14. Ifbiometricfacial recognitionisproposed aspart ofthe solution, ensurethatthe photograph captured for the biometric record can be exported to other Applications such as smart cards if required.	Y	
R613.	15. Ensure that the solution is capable of storing one or more biometric records for an individual.	Y	
R614.	16. Ensure that the solution design and implementation will prevent fraudulent use of the System by the Operator, either in collusion with the person or independently.	Y	
R615.	17. Ensure that the solution is capable of operating with the following Network Protocols:	Y	
R616.	17.1. Internet Protocols (TCP, UDP, etc.) with Support for both IPv4 and IPv6	Y	
R617.	17.2. HTTPS (TLS/SSL) encryption	Y	
R618.	17.3. NAT (Network Address Translation)	Y	
R619.	18. Ensure that any information collected concerning a person will be stored only where and when it is needed to fulfill the approved purposes of the Solution.	Y	
R620.	19. Ensure that alldata that is stored bythe solution will beencrypted at restinaccordance with VITA Rules and the SMM.	Y	
R621.	20. Ensure that all data that is transmitted by the solution will be encrypted in transit in accordance with VITA Rules and the SMM.	Y	
R622.	21. Ensure that any Personal Data (including biometric data) that is to be transmitted be digitally signed as soon as it is recorded for subsequent checking of integrity on receipt.	Y	
R623.	22. Ensure that any and all attempts to access, modify, duplicate or otherwise interact with data are traceable and generates a read-only audit record.	Y	
R624.	23. Ensure that the Operating System and other Patches for the solution are applied in accordance with the SMM and VITA Rules.	Y	
R625.	24. Submit to an external controlled Penetration Test and vulnerability scan against the Solution in accordance with VITA Rules and the SMM.	Y	
R626.	25. Ensure that the solution complies with the following international standards:	Y	
R627.	25.1. Biometric data:		
R628.	25.1.1. ISO/IEC 19785-1 Common Biometric Exchange Formats Framework	Y	
R629.	25.1.2. ISO/IEC 19794 Biometric data interchange formats	Y	
R630.	25.2. Security:		
R631.	25.2.1. FIPS 201: Personal Identity Verification (PIV) of Federal Employees and Contractors (including for any smartcard components, CMS Authentication Standards 2011 and Acceptable Risk Safeguards)	Y	
R632.	25.2.2. FIPS-201-2	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R633.	25.2.3. ITU X.509 Public-key and attribute certificate frameworks	Y	
R634.	25.2.4. NIST SP 800-76 Biometric Data Specification for PIV	Y	
R635.	25.2.5. NIST SP 800-78 Cryptographic Algorithms and Key Sizes for PIV	Y	
R636.	**6.5 Cages and Locked Enclosures**		
R637.	*Supplier's responsibilities include:*		
R638.	1. Provide cages with locks in accordance with VITA Rules andthe SMM to secure systems storing Commonwealth data. Any keys used to access the caged area should be controlled in accordance with VITA Rules and the SMM.	Y	
R639.	2. Provide enclosures with locks in accordance with VITA Rules and the SMM to secure systems storing Commonwealth data. Any keys used to access the caged area should be controlled in accordance with VITA Rules and the SMM.	Y	
R640.	**6.6 Video/Audio Recording**		
R641.	*Supplier's responsibilities include:*		
R642.	1. Implement video and audio recording in any areas where physical access controls are used to protect Commonwealth data (e.g., badge reader entry points, mantraps, fingerprint readers).	Y	
R643.	2. Maintain and store all recordings in accordance with VITA Rules and the SMM.	Y	
R644.	3. Provide all recordings to the MSI and VITA upon request.	Y	
R645.	4. Ensure that all video and audios are monitored by appropriate personnel in accordance with the SMM.	Y	
R646.	**6.7 Access Card Support**		
R647.	*Supplier's responsibilities include:*		
R648.	1. Provide, implement, and maintain card access for all areas which will be accessed by Commonwealth employees or Commonwealth designated entities utilizing industry standard technology such as PIV-I or CAC cards.	Y	
R649.	**6.8 Facility Environmental Requirements**		
R650.	*Supplier's responsibilities include:*		
R651.	1. Provide, implement, and maintain electrical service to the Site that has a 99.9% or better rating for reliability of service.	Y	
R652.	2. Ensure that Electricity will be received from two separate substations (or more) preferably attached to two separate power plants.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R653.	3. Ensure that water will be available from more than one source.	Y	
R654.	4. Ensure that all fencing around the facility be at least 20 feet from the building on all sides.	Y	
R655.	5. Provide, implement, and maintain an automatic authentication method for Data Center employees, authorized Commonwealth employees, and other designated entities (e.g., badge reader or biometrics).	Y	
R656.	6. Ensure that physical authentication tokens are compatible with the Commonwealth authentication solutions defined in the SMM.	Y	
R657.	7. Ensure that the area surrounding the facility be well lit and free of obstructions so that surveillance via CCTV cameras and patrols function in accordance with VITA Rules and the SMM.	Y	
R658.	8. Ensure that any signage associated with the building not identify the facility as a Data Center.	Y	
R659.	9. Provide, implement, and maintain cameras outside the facility to monitor the physical location for access to the premises and access to locations where COV data is stored.	Y	
R660.	10. Maintain cameras and corresponding Equipment in accordance with VITA Rules and the SMM.	Y	
R661.	11. Implement and maintain proper segmentation to ensure that the cameras and corresponding Equipment cannot be remotely accessed by unauthorized parties.	Y	
R662.	12. Provide, implement, and maintain parking permits or other VITA approved methods of authorization when parking vehicles in proximity to the building. Examples of personnel that may park within proximity to the building include: Data Center employees, contractors, guards, other designated parties, and cleaning crew.	Y	
R663.	12.1. Ensure that Service engineers and visitor vehicles are limited to parking in visitor parking areas.	Y	
R664.	12.2. Ensure that unauthorized vehicles are removed from the premises in accordance with VITA Rules and the SMM.	Y	
R665.	13. Ensure that parking spaces are a minimum of 25 feet from the building.	Y	
R666.	14. Ensure that the site location meetings the following criteria:	Y	
R667.	14.1. Any computer room will not have windows to the exterior of the building	Y	
R668.	14.2. All computer rooms will be placed within the interior of the building.	Y	
R669.	14.3. Any computer room with a wall along an outside edge of a building will have a physical barrier preventing close access to that wall.	Y	
R670.	15. Provide, implement, and maintain a Security kiosk, physical barriers (concrete barricades), and Closed Caption Television (CCTV) cameras at each entrance to the facility to ensure each person entering the facility is identified.	Y	
R671.	16. Train guards to follow and enforce physical Security policy according to the SMM.	Y	
R672.	17. Ensure cleaning crews work in groups of at least two or are supervised by Security personnel	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
	when working in designated restricted areas.		
R673.	18. Ensure that visitors requiring access to the building present a government issued picture ID (United States based) in exchange for a visitor's badge allowing access to the facility.	Y	
R674.	19. Ensure that visitors will be escorted at all times by authorized staff.	Y	
R675.	20. Ensure that visitors will not beallowed accesstoa computerroom ordesignated restricted areas without prior approval and a designated escort in accordance with VITA Rules and the SMM.	Y	
R676.	21. Provide, implement, and maintain a log of Equipment being placed in and removed from the facility. The log should record information in accordance with the SMM.	Y	
R677.	22. Provide log information via an automated mechanism to designated parties in accordance with VITA Rules and the SMM.	Y	
R678.	23. Ensure all personnel badges include the individual's picture and all associated metadata is maintained in a centralized Database.	Y	
R679.	24. Provide and install signs at all entrances to any computer room stipulating the room as restricted access and prohibiting food, drink, and smoking in the computer room.	Y	
R680.	25. Provide and install an automatic authentication mechanism at any entrance to the computer room (e.g., badge reader, biometrics).	Y	
R681.	26. Ensure all doors are fireproof.	Y	
R682.	27. Restrict computer room access to only authorized staff and escorted visitors in accordance with VITA Rules and the SMM.	Y	
R683.	28. Monitor all computer rooms via CCTV cameras.	Y	
R684.	29. Provide, implement, and maintain redundant access to power, cooling, Networks, and life safety facilities in each computer room in accordance with the SMM.	Y	
R685.	30. Provide, implement, and maintain the appropriate environmental controls in each computer room in accordance with the SMM.	Y	
R686.	31. Provide, implement, and report the results from environmental sensors to log the status of each computer room for monitoring and trend analysis to the designated parties in accordance with the SMM.	Y	
R687.	32. Provide, implement, and maintain a fire suppression system in each computer room that minimizes damage and impact to hosted systems and Infrastructure.	Y	
R688.	33. Provide, implement, and maintain fire extinguishers in each computer room.	Y	
R689.	34. Provide, implement, and maintain emergency power off switches inside each computer room.	Y	
R690.	35. Provide, implement, and maintain the ability to maintain power when switching between power providers.	Y	
R691.	36. Provide and maintain at least 24 hours of generator fuel on site.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R692.	37. Ensure all printed material containing sensitive information will be shredded on site or sent via bonded carrier to a VITA approved document destruction company before being discarded.	Y	
R693.	38. Ensure all dumpsters are monitored by CCTV.	Y	
R694.	39. All areas used for monitoring systems will have the necessary Infrastructure (e.g., redundant power, water, and HVAC) to remain functioning.	Y	
R695.	**6.9 Personnel and Visitor Monitoring**		
R696.	*Supplier's responsibilities include:*		
R697.	1. Provide, implement, and maintain surveillance and control of ingress and egress to the buildings, grounds and parking areas in accordance with VITA Rules and the SMM.	Y	
R698.	2. Ensure each entry point is monitored by a guard.	Y	
R699.	3. Ensure that each employee badge is visually verify upon entry.	Y	
R700.	4. Ensure that all non-badged individuals are required to sign in upon entry to the facility	Y	
R701.	5. Ensure that the visitor's signature and identity are verified.	Y	
R702.	6. Provide monitoring of building fire and life safety features including orderly control of evacuations, drills and other exercises that instruct tenants and visitors about building safety.	Y	
R703.	7. Detaining all visitors/contractors in lobby areas during non-business hours until such time as an authorized-employee escorts them to their destination inside the building and back to the lobby for the purpose of signing in/out.	Y	
R704.	8. Ensure security personnel patrol the facility parking lots in accordance with the SMM.	Y	
R705.	9. Provide, implement, and maintain automated behavior analysis controls in all areas that allow public access to identify suspicious or malicious behavior.	Y	
R706.	**6.10 Remote Management**		
R707.	*Supplier's responsibilities include:*		
R708.	1. Ensure remote management of any physical areas be compliant with VITA Rules and the SMM.	Y	
R709.	2. Ensure remote management of any physical areas be monitored for unauthorized access.	Y	
R710.	3. Ensure third party connections to any remote/environmental management systems be managed in accordance to VITA Rules and the SMM.	Y	
R711.	**7.0 Server and Platform Services**		
R712.	*Supplier is responsible to maintain the current environments identified in the Environment Overview Documents as well as new Platform Services offered in this solution.*		

Ref#	Requirement	Comply (Y/N)	Supplier Response
	Supplier will provide VITA andits Clients with Platform Servicesin a multi-tier Support Level environment. The Commonwealth is interested in Suppliers offering a variety of tiers that provide Availability, performance, Support, and recovery Services.		
R713.	**7.1 Common Platform Services**		
R714.	*Supplier's responsibilities include:*		
R715.	1. Assume responsibility for and perform all console functions and operations.	Y	
R716.	2. Issue operator commands to control all In-Scope computer platforms throughout the organization.	Y	
R717.	3. Install, Configure, monitor and Support tools for the collection of detailed information required for SLAs, Reports and invoicing.	Y	
R718.	4. Ensure the implementation of Hardware system management and monitoring for Servers in all Data Centers in accordance with the SMM.	Y	
R719.	5. Manage and monitor Server performance and utilization of the various Server resources necessary to provide optimum Services performance (e.g., CPU, file system level Storage, memory, Server Network interface throughput).	Y	
R720.	6. Monitor all processing.	Y	
R721.	7. Monitor the performance of online interactive traffic and, in accordance with the SMM, take appropriate actions to resolve online System-related Incidents and/or Problems, including escalating (as appropriate) the Incident and/or Problem to the proper Support group.	Y	
R722.	8. On an ongoing basis, enhance processing capabilities and efficiencies through system tuning and other run-time improvements.	Y	
R723.	9. Operate terminal and jump Servers for Customers.	Y	
R724.	10. Provide capability for VITA and VITA Customers to utilize the enterprise management and monitoring tools and/or deploy Customer specific monitoring and management agents (e.g., SCOM).	Y	
R725.	11. Build Application packages, based on Customer requirements, for deployment.	Y	
R726.	12. Deploy the packages based on release schedules in accordance with the SMM.	Y	
R727.	13. Provide ongoing coordination and Support for Customer Application groups.	Y	
R728.	14. Perform load balancing in coordination with the Customers and Authorized Third Party Vendors.	Y	
R729.	15. Provision, Install, Operate, Support, and manage Application acceleration Services, as directed by MSI, VITA or VITA Customers.	Y	
R730.	16. Provide for the partitioning of the Service such that multiple VITA Customers can securely	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
	share the use of Application acceleration Systems, including the Support of multiple organizations and sub-organizations.		
R731.	17. Provide for proactive monitoring and Support.	Y	
R732.	18. Provide reports on the usage of Application acceleration Services.	Y	
R733.	19. Perform Server administration functions, which include the development, establishment, Installation, and maintenance of:	Y	
R734.	19.1. Directories.	Y	
R735.	19.2. Directory structures.	Y	
R736.	19.3. Naming conventions.	Y	
R737.	19.4. File Systems.	Y	
R738.	20. Purge records and file old User accounts upon VITA-approved User's request and in accordance with VITA and VITA Customer records retention policies.	Y	
R739.	21. Restore archived or deleted files upon VITA-approved User's request.	Y	
R740.	22. Perform regular monitoring of utilization needs and efficiencies, and report regularly on tuning initiatives.	Y	
R741.	23. Perform or obtain proactive failure trend analysis.	Y	
R742.	24. Produce trend reports to highlight production Incidents and Problems and establish predetermined action and escalation procedures when batch window Incidents and Problems are encountered.	Y	
R743.	25. Monitor, verify, and make appropriate adjustments to Support proper and timely Application process executions.	Y	
R744.	26. Monitor Applications to proactively prevent or Resolve Application performance, degradation or failure where such activities are part of the Service.	Y	
R745.	27. Notify the MSI and affected VITA Customers, in accordance with the notification procedures, in the Event that Applications do not execute properly.	Y	
R746.	28. Perform periodic and Emergency Systems maintenance in accordance with Procedures established in the SMM to minimize the impact to Customers' businesses.	Y	
R747.	29. Perform computer shutdowns and restarts, as required, and execute customary utility functions.	Y	
R748.	30. Maintain shutdown and restart order and dependency documentation for all Systems and their Services/Processes for a Site.	Y	
R749.	31. Gather and maintain order and dependency information, by VITA and VITA Customer business priorities.	Y	
R750.	32. Maintain, administer, and provide necessary automated tools and processes for systems management to the extent available in the VITA-approved tool suite or as required to be	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
	delivered by Supplier elsewhere in the Agreement.		
R751.	33. Maintain tables, calendars, parameters, and definitions for tools used to automate manual Procedures or to automate and improve the quality of the operations.	Y	
R752.	34. Provide remote monitoring and management for all Equipment.	Y	
R753.	35. Maintain and update the operational documentation for all operations procedures and Services, including maintaining accurate information about all CIs in the CMS / CMDB.	Y	
R754.	36. Provide guidance for active prevention of Service performance events (e.g. CPU, file system level Storage, memory, Server, Network interface throughput.)	Y	
R755.	37. Provide threshold levels at a Server or Application level, per VITA and VITA Customer guidelines.	Y	
R756.	38. Analyze performance metrics and respond proactively to potential Problem areas.	Y	
R757.	39. Suspend, disable, or remove Users in accordance with procedures and relevant notifications developed and documented with VITA and VITA Customers' input and Approval.	Y	
R758.	40. Provide routine administrative Services, such as print queue setup, print table setup rights, as well as administration and password administration as requested by VITA or its Customers.	Y	
R759.	41. Audit Server rights and privileges on at least a monthly and ad hoc basis as requested with results reported to MSI, VITA and VITA Customers.	Y	
R760.	42. Assist individual departments and VITA-approved Users in lost or damaged file recovery from the Server backups by executing agreed recovery procedures or approved workarounds including defined Recovery Point Objectives (RPO) for the data.	Y	
R761.	43. Provide assistance in analyzing and correcting all Problems (e.g., Application, End-User Computing, Network) that may be associated with Server processing.	Y	
R762.	44. Maintain and update the documentation for all Server operations Procedures and Services, including maintaining accurate information about all CIs in the CMS / CMDB and relationships between CIs.	Y	
R763.	45. Provide node/host information, and check and reset ports.	Y	
R764.	46. Maintain and develop tools and processes to provide automated systems management.	Y	
R765.	47. Provide a standard remote screen sharing service for collaborative work as requested by VITA or VITA Customer.	Y	
R766.	48. Provide remote Software distribution to Equipment.	Y	
R767.	49. Provide status and trending reports, including:	Y	
R768.	49.1. CPU/Core (average peak utilization for the period).	Y	
R769.	49.2. Memory (RAM) (average peak utilization for the period).	Y	
R770.	49.3. Disk (average peak utilization for the period).	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R771.	49.4. Network Interface Card (NIC) (average peak utilization for the period).	Y	
R772.	49.5. Servers that have gone above a defined set of thresholds.	Y	
R773.	50. Provide System administration and operational Support for high-Availability Equipment requiring manual and/or automated fail-over methods.	Y	
R774.	51. Maintain and control spooling to remote Sites.	Y	
R775.	52. Provide technical Support for Equipment and Software for remote print locations.	Y	
R776.	53. Integrate with the MSI's SMS to provide VITA-approved Users with access to real-time system monitoring information via the Customer Portal withprofiled access by VITA request (e.g. segregated by VITA Customer.)	Y	
R777.	54. Monitor and alert on thresholds (e.g. dataset or table space capacity events, full log files, file systems, etc.), and provide alerts to VITA and its Customers as specified in the SMM.	Y	
R778.	**7.2 Server Services**		
R779.	Server Services represents the provisioning and administration of traditional Server environments. The Supplier is expected to maintain all aspects of the Server administration (e.g., Hardware, hypervisor, operating system, and tools). It is expected that some of the below Server service platforms will have different SLAs and cost models. 1. x86 based commodity Servers: • Traditional Physical Servers (e.g., Windows Server, RHEL or Oracle Unbreakable Linux) • Traditional Virtual Servers (e.g., Windows Server, RHEL or Oracle Unbreakable Linux) • New COV Private Cloud (e.g., Windows Server, RHEL) 2. UNIX based Servers (many are midrange size Servers) • HP-UX • AIX (e.g., Power7, Power6) • Solaris (e.g., SPARC, Fujitsu, Oracle/Sun) Supplier's responsibilities include:		
R780.	**7.2.1 General**		
R781.	Supplier's responsibilities include:		
R782.	1. Provision Physical and Virtual Servers as requested by VITA or VITA Customers.	Y	
R783.	2. Provide the maintenance, Patching, and Support of the Operating System.	Y	
R784.	3. Provide multi-tenant Software distribution Services to all Server platforms and enable VITA and	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
	VITA Customers to utilize these tools for Software distribution.		
R785.	4. Provide maintenance and Support of the Application/Web Server Software (e.g., WebSphere Application Server, WebSphere Application Server Network Deployment, IIS, JBoss Enterprise, WebLogic Application Server) as an add-on service when requested.	Y	
R786.	5. Provide the maintenance and Support of the physical Devices, firmware, and hypervisors.	Y	
R787.	6. Update and maintain shared-use file Server libraries of VITA's Software in accordance with the SMM.	Y	
R788.	7. Install and Support sufficient data Storage and processing capacity to facilitate the use of Server Applications Software.	Y	
R789.	8. Provide routine administrative Services, such as User and print queue setup, print table setup rights, as well as administration and password administration to enable shared use of departmental data and Applications.	Y	
R790.	9. Audit the Server rights and privileges on at least a quarterly basis and report the results to the MSI and VITA.	Y	
R791.	10. Perform or assist individual Customers and Users in lost or damaged file recovery from the Server backups by executing SMM recovery procedures.	Y	
R792.	11. Provide assistance in analyzing and correcting endpoint and/or Network Incidents and Problems that may be associated with Server processing.	Y	
R793.	12. Provide node/host information to authorized VITA representatives or its agents, and check and reset ports.	Y	
R794.	13. Develop tools and processes to provide automated systems management.	Y	
R795.	14. Provide remote Software distribution.	Y	
R796.	15. Provide system administration and operational Support for high Availability clusters; multi-site high Availability clusters; Disaster Recovery; with automated and manual fail-over methods.	Y	
R797.	16. Provide technical Support for Server environments.	Y	
R798.	17. Install productivity tools/utilities, and perform all required operational modifications for the efficient and proper delivery of the Services.	Y	
R799.	18. Assign and initialize disk Storage volumes as required for performance of the Services.	Y	
R800.	19. Determine file, data set, and volume placement.	Y	
R801.	20. Utilize tools and processes to allow automated and remote systems management of the Server environment. (e.g., Software distribution, backups, performance measurement, tuning, license and Asset Management). Such tools and processes will include:	Y	
R802.	20.1. Broadcast Software distribution.	Y	
R803.	20.2. License management tools.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R804.	20.3. Performance measurement and tuning.	Y	
R805.	20.4. Network monitoring and control protocols (e.g., SNMP.)	Y	
R806.	20.5. Backup/Business Continuity.	Y	
R807.	20.6. Server administration.	Y	
R808.	20.7. Server management re-Configuration.	Y	
R809.	20.8. Automatic alerting.	Y	
R810.	21. Install Software and perform monitoring and removal of malware programs from all Servers.	Y	
R811.	22. Perform Server administration functions, which include the development, establishment, Installation, and maintenance of:	Y	
R812.	22.1. Directories	Y	
R813.	22.2. Directory structures	Y	
R814.	22.3. Naming conventions	Y	
R815.	23. Create and maintain operational documentation for all Applications and User procedures that affect operations for VITA and VITA Customers.	Y	
R816.	24. Provide integrations with high Availability, failover and Disaster Recovery type Services as necessary.	Y	
R817.	25. Provide ability to integrate with new COV Services including Cloud-based as necessary.	Y	
R818.	26. Enforce hardening standards as established by the Managed Security Services Provider and VITA Rules.	Y	
R819.	27. Provide external Internet based monitoring of DMZ Services (e.g., Web Servers).	Y	
R820.	**7.2.2 x86 based commodity Servers**		
R821.	*This is the Strategic Server platform for Commonwealth and it represents the target platform for deploying many existing and new Applications. It is expected to have and maintain competitive commodity type pricing.*		
R822.	**7.2.2.1 Traditional physical Servers**		
R823.	*Traditional Physical Servers Support Windows Server, RHEL and Oracle Unbreakable Linux. Currently, this platform is highly utilized and we expect substantial migration of this platform to virtual or Cloud-based (including private) models over time.* *Supplier's responsibilities include:*		
R824.	1. Assist VITA and VITA Customers in selecting and consuming the COV Private Cloud vs. traditional Physical or Virtual Servers.	Y	
R825.	2. As requested by the MSI, provide technical assistance to Customers in sizing Servers to meet Application needs.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R826.	3. Provide Configuration standards (memory, CPU, manufacturers, and models) for small, medium and large general-purpose Servers. These standards are subject to VITA and VITA Customers approval and must be Updated at least annually and as models change.	Y	
R827.	4. Provide timely rough order of magnitude estimates (ROM) and quotes for non-standard Servers upon request.	Y	
R828.	5. Provide on-going monitoring to ensure sizing is appropriate.	Y	
R829.	6. Provide multipath capabilities to Servers to Support data replications when needed (e.g. PowerPath).	Y	
R830.	7. Provide VITA and VITA Customers access to Hardware based remote management interface (e.g. ILO).	Y	
R831.	**7.2.2.2 Traditional Virtual Servers**		
R832.	*Traditional Virtual Servers running on a hypervisor (e.g. VMWare, Hyper-V) support guest Operating Systems (e.g., Windows Server, RHEL). The Commonwealth has a large VMWare implementation that must be Supported but is open to reviewing an alternative hypervisor.* *Supplier's responsibilities include:*		
R833.	1. Assist VITA and VITA Customers in migrating from Physical commodity Servers to Virtual Servers.	Y	
R834.	2. Provide Self-service and rapid provisioning of different types of Virtual Servers.	Y	
R835.	3. Provide VM without OS (IaaS) to Support virtual Appliances when needed.	Y	
R836.	4. Provide hypervisor with High Availability andlive migration capabilities (e.g., VMotion, HA).	Y	
R837.	5. Provide a pricing model where Virtual Servers cost less than Physical Servers for all configurations (extreme memory or processing requirements may be the exception). Model should be CPU/core/memory based.	Y	
R838.	6. Provide virtual memory on demand.	Y	
R839.	7. Provide a memory and CPU subscription model that is approved by ITISP Governance.	Y	
R840.	8. Monitor and tune memory and CPU subscription models.	Y	
R841.	9. Provide VITA and VITA Customers access to virtual consoles with capability to utilize the hypervisor for common Services (e.g., start/stop guests, console, and monitor the environment).	Y	
R842.	**7.2.2.2.1 Enclave and Containerization of Virtual Environments**		
R843.	*Supplier's responsibilities include:*		
R844.	1. Provide a multi-tenant content trust platform for containerized images that Supports:	Y	
R845.	1.1. Protection of containers regardless of location (On Premise, hosted, or virtual Data	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
	Centers);		
R846.	1.2. Ability for the publishers to sign their images and later use this for verification;	Y	
R847.	1.3. Ensure the integrity of hardened Security baselines (as approved by VITA) applied to production Application containers;	Y	
R848.	1.4. Analysis engine that inspects containers layer-by-layer for known Security flaws, identifying container images that may not have contained any known vulnerabilities when originally developed;	Y	
R849.	1.5. Provides Services for continuous monitoring for vulnerabilities in both static container images and runtime container Applications; and	Y	
R850.	1.6. Provide alerts to publishers for when Timestamp keys fail.	Y	
R851.	2. Provide a secure multi-tenant repository for tagging and offline key management.	Y	
R852.	**7.2.2.3 COV Private Cloud**		
R853.	*Suppliers could potentially extend the functions of the traditional Virtual commodity Server platform to meet this need. Suppliers can propose a Private Cloud to supplement takeover services and/or can propose a Private Cloud as part of their to-be solution.* *Supplier's responsibilities include:*		
R854.	1. Provide choices on how VITA and VITA Customers would be billed (e.g., fixed monthly fees, pay for use).	Y	
R855.	2. Provide VITA and VITA Customers with a sandbox (test environment) to enable proof of concepts quickly and inexpensively.	Y	
R856.	3. Collaborate with the MSI to assist Customers in selecting and consuming the COV Private Cloud vs. Traditional Physical or Virtual Servers.	Y	
R857.	4. Document deployment models and compliance to the following NIST Cloud framework characteristics including:	Y	
R858.	4.1. On-demand self-service	Y	
R859.	4.2. Broad Network access	Y	
R860.	4.3. Resource pooling	Y	
R861.	4.4. Rapid elasticity	Y	
R862.	4.5. Measured service	Y	
R863.	5. Provide both automatic and manual scale-up and scale-down of capacity or Instances based on User demand or other factors.	Y	
R864.	6. Provide metering to limit Server scale-up or scale-down based on VITA or Customer requirements.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R865.	7. Provide sufficient capacity to handle VITA and VITA Customer's elasticity requirements.	Y	
R866.	8. Provide technical assistance to agencies in sizing Servers (CPU/cores and memory) to meet Application needs.	Y	
R867.	9. Provide on-going monitoring to ensure sizing (CPU/cores and memory) is appropriate.	Y	
R868.	**7.2.2.3.1 Enclave and Containerization of Virtualized Environments**		
R869.	*Supplier's responsibilities include:*		
R870.	1. Provide a multi-tenant content trust platform for containerized images that Supports:	Y	
R871.	1.1. Protection of containers regardless of location (On Premise, hosted, or virtual Data Centers);	Y	
R872.	1.2. Ability for the publishers to sign their images and later use this for verification;	Y	
R873.	1.3. Ensure the integrity of hardened Security baselines (as approved by VITA) applied to production Application containers;	Y	
R874.	1.4. Analysis engine that inspects containers layer-by-layer for known Security flaws, identifying container images that may not have contained any known vulnerabilities when originally developed;	Y	
R875.	1.5. Provides Services for continuous monitoring for vulnerabilities in both static container images and runtime container Applications; and	Y	
R876.	1.6. Provide alerts to publishers for when Timestamp keys fail.	Y	
R877.	2.		
R878.	**7.2.3 UNIX Based Servers**		
R879.	*These platforms are Contained technologies and are typically needed to meet specific business requirements. In general, no large scale additional expansion of these platforms is anticipated. There is an expectation that some of the current platforms will become obsolete and that Applications may not be easily migrated to x86 based operating systems. SLAs and cost models may be specific to each underlying Hardware platforms. The Commonwealth is interested in Suppliers offering alternative long-term approaches (e.g., Off Premise, Colocated).* *Supplier's responsibilities include:*		
R880.	1. Collaborate with the MSI to provide technical assistance to Customers in sizing Servers to meet Application needs.	Y	
R881.	2. Provide timely rough order of magnitude estimates (ROM) and quotes for Servers upon request.	Y	
R882.	3. Provide on-going monitoring to ensure sizing is appropriate.	Y	
R883.	4. Provide multipath capabilities to Servers to Support data replications when needed (e.g.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
	PowerPath).		
R884.	5. Provide VITA and VITA Customers access to Hardware based remote management interface (e.g. service console port).	Y	
R885.	6. Provide integrations with high Availability, failover and Disaster Recovery type Services as necessary.	Y	
R886.	7. Provide IaaS as needed allowing agencies with System administration capabilities to provide their own administration (e.g., VMs, cells, profiles).	Y	
R887.	**7.3 Database Services**		
R888.	*Supplier will provide SQL Server and Oracle Database Services on both Physical and Virtual Servers regardless of physical location. Supplier will be responsible for the administration of the Database Management System (e.g., maintenance plans, backup and recovery, clustering), Operating System and accompanying supporting tools.* *The Commonwealth currently owns Microsoft SQL Server licenses that are shared among Customers. For Oracle, the licenses are currently owned by VITA Customers.* *Supplier's responsibilities include:*		
R889.	1. Plan for Changes in the size of Databases that result from business growth and Project implementation based on information supplied by the MSI, VITA and its Customers, and review plans with the MSI and ITISP Governance on a regular basis for comment and approval.	Y	
R890.	2. Correct out-of-capacity situations caused by unusual activities in a timely manner (e.g., dataset or table space capacity events, full log files.)	Y	
R891.	3. Proactively monitor and prevent out-of-capacity situations (e.g., dataset or table space capacity events, full log files.)	Y	
R892.	4. Develop, document, and maintain Physical Database Support and management standards and Procedures based on industry best practices as well as VITA and its Customers' needs.	Y	
R893.	5. Define Database creation, Configuration, Upgrade, Patching and Refresh requirements	Y	
R894.	6. Install, Configure, maintain, and monitor Database management systems.	Y	
R895.	7. Create Databases and Database System Instances to Support VITA and its Customers.	Y	
R896.	8. Create scheduled and on-demand Database snapshots and clones.	Y	
R897.	9. Provide Databases with High Availability as defined by business requirements.	Y	
R898.	10. Assist Customers with Database management system version Upgrades and migrations.	Y	
R899.	11. In collaboration with the MSI, assist Customers with determining which Database Service best meets the Customer's requirements.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R900.	12. In collaboration with the MSI, assist Customers with determining the feasibility and implementation of high Availability Databases.	Y	
R901.	13. Provide data dictionary expertise, data assistance, data warehouse metadata definition, data mapping functions and creation of data cubes for VITA and eligible VITA Customers' Application developers.	Y	
R902.	14. Install, maintain, and Support Database Software.	Y	
R903.	15. Maintain Databases to meet the Service Levels and other performance standards, to maximize efficiency, and minimize outages.	Y	
R904.	16. Perform control functions to Support existing Systems as of the Effective Date, as well as any planned new Systems development.	Y	
R905.	17. Implement and administer appropriate Database management tools across all Database Instances (e.g., data masking tools, Redgate SQL Compare.)	Y	
R906.	18. Make performance metrics and historical data available for trending and reporting over a minimum of 6 months and be available via a dashboard.	Y	
R907.	19. Provide physical Database management Support.	Y	
R908.	20. Test and implement Database environment Changes, as approved by VITA or VITA Customers.	Y	
R909.	21. Maintain consistent Database parameters and System settings across all like Instances.	Y	
R910.	22. Maintain Database consistency in accordance with the established Software Development Lifecycle.	Y	
R911.	23. Ensure Database consistency via toolsto monitor, predict, and prevent Database corruption.	Y	
R912.	24. Open, track, and manage the Resolution of Database Problems.	Y	
R913.	25. Provide technical assistance, troubleshooting Support, and subject matter expertise to VITA, VITA Customer designee, and Third Party Vendor Support.	Y	
R914.	26. Monitor Database for Incidents and Problems and automatically generate Incidents and Problems using the procedures, processes, and SMS defined in the SMM.	Y	
R915.	27. Provide customizable real-time notifications and alerts to the MSI and Customers via multiple modes of communication.	Y	
R916.	28. Perform Database administration backup & recovery, Security and Compliance.	Y	
R917.	29. Perform Database snapshots and clones at request of authorized Customers.	Y	
R918.	30. Maintain, operate, and Upgrade automated monitoring tools to monitor Database performance.	Y	
R919.	31. Employ Database performance analysis to confirm physical Database requirements in Support of Customer's business Systems.	Y	
R920.	32. Identify and Resolve locking conflicts, latch contention, rollback requirements, etc. for all	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
	Database Instances in coordination with VITA and eligible Customers' Application developers.		
R921.	33. Define and execute Database performance and tuning scripts and keep Databases running at optimal performance for the Commonwealth's workloads.	Y	
R922.	34. Perform Database reorganizations to optimize performance when required via established thresholds or Customer requests.	Y	
R923.	35. Execute Database System Configuration Changes, Upgrades and Patches in accordance with the SMM.	Y	
R924.	36. Maintain documentation for Database Instance parameters and System settings.	Y	
R925.	37. Perform shutdowns and restarts for Database management Systems, Instances, and individual Databases as requested by the MSI or Customers.	Y	
R926.	38. Maintain, Update, and implement Database archive Processes and Procedures, as defined in the SMM, to recover from an outage or corruption to meet established SLAs in order to meet VITA's business requirements.	Y	
R927.	39. Execute VITA and its Customers' Database backup schedules, retention periods, and levels (i.e. full, incremental, or differential)	Y	
R928.	40. Exercise Database restores from Database exports, dumps, backups, flat files, secondary Databases, and disk based snapshots.	Y	
R929.	41. Provide granular restoration options to include the Server, Instance, Database, table, and row levels at Customer defined recovery points.	Y	
R930.	42. Provide Security administration including Service Requests, managing role and End-User Database permissions in accordance with the SMM, which may include Customer-specific policies.	Y	
R931.	43. Execute authorization requirements as defined by VITA and its Customers (e.g., Users, roles, schemas.)	Y	
R932.	44. Provide Database management encryption for the entire system or subcomponents as requested by VITA or its Customers.	Y	
R933.	45. Provide an interface for VITA and its Customers to delegate Database Security functions	Y	
R934.	**7.4 Appliance Services**		
R935.	*Supplier responsibility includes provisioning bare metal Virtual and Physical Appliances Servers (e.g., hardened virtual Linux Appliances, physical Network monitoring Appliances, Servers with bundled Hardware and pre-Installed Software.) Supplier is not responsible for the maintenance of the bundled pre-Installed Software or Applications that run on these Devices.*		
R936.	**7.4.1 Physical Appliance Services**		

Ref#	Requirement	Comply (Y/N)	Supplier Response
R937.	*Supplier's responsibilities include:*		
R938.	1. Deploy the physical Appliance in the Data Centers.	Y	
R939.	2. Connect Power and Network.	Y	
R940.	3. Configure Network.	Y	
R941.	4. Document the Configuration in the CMDB.	Y	
R942.	5. Provide process to power on/off and reboot.	Y	
R943.	**7.4.2 Virtual Appliance Services**		
R944.	*Supplier's responsibilities include:*		
R945.	1. Deployment of VITA or VITA Customer provided Virtual Server image (i.e., ISO).	Y	
R946.	2. Provide Network Configuration for Appliance.	Y	
R947.	3. Provide VITA and VITA Customers capability to shut down and reboot the Appliance.	Y	
R948.	4. Provide Appliance monitoring.	Y	
R949.	5. Provide Appliance automated and manual Update capabilities.	Y	
R950.	**7.5 Other Platform Services**		
R951.	*Supplier responsibility includes Supporting other Platform Services that provide more than Operating Systems or Database Services to the environment.*		
R952.	**7.5.1 Virtual Applications and Utility Applications**		
R953.	*The Commonwealth currently utilizes Citrix to publish virtual Applications. The Supplier will be required to maintain this environment as current state but can propose additional solutions around Virtual Desktop Infrastructure (VDI).* *Supplier's responsibilities include:*		
R954.	1. Monitor published Virtual Application Servers for system health, Patch and Upgrade currency and system performance, including:	Y	
R955.	1.1. Manage published virtual Application platforms.	Y	
R956.	1.2. Monitor usage for identification of potential Security or Policy breaches, as defined in the SMM and perform trend reporting.	Y	
R957.	2. Configuration of the Network, provisioning Services and control broker Services to Support the published platform.	Y	
R958.	3. Configuration of the Virtual Application delivery Services required to Support the published platform.	Y	
R959.	4. Configuration of the published Desktops, User data and settings within the published platform.	Y	
R960.	5. Perform Application Patch and Upgrade activities.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R961.	**7.5.2 Middleware Services**		
R962.	Currently, VITA Supports, owns Software licenses, manages the Middleware components, and supports the environment that several Agencies utilize while the current Supplier Supports the IBM Power 7 Infrastructure and AIX Software. VITA creates/manages the profiles/cells while the Supplier creates/manages the LPARs. Currently the Commonwealth owns the Power 7's and the related DataPower security appliances. Hardware is housed in dedicated racks. When that Hardware needs to be Refreshed, the expectation is the new Supplier will provide the Hardware/Platform Services. The IBM PureApplication System, PureApplication Service and BlueMix Public are examples of the type of platform that could meet future platform needs VITA's Middleware Service alternatives are: • Collaborative VITA Managed Middleware • Collaborative Supplier Managed Middleware • Enterprise Middleware Suppliers are expected to cover all three of these alternatives within their solution proposals		
R963.	**7.5.2.1 Collaborative VITA Managed Middleware**		
R964.	In this alternative, VITA Supports, owns Software licenses and manages the Middleware components in Support for several Agencies while Supplier Supports the IBM Power 7 Infrastructure and AIX Software. VITA creates/manages the profiles/cells while the Supplier creates/manages the AIX LPARs. Supplier will provide replacement platform when the current Power7 infrastructure needs to be replaced. Supplier's responsibilities include		
R965.	1. Provide Support for the Collaborative Middleware Infrastructure (i.e., IBM AIX Power 7 or higher).	Y	
R966.	2. Refresh when needed the Power 7 infrastructure (possibly IBM Pure Application System or Service).	Y	
R967.	3. Provision and Support shared Process pools per VITA requirements.	Y	
R968.	4. Provide technical Support for Middleware Infrastructure.	Y	
R969.	5. Perform operational activities and interface with other teams and Third Party Suppliers as required, including: Monitor, Installation, Configuration, provisioning(e.g., Software, LPARS, Network connectivity, SAN, facility space), Update, Patch, backup and recovery.	Y	
R970.	6. Assume and maintain current Middleware Software licenses which Support these Services as requested by VITA.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R971.	**7.5.2.2 Intentionally Left Blank**		
R972.	**7.5.2.3 Intentionally Left Blank**		
R973.	**8.0 Storage Services**		
R974.	Supplier is responsible for providing Multi-tenant multi-tiered Storage Services to VITA and VITA Customers. Services and assets may reside at CESC or Customer Facility. Supplier's Storage Support responsibilities include all levels and types of Storage (e.g., Network Attached Storage (NAS), Storage Area Network (SAN), and locally attached Server Storage). The environment requires multiple levels of speed, redundancy, scalability, Availability, and Security.		
R975.	**8.1 Storage Management**		
R976.	Supplier's responsibilities include:		
R977.	1. Remain current in the knowledge and use of data Storage technology and management products and provide new emerging Storage technologies.	Y	
R978.	2. Provide Network Attached Storage (NAS) Services for all tiers of Storage.	Y	
R979.	3. Provide encryption at rest Services for all tiers of Storage.	Y	
R980.	4. Perform online Storage tuning.	Y	
R981.	5. Provide event, warning, alert, and alarm processing and management.	Y	
R982.	6. Resolve all event, warning, alert, and alarm messages.	Y	
R983.	7. Utilize and Support Incident and Problem Management in accordance with the SMM.	Y	
R984.	8. Provide Storage and Backup infrastructure Configuration maintenance.	Y	
R985.	9. Provide improvement or remedial activities in operational processes in accordance with the SMM.	Y	
R986.	10. Assign and initialize Storage volumes as required.	Y	
R987.	11. Manage the archiving of inactive files and report on Storage directories for review by VITA and VITA Customers.	Y	
R988.	12. Conduct routine monitoring using Software tools to measure the efficiency of online Storage access, and take corrective action as needed (including performance adjustments to Equipment and Software, or file placement as required to improve service).	Y	
R989.	13. Provide multiple tiers of Storage to Support differing performance needs (e.g., SAN Flash, high speed SAN, average speed SAN, dynamic SAN that moves between tiers).	Y	
R990.	14. Provide multi-site buffered replicated Storage for all tiers of Storage.	Y	
R991.	15. Provide multi-site active-active Storage for tier 0 and tier 1 Storage to Support multi-site highly available clustered Databases.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R992.	16. Provide and maintain locally attached Server Storage where required by VITA or VITA Customers. (e.g., locally attached Storage, locally attached SSD).	Y	
R993.	17. Maintain and improve Storage resource efficiency and space utilization requirements.	Y	
R994.	18. Support Storage for high-speed relational and non-relational Databases, data-marts and data warehouses utilizing Oracle and Microsoft SQL and other technologies. (e.g., Oracle ASM, raw).	Y	
R995.	19. Create and keep up to date the backup and Storage procedures defined in the SMM.	Y	
R996.	20. Provide data migration Services from existing to new backup and Storage service platforms including migration of existing Access Control Lists (ACLs) if applicable.	Y	
R997.	21. Provide secure, durable data sharing Services between heterogeneous nodes and platforms (e.g., NFS, CIFS, NAS).	Y	
R998.	22. Monitor, maintain and Report on User directories for file activity and inactivity.	Y	
R999.	23. Provide online Storage compression as needed.	Y	
R1000.	24. Provide automated de-duplication of data.	Y	
R1001.	25. Provide data migration and archive management at both the User level and array level.	Y	
R1002.	26. Provide documentation Support and maintenance.	Y	
R1003.	27. Monitor and control Storage performance according to SMM.	Y	
R1004.	**8.1.1 External Storage Media Management**		
R1005.	*The Commonwealth is working to migrate all archival and backup libraries to Storage; however, the Supplier must maintain the current capabilities. The Commonwealth does not plan to expand its use of tape Storage.* *Supplier's responsibilities include:*		
R1006.	1. Properly maintain the residual tape libraries.	Y	
R1007.	2. Assume operational responsibilities for all external Storage media management functions, both on-site and off-site, for external Storage media library operations and administration.	Y	
R1008.	3. Mount or initialize external Storage media as necessary to Support operational activities.	Y	
R1009.	4. Retrieve archived external Storage media from on-site and off-site Storage as requested by VITA or VITA Customers.	Y	
R1010.	5. Dispose of retired external Storage media in an environmentally sound manner after purging anyVITA or VITA Customer data, andprovide to VITA or VITA Customers the necessary documentation or certificates that the external Storage media has been disposed.	Y	
R1011.	6. Wipe and erase the data and Configuration information resident in the computer system, Storage components, and/or Devices complying with VITA Rules (e.g., COV SEC 514) and	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
	prior to disposing of Equipment.		
R1012.	7. Operate and Support the media library and library management system.	Y	
R1013.	8. Provide reports of retired and disposed external Storage media as required in the SMM.	Y	
R1014.	9. Support Customers' specific legacy backup systems for recovery of archived tapes or virtual tapes as various legal or legislative holds may surpass the Availability of the physical backup Infrastructure currently being utilized.	Y	
R1015.	10. Maintain a Database cataloging the archival System for the external Storage media library.	Y	
R1016.	11. Restore required files and datasets from external Storage media as required by the SMM.	Y	
R1017.	12. Maintain an existing inventory control system to properly manage external Storage media in Storage and prepare them for shipment to the contingency Site.	Y	
R1018.	13. Assume operational responsibility for off-site media Storage.	Y	
R1019.	14. Store external Storage media and business-recovery-related paper documentation at secure off-site vault Storage. Off-site vault Storage also includes external Storage media business recovery functions, such as packaging and transportation to and from Storage and remote computer recovery centers.	Y	
R1020.	15. Provide off-site vault Storage in a physically and environmentally controlled and protected area with appropriate fire protection and with multiple layers of physical Security designed to prevent unauthorized access.	Y	
R1021.	16. Follow off-site external Storage media storage procedures in the SMM.	Y	
R1022.	**8.2 Backup and Recovery Services**		
R1023.	*Supplier's responsibilities include:*		
R1024.	1. Assume responsibility for Customer system data backup requirements for all tiers of Storage service and local disk, including:	Y	
R1025.	1.1. Off-site vaulting of data	Y	
R1026.	1.2. Cataloging of backups	Y	
R1027.	1.3. Restoring data from the backups	Y	
R1028.	2. Perform system data backup and recovery as required and in accordance with VITA Rules and the SMM.	Y	
R1029.	3. Perform standard backup schedules in accordance with VITA Rules and the SMM.	Y	
R1030.	4. Provide a backup infrastructure that can complete backup within the window defined in the SMM.	Y	
R1031.	5. Ensure backup process does not adversely affect VITA or VITA Customer Services.	Y	
R1032.	6. Provide a data archiving service that supports the retrieval of data from lower Storage tiers.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R1033.	7. The service is able to restore data to any system within the enterprise.	Y	
R1034.	8. The service should include space saving techniques such as de-duplication and compression.	Y	
R1035.	9. The service provides minimal impacts to the system being backed up using techniques such as backup intervals, and Network and CPU throttling.	Y	
R1036.	10. Includes Security features such as access control and encryption.	Y	
R1037.	11. Provides a User interface that allows self-restore, and indicates recent completed backups and the current backup status.	Y	
R1038.	12. The service provides the capabilities to implement data integrity checks and dynamic client load balancing.	Y	
R1039.	13. The service provides functions allowing easy e-discovery for compliance, such as full-text indexing and search, federated search, and Support for legal hold.	Y	
R1040.	14. Support the Commonwealth records retention policies per VITA Rules.	Y	
R1041.	15. Provide capability to backup open files.	Y	
R1042.	16. Collaborate with the MSI to define a process by which designed Users can request recovery of deleted or corrupted files, and document the process in the SMM.	Y	
R1043.	17. Provide Customer the ability to perform ad hoc self-service data or file snapshots and backups for one time or recurring periods.	Y	
R1044.	18. Develop a backup and recovery process and document the process in the SMM; maintain a list of Servers to be included in the regular backup process.	Y	
R1045.	19. Provide Disaster Recovery Services across all platforms per the Commonwealth and VITA formally-defined Disaster Recovery planning requirements (i.e., Business Continuity Plan, annual test plan, infrastructure/facilities to which recovery can be made.)	Y	
R1046.	20. Provide a daily report to VITA, the MSI, and VITA Customers of backup success and failure by filtered Customer.	Y	
R1047.	21. Initiate and complete restoration from backup within time defined within service levels or less from User request.	Y	
R1048.	**8.3 Provisioning and De-Provisioning of Storage**		
R1049.	*Supplier's responsibilities include:*		
R1050.	1. Provide mechanism for Customers to expand or remove Storage Services as needed to meet requirements.	Y	
R1051.	2. Provide an automated workflow for Storage Service provisioning and de-provisioning that integrates with the MSI Service Management Systems.	Y	
R1052.	3. Supplier will adhere to all VITA and VITA Customer Security Policies regarding the destruction	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
	of data after de-provisioning request is authorized.		
R1053.	4. Provide capability to provision Storage that allows VITA and VITA Customers to pay for Storage consumed instead of Storage allocated.	Y	
R1054.	5. Wipe and erase the data and Configuration information resident in Storage, Storage components, and/or Devices complying with VITA Rules prior to removing or reallocating.	Y	
R1055.	**8.4 Security and Data Management**		
R1056.	*Supplier's responsibilities include:*		
R1057.	1. Comply with VITA Rules including Security, data and records management, and electronic records and data archiving.	Y	
R1058.	2. Provide Data management Support including:	Y	
R1059.	2.1. Leverage industry best practices for the management and organization of Customer data.	Y	
R1060.	2.2. Develop and document in the SMM procedures for performing Storage and Data management and archive procedures that meet requirements and conform to defined policies.	Y	
R1061.	2.3. Provide a solution that allows for the archiving of data based upon various criteria such as last accessed date.	Y	
R1062.	2.4. Provide access to data and backups that allows for cost effective Storage.	Y	
R1063.	2.5. Design, document in the SMM, and implement a data lifecycle management plan based on VITA and VITA Customer (e.g., Library of Virginia) requirements or regulations.	Y	
R1064.	2.6. Support data type classification requirements and labeling (e.g., FTI, PCI) in accordance with VITA Rules.	Y	
R1065.	2.7. Provide expedited Support for e-discovery and special legal or legislative requests of data (e.g., FOIA).	Y	
R1066.	**9.0 Network Services Associated with Server/Platform/Storage Services**		
R1067.	*Supplier responsibilities related to Data Center LAN and Network Services includes administration of Network components within any Data Center(s). For Disaster Recovery purposes, one additional physical or virtual Data Center location is required.* *The Commonwealth hosts a multi-tenant Network where each Customer has access to their own*		

Ref#	Requirement	Comply (Y/N)	Supplier Response
	secure segmented Networks, segmented Virtual Routing and Forwarding VRF tables, a shared Network for shared Services, and a DMZ for Internet Services. While it is one Commonwealth Network, each Customer is logically isolated from other Agencies. *The scope is everything up to the core switch within Data Center facilities which includes:* • *Local Area Network Services* • *Networked Appliance Services* • *Network Security Services* • *Load Balancing Services* • *Private Network Services* • *Network Time Services* • *IP address management Services* • *Data Center LAN Performance monitoring and management Services*		
R1068.	**9.1 General Requirements**		
R1069.	*Supplier's responsibilities include:*		
R1070.	1. Act as a single point of contact for the management of the Data Center LAN, including assisting the MSI and other Service Tower Suppliers.	Y	
R1071.	2. In collaboration with the MSI, provide VITA-approved Users, other Service Tower Suppliers and designated Third Party Vendors with technical Support and advice regarding the use and functionality of Data Center LAN Services.	Y	
R1072.	3. Provide highly available redundant Network load balancing Services.	Y	
R1073.	4. Perform load balancing as required by Customers.	Y	
R1074.	4.1. Provide Support for complex load balancing rules. (e.g., Session State, Source IP, Least Connections, round-robin balance, weighted load distribution)	Y	
R1075.	4.2. Provide Support for two-arm (in-line), one-arm, and direct Server response load balancing.	Y	
R1076.	4.3. Provide Support for load balancing SSL termination and pass thru of SSL.	Y	
R1077.	4.4. Implement and maintain the load balancing SSL certificates mandated by Customer.	Y	
R1078.	5. Maintain and Install upgrades, configure and fine-tune Data Center LAN Network operating Software in accordance with SMM.	Y	
R1079.	6. Administer all Data Center LAN required activities, including processing change requests.	Y	
R1080.	7. Provide a fully redundant Network based Architecture (e.g., dynamic routing)	Y	
R1081.	8. Provide for least latency based route selection, where traffic is routed to the 'best' Network	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
	gateway		
R1082.	9. Document all aspects of the Data Center LAN Services in accordance with VITA Rules and the SMM, including:	Y	
R1083.	9.1. Design criteria and standards	Y	
R1084.	9.2. Escalation procedures	Y	
R1085.	9.3. Service acceptance procedures	Y	
R1086.	9.4. Topology documentation	Y	
R1087.	9.5. Contact information	Y	
R1088.	9.6. System inventories	Y	
R1089.	9.7. Disaster Recovery Plans (including Technical Recovery Guides)	Y	
R1090.	10. Document operations Procedures and Services.	Y	
R1091.	11. Maintain Site logs in a centralized location in accordance with VITA Rules and the SMM.	Y	
R1092.	12. Provide Site logs in a portable, industry-standard format in accordance with VITA Rules and the SMM.	Y	
R1093.	**9.2 Planning and Design Services**		
R1094.	*Supplier's responsibilities include:*		
R1095.	1. Collaborate with the MSI, VITA, and the ITISP Governance to analyze the Data Center LAN Service Equipment and Network needs.	Y	
R1096.	2. As directed by the MSI, provide programming, engineering, and design functions for any proposal requested by VITA for new Equipment or changes to the existing Data Center LAN Service environment.	Y	
R1097.	3. Develop and propose new or enhanced plans and designs on an ongoing basis.	Y	
R1098.	4. Provide flexible Network solution (e.g. Software-defined Network (SDN)).	Y	
R1099.	5. Provide plans and design for the following components:	Y	
R1100.	5.1. Overall Network Topology, including the physical and logical layout of the Data Center LANs.	Y	
R1101.	5.2. IP addressing and Device/Host naming schemas.	Y	
R1102.	5.3. Security (e.g. physical, information) compliance.	Y	
R1103.	5.4. Optimal communications protocols within the Data Center LANs as necessary to satisfy VITA's and VITA Customers' business and operational requirements as they evolve.	Y	
R1104.	5.5. Network Equipment.	Y	
R1105.	5.6. Network Software.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R1106.	5.7. Network Appliances.	Y	
R1107.	5.8. Transport Services.	Y	
R1108.	5.9. Network bandwidth and volume assumptions and projections.	Y	
R1109.	5.10. Expected performance and Quality of Service (QoS) based on designs and plans, and minimum performance and QoS expectations.	Y	
R1110.	5.11. Expected Availability, based on designs and plans for redundancy, and minimum availability expectations.	Y	
R1111.	6. Design, implement, and maintain Network Devices to eliminate single points of failure (e.g., routers, switches, load balancers).	Y	
R1112.	7. Provide Network prioritization of traffic. (i.e., QoS)	Y	
R1113.	8. Prevent broadcast congestion and outages.	Y	
R1114.	9. Design and implement segmentation of Equipment, traffic, and design features to sufficiently control and contain traffic levels.	Y	
R1115.	10. Design and implement sufficient redundancy and alternative routing to meet the Service Levels and VITA and VITA Customers' Security and Service Continuity requirements.	Y	
R1116.	11. Work cooperatively with other Integrated Suppliers, Third Party Vendors, VITA, and ITISP Governance to facilitate effective planning and design of the VITA Network.	Y	
R1117.	**9.3 Operations and Maintenance**		
R1118.	*Supplier's responsibilities include:*		
R1119.	1. Install, change, disconnect or remove Data Center LAN Equipment and related Software and Configurations to meet VITA's and VITA Customers' business and Application requirements in accordance with the processes and procedures in the SMM.	Y	
R1120.	2. Implement Data Center LAN connections for all VITA-approved Users, designated Equipment and Applications, other VITA Suppliers and designated Third Party Vendors, as required.	Y	
R1121.	3. Implement Data Center LAN Segments as requested.	Y	
R1122.	4. Implement load balancing Configurations as requested (e.g., keep alive, rules, session state).	Y	
R1123.	5. Assign and Implement IP address ranges as requested.	Y	
R1124.	6. Implement routing and filtering as requested.	Y	
R1125.	7. Maintain Networking environment and upgrade Data Center LAN Services as required to meet VITA and VITA Customer business and Application requirements, and in compliance with approved Refresh targets.	Y	
R1126.	8. Plan, Install, operate, and maintain all applicable Data Center LAN Services/Equipment.	Y	
R1127.	9. Assist the MSI, Customers and authorized Third Party Vendors with end-to-end bandwidth	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
	analysis as requested.		
R1128.	10. Provide secure, encrypted Connectivity for Users of Data Center Network Services in accordance with VITA Rules and the SMM.	Y	
R1129.	10.1. Employ appropriate encryption measures (e.g., IPSec, AES, Blowfish, ECC)	Y	
R1130.	## 9.4 Monitoring		
R1131.	*Supplier's responsibilities include:*		
R1132.	1. Configure, Implement, and Maintain the appropriate Data Center LAN Equipment monitoring.	Y	
R1133.	2. Monitor and manage continuous performance of Data Center LAN Systems/Equipment.	Y	
R1134.	3. Use intelligent Network Devices, Systems, and Tools to effectively monitor Data Center LANs remotely.	Y	
R1135.	4. Test Data Center LAN Equipment after implementation to include remote monitoring through agents and monitoring systems.	Y	
R1136.	5. Monitor alarms sent by Customer Network Systems; perform emergency and routine service in response to critical and non-critical Incidents.	Y	
R1137.	6. Integrate alerting into Commonwealth Joint Operations Center provided by the MSI.	Y	
R1138.	7. Integrate logging into Commonwealth Security Information and Event Management (SIEM).	Y	
R1139.	8. Provide automatic notification of issues identified by the monitoring solution in accordance with VITA Rules and the SMM.	Y	
R1140.	## 9.5 Network-based Appliance Services		
R1141.	*Supplier's responsibilities include:*		
R1142.	1. Provision, Install, operate, Support, and manage multi-tenant segmented Network based Appliances (e.g. Network load balancers WAN Application acceleration systems) as directed by the MSI.	Y	
R1143.	2. Provide and support the tools that integrate with the MSI's SMS and that provide Customers with access to User information and administration capabilities as required.	Y	
R1144.	3. Provide for the partitioning of the Service such that multiple Customers can securely share the use of Network Appliances, including the Support of multiple organizations and sub-organizations.	Y	
R1145.	4. Provide Reports on the usage of Network Appliances in accordance with the SMM.	Y	
R1146.	5. Provide additional detailed Reporting for auditing and compliance.	Y	
R1147.	6. Provide all technical system Support and Reporting for operations including:	Y	
R1148.	6.1. Storage management for all media	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R1149.	6.2. System programming	Y	
R1150.	6.3. Capacity planning	Y	
R1151.	6.4. Performance analysis and tuning	Y	
R1152.	7. Install and maintain all system Software products.	Y	
R1153.	8. Develop and Install productivity tools/utilities, and perform all required operational modifications for the efficient and proper delivery of the Services.	Y	
R1154.	9. Provide regular monitoring and Reporting of performance, utilization, and efficiency in accordance with VITA Rules and the SMM.	Y	
R1155.	10. As directed by the MSI, provide technical advice and Support (e.g. Architecture) to VITA, VITA Customers, other Service Tower Suppliers and specific Third Party Vendors, as required.	Y	
R1156.	11. Supplier responsibilities include providing, Installing and utilizing tools and processes to allow automated and remote systems management of Network Appliances. The outcome of all activities will be made available to VITA and VITA Customers upon request via the MSI SMS. Such tools and processes will include:	Y	
R1157.	11.1. Administration, management and Configuration	Y	
R1158.	11.2. License management tools	Y	
R1159.	11.3. Performance measurement and tuning	Y	
R1160.	11.4. System monitoring and controls	Y	
R1161.	11.5. Disaster Recovery, Backup/Recovery, and Business Continuity	Y	
R1162.	11.6. Automatic alerting to Support automated Incident creation and notification of affected VITA Customer	Y	
R1163.	11.7. Integration into SIEM and SMS tools and MSI Joint Operations Center	Y	
R1164.	11.8. Configuration discovery	Y	
R1165.	11.9. Patch management	Y	
R1166.	**9.6 Third Party Network Services**		
R1167.	*Supplier's responsibilities include:*		
R1168.	1. Provide an isolated / separate physical area for Third Party communication Equipment.	Y	
R1169.	2. Provide alog of allpersonnelthat enter the area, the time of entry, the time of exit, andthe reason for access	Y	
R1170.	3. Provide the capability to establish a separate demarcation point (demarc) and demarc connection for each vendor	Y	
R1171.	4. Provide cabinets with unique keyed locking mechanism to contain the vendor's communication Equipment.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R1172.	5. Provide labels or other methods to clearly mark each cabinet as to the identity of the contained vendor	Y	
R1173.	6. Provide independent Local Area Network connections for each vendor communication cabinet	Y	
R1174.	7. Provide the capability to separate each vendor's Local Area Network traffic from any other vendor traffic using either physical or logical Network capabilities	Y	
R1175.	8. Provide the capability to separate the Third P{arty communication vendor's Local Area Network traffic from the rest of the facility using either physical or logical Network capabilities	Y	
R1176.	9. Provide fault-tolerant power feeds to each vendor cabinet	Y	
R1177.	10. Provide adequate cooling and power to each vendor cabinet	Y	
R1178.	11. Provide the required cabling between the vendor's cabinet and the vendor's demarcation point.	Y	
R1179.	12. Provide personnel to escort the Third Party communication vendor to the correct Equipment cabinet if required for Installation or maintenance of Equipment.	Y	
R1180.	9.7 Network Time Services		
R1181.	Supplier's responsibilities include:		
R1182.	1. Provide Network time source capable of stratum 1 or better.	Y	
R1183.	2. Provide Network Time Protocol (NTP) Services to VITA and VITA Customer Networks. Supplier will provide VITA with a Stratum 1 time source to synchronize the VITA Network.	Y	
R1184.	3. Ensure all VITA Network Services and systems are using the appropriate Network timing source and passing Network timing to other Services.	Y	
R1185.	4. Make Network timing available to other VITA Suppliers.	Y	
R1186.	9.8 IP Address Management Services		
R1187.	Supplier's responsibilities include:		
R1188.	1. Provide IP address management in accordance with VITA Rules and the SMM.	Y	
R1189.	2. Provide a central Support model of management.	Y	
R1190.	3. Manage subnets IP address ranges and overall IP addresses schema.	Y	
R1191.	4. Provide IP address Reporting and auditing.	Y	
R1192.	5. Provide new IP address request management Services.	Y	
R1193.	6. Assign new and existing IP addresses as required.	Y	
R1194.	7. Resolve any IP address conflicts.	Y	
R1195.	8. Administer policies within Data Centers that Support consistencies throughout the VITA and VITA Customer Networks.	Y	
R1196.	9. Interface and integrate with other Suppliers of Network Services (e.g. DNS).	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R1197.	10. Appropriately Support the delivery of Services by other VITA Suppliers and Third Party Vendors.	Y	
R1198.	**9.9 Data Center LAN Performance Monitoring and Management Services**		
R1199.	*Supplier's responsibilities include:*		
R1200.	1. Monitor and manage continuous end-to-end performance of the Data Center Networks, including:	Y	
R1201.	1.1. Monitor the VITA Network at demarcations to be agreed on by VITA to measure, monitor, and Report end-to-end performance of the Data Center LAN	Y	
R1202.	1.2. Monitor the level and quality of service of the Data Center LAN for data including monitoring compliance with Service Levels.	Y	
R1203.	1.3. Monitor and manage the Data Center LANs for service degradation, including detection, isolation, diagnosis, and correction of Incidents on a 24x7x365 basis.	Y	
R1204.	1.4. Provide all necessary monitoring, diagnostic, and maintenance systems and Software to meet monitoring and management requirements in accordance with VITA Rules and the SMM.	Y	
R1205.	1.5. Identify actual and potential bottlenecks that affect the Services.	Y	
R1206.	1.6. Perform necessary daily diagnostic routines.	Y	
R1207.	1.7. Employ Network management system tools to monitor Events that exceed design thresholds, as well as:	Y	
R1208.	1.7.1. Use the tools to provide automated alarms and indication of VITA and VITA Customer Network Incidents when thresholds are exceeded.	Y	
R1209.	1.7.2. Integrate the tools to automatically generate an Incident within the Incident Management System, Joint Operations Center and SIEM tools.	Y	
R1210.	1.8. Provide Reporting and corrective action procedures in response to design thresholds being exceeded.	Y	
R1211.	1.9. Execute corrective action procedures when design thresholds are exceeded in accordance with VITA Rules and the SMM.	Y	
R1212.	1.10. Notify the MSI and VITA of any need for an unscheduled interruption.	Y	
R1213.	2. Report to the MSI on Data Center LAN performance, resource shortages, utilization statistics and trends in accordance with VITA Rules and SMM.	Y	
R1214.	3. Integrate with the MSI-provided Customer Portal to provide an easily accessible report on the operational status of the Data Center LAN in accordance with the SMM.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R1215.	4. In accordance with the SMM, optimize and improve the performance and design of the Data Center LAN using data gathered from performance monitoring and forecasting activities including:	Y	
R1216.	4.1. Perform regular optimization analyses on at least a quarterly basis, and prior to and following any transitions or changes.	Y	
R1217.	4.2. Optimize cost-effectiveness and cost-efficiency, without sacrificing performance or the ability to meet the Service Levels.	Y	
R1218.	4.3. Use modeling and other analysis tools where applicable to determine methods of improving the performance.	Y	
R1219.	4.4. Assess and implement alternate methods and procedures to reduce errors and downtime.	Y	
R1220.	4.5. Collaborate with the MSI to develop and deliver optimization plans and schedules to VITA and ITISP Governance to address issues identified through trend analysis and standardized Reporting.	Y	
R1221.	**9.10 *Intentionally Left Blank***		
R1222.	**9.11 *Intentionally Left Blank***		
R1223.	**9.12 Remote Access Services**		
R1224.	**9.12.1 General Requirements**		
R1225.	*Supplier's responsibilities include:*		
R1226.	1. Act as a single point of contact for the management of the Remote Access Services.	Y	
R1227.	2. Provide for secure, reliable and highly available remote access connectivity into Data Center core Networks from other Networks, VITA Customer Networks, the public Internet and other industry standards-based Third Party Vendor Networks.	Y	
R1228.	3. Provide mechanisms to meet multiple agency Security and Application requirements for remote access.	Y	
R1229.	4. Integrate with MSI to provision Service Requests through online self-service tools.	Y	
R1230.	5. Partition the Remote Access Service such that multiple VITA Customers can securely share the Remote Access Service.	Y	
R1231.	5.1. Support multiple organizations and sub-organization relationships.	Y	
R1232.	5.2. Support VITA Customer-specified access control policies.	Y	
R1233.	5.3. Support policy enforcement of access authority.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R1234.	6. Authorize and restrict access based on multiple factors (e.g. RSA token, certificate, User name, User category, organization, Device type and Application).	Y	
R1235.	7. Provide for detailed reporting to meet VITA and VITA Customer audit and compliance requirements.	Y	
R1236.	8. Provide fixed IP addressing capabilities, such that Users receive the same address each time they connect to the Network as required.	Y	
R1237.	9. Provide the capabilityfor the use of the Remote Access Services by Third Party Vendors who provide Support for Data Center Services via an Internet connection.	Y	
R1238.	10. Provide solutions that are transport and access type independent.	Y	
R1239.	**9.12.2 Remote Access and VPN Security**		
R1240.	*Supplier's responsibilities include:*		
R1241.	1. Secure remote access via asecure channel (VPN), using strong cryptography and Security protocols (e.g. SSL/TLS, IPSEC, SSH) to safeguard sensitive data during transmission over public Networks.	Y	
R1242.	1. Verify that only trusted keys and/or certificates are accepted.	Y	
R1243.	2. Assign all Users a unique ID before allowing them to access system components or data.	Y	
R1244.	3. Incorporate two-factor authentication for remote access (Network-level access originating from outside the Network) to theNetwork.	Y	
R1245.	4. Ensure that all system components and Software are protected from known vulnerabilities by having the latest vendor-supplied Security Patches Installed.	Y	
R1246.	5. Install critical Security Patches within one month of release	Y	
R1247.	6. Implement automated audit trails for all system components.	Y	
R1248.	7. Secure audit trails so they cannot be altered.		
R1249.	**9.12.3 Remote User VPN**		
R1250.	*Supplier's responsibilities include:*		
R1251.	1. Provide for Site-to-Site and client-to-Site connections that enable fast, reliable and secure access into VITA Customer specified LAN within the Data Center(s) per VITA Customer requirements.	Y	
R1252.	2. Provide, Support, Install and manage single-factor and multi-factor authentication mechanisms.	Y	
R1253.	3. Provide, Support, Install and manage remote access Software clients for client-to-Site usage.	Y	
R1254.	**9.12.4 Remote User VPN (clientless)**		
R1255.	*Supplier's responsibilities include:*		
R1256.	1. Provide secure remote access, including clientless access to authorized web Applications, client/server Applications, Voice, and file sharing to VITA and VITA Customers, and designated	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
	Third Party Vendors.		
R1257.	2. Provide the capability to use certificate based VPN authentication.	Y	
R1258.	3. Provide a mechanism for authorized access using Internet and VITA WAN connections which require username/password or other credentials for authentication.	Y	
R1259.	4. Ensure the service has no requirements for Software to be Installed or maintained on any end-User computing Device.	Y	
R1260.	5. Ensure the service has no requirements for specialized Equipment at the VITA Customer premises.	Y	
R1261.	6. Enable secure access from public End-User computing Devices.	Y	
R1262.	7. Enable secure access through firewalls that do not permit IPSec traffic.	Y	
R1263.	**9.13 Network Switching in Data Center**		
R1264.	*Supplier's responsibilities include:*		
R1265.	1. Develop and implement approved Data Center LAN strategies in Support of VITA and VITA Customers' business objectives and in accordance with Change Management Procedures.	Y	
R1266.	2. Provide VITA-approved Users, other VITA Suppliers and designated Third Party Vendors with technical Support and advice regarding the use and functionality of Data Center LAN Services.	Y	
R1267.	3. Analyze and propose cost-effective VITA and VITA Customer Data Center LAN solution alternatives.	Y	
R1268.	4. Provide single-site and multi-site highly available redundant Network load balancing Services.	Y	
R1269.	5. Perform load balancing as required by VITA and VITA Customers.	Y	
R1270.	5.1. Support complex load balancing rules. (e.g., Session State, Source IP, Least Connections, round-robin balance, weighted load distribution)	Y	
R1271.	5.2. Support two-arm (in-line), one-arm, and direct Server response load balancing.	Y	
R1272.	5.3. Support load balancing SSL termination and pass thru of SSL.	Y	
R1273.	6. Maintain and Install upgrades, configure and fine-tune Data Center LAN Network operating Software in accordance with SMM.	Y	
R1274.	7. Administer all Data Center LAN requirements and activities, including processing change requests.	Y	
R1275.	8. Provide a fully redundant Network based Architecture (e.g., dynamic routing)	Y	
R1276.	9. Provide for latency based route selection, where traffic is routed to the 'best' Network gateway	Y	
R1277.	10. Document operations Procedures and Services.	Y	
R1278.	11. Update Site logs.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R1279.	**10.0 Disaster Recovery Services**		
R1280.	*The supplier is expected to implement new DR Service models for the Customers to migrate to over time.* *For those new models, the Commonwealth will accept an offering of Cloud-based DR Infrastructure as a service (DRaaS) or Recovery as a service (RaaS) as long as required RPO/RTO requirements can be satisfied.* *The Supplier is responsible for providing these Infrastructure Services but the MSI will provide the management, planning, strategy, and testing coordination Services associates with Service Continuity Planning.*		
R1281.	**10.1 General Services**		
R1282.	*Supplier responsibilities include the following:*		
R1283.	1. Allow VITA or VITA Customers to declare individual declaration of disaster based upon Customer Critical Business Functions.	Y	
R1284.	2. Provide Infrastructure that will Support multiple Tiers based on Recovery Time Objectives and Recovery Point Objectives.	Y	
R1285.	3. Migrate existing Customers that subscribe to current Disaster Recovery Service to the new Infrastructure.	Y	
R1286.	4. Provide sufficient bandwidth between locations toaccommodate required Service Levels.	Y	
R1287.	5. Use multiple Network carriers or communication service providers to assure highly available Networking and wide-area communications between primary and DR Data Centers.	Y	
R1288.	6. Maintain unique Network/TCP address schemes to facilitate Network connectivity on demand to facilitate a Customer by Customer basis disaster recovery approach.	Y	
R1289.	7. Configure virtual Hosts between locations to allow for dynamic movement of Server Instances from one location to the other (e.g., VMotion)	Y	
R1290.	8. Provide real-time, buffered Storage data replication between locations.	Y	
R1291.	9. Integrate with all Suppliers via the MSI to ensure seamless implementation of DR Services for VITA and VITA Customers.	Y	
R1292.	10. Provide planning and scheduled testing of DR Services withMSI, VITA, and VITA Customers.	Y	
R1293.	11. Monitor Security trends and cyber threats to prevent the replication of compromised data to Disaster Recovery locations.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R1294.	12. Leverage virtualization to automate DR Infrastructure as much as possible or where applicable.	Y	
R1295.	13. Provide VM replication or image backup/restore for system state protection (which ensures that system Configurations stay in sync) and establish a robust Patch management process for their Physical standby Servers where applicable.	Y	
R1296.	14. Utilize Network virtualization and location-independent Networking mechanisms, instead of stretched VLANs, to improve DR Network resiliency where applicable.	Y	
R1297.	15. Automate DR by using run book or DR orchestration automation tools (e.g. VMware's SRM).	Y	
R1298.	16. Provide information on Incidents and outages that could escalate to a declared disaster.	Y	
R1299.	17. Verify there is sufficient spare Networking and compute capacity to run all Services at one site when in active-active mode.	Y	
R1300.	18. Perform DR Site capacity planning.	Y	
R1301.	19. Performing tests of Fail Back activities.	Y	
R1302.	20. Perform Change Management on changes that are required for maintenance and that occur during the execution of the DR Plan.	Y	
R1303.	21. Evaluate Cloud-based DR in the DR strategy development process where feasible.	Y	
R1304.	22. Define the roles, responsibilities and reporting hierarchy of the different Supplier DR teams and members.	Y	
R1305.	23. Ensure there is no Single Point of Failure (SPOF) regarding DR personnel. Alternate team members should be identified.	Y	
R1306.	24. Conduct scheduled training of DR staff as applicable.	Y	
R1307.	25. Provide VM replication or image backup/restore for system state protection	Y	
R1308.	26. Coordinate through MSI maintenance of DR and standby infrastructure to ensure consistent Configuration.	Y	
R1309.	27. Supply all the necessary qualified resources to Support the DR Services.	Y	
R1310.	28. Maintain communication on status of DR with MSI, VITA, and VITA Customers.	Y	
R1311.	**10.2 Disaster Recovery Planning and Testing Support**		
R1312.	*Supplier's responsibilities include:*		
R1313.	1. In collaboration with the MSI, develop and manage a strategy to ensure that RTOs and RPOs are met.	Y	
R1314.	2. Support MSI, VITA, and VITA Customers in creating and maintaining a comprehensive Disaster Recovery procedure that provides specific work instructions outlining the procedures for planning, testing, declaration, implementation, failback, post-mortem and continuous improvement processes.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R1315.	3. Perform DR Site capacity planning.	Y	
R1316.	4. Perform tests of Fall Back activities.	Y	
R1317.	5. Perform Change Management on changes that are required for maintenance and that occur during the execution of the DR Plan.	Y	
R1318.	6. Maintain the DR run books in a secure remote location that is accessible outside the primary or alternate Data Center locations.	Y	
R1319.	7. Coordinate with MSI, VITA and VITA Customers to receive updates to business requirements and threats as to augment or modify the DR plans. Updates will be in accordance with the procedures outlined in the SMM.	Y	
R1320.	8. Provide DR testing status to the MSI for all IT Applications including when a DR plan was last exercised and the status of that test.	Y	
R1321.	9. Support a comprehensive DR testing schedule.	Y	
R1322.	10. Provide input to the DR strategy as required by the MSI, VITA, and VITA Customers.	Y	
R1323.	11. Recommend solutions to close gaps in the lessons learned Report.	Y	
R1324.	12. As Infrastructure or Applications change work with MSI, VITA, and VITA Customers to update DR plans.	Y	
R1325.	13. Provide all necessary qualified resource to Support DR planning, improvement, and testing, ensuring no single point of failure of DR personnel.	Y	
R1326.	14. Define the Supplier roles, responsibilities and reporting hierarchy of the different DR teams and members, and maintain reporting structure diagrams.	Y	
R1327.	15. Conduct scheduled training of DR staff as applicable.	Y	
R1328.	**11.0 Security Functions**		
R1329.	**11.1 General Integration**		
R1330.	*Supplier's responsibilities include:*		
R1331.	1. Coordinate with Managed Security Supplier via the MSI to support Managed Security platform toolset within the Managed Environment	Y	
R1332.	2. Install, operate, Configure, Support, and manage Managed Security platform toolset in the environment in accordance with the SMM.	Y	
R1333.	3.		
R1334.	4. Communicate and report any Intrusion detected in the environment in accordance with the SMM.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R1335.	**11.2 Endpoint Security**		
R1336.	*This section addresses requirements for end points of enterprise environment. These controls may extend to any Device including but not limited to Servers, desktop, mobile Devices, etc.*		
R1337.	**11.2.1 Full Disk Encryption**		
R1338.	*Supplier's responsibilities include:*		
R1339.	1. Implement full disk encryption as required by VITA Rules and in accordance with the SMM (using VITA-provided tools).	Y	
R1340.	2.		
R1341.	**11.3 Data Security**		
R1342.	*Data Security includes Security controls that are intended to protect Commonwealth data. Data may traverse or be stored within the environment and outside the environment. The controls included in this section focus on protecting the data itself with controls such as encryption.*		
R1343.	**11.3.1 Enhanced Database Security (EDS) Service**		
R1344.	*Supplier's responsibilities include:*		
R1345.	1. Provide enhanced Security Services for specific Database Instances to minimize Security concerns due to out of Support Database Software.	Y	
R1346.	2. Implement the EDS solution to ensure that it does not modify the monitored Databases and will have minimal impact on Database performance.	Y	
R1347.	3. Perform EDS Configuration Updates in accordance with the SMM.	Y	
R1348.	**11.4 Application Security**		
R1349.	*Application Security controls focus on applying Security measures that impact Applications. The controls are intended to provide additional Security for circumstances when the Security controls are needed as well as when there are compensating controls required.*		
R1350.	***11.4.1 Intentionally Left Blank***		
R1351.	**12.0 Enhanced Services**		
R1352.	*The Commonwealth is interested in any other Services that would provide additional value to the overall offering.*		
R1353.	**12.1 Cloud-Based Services**		
R1354.	*Suppliersmaypropose Cloud-based Servicestoprovide platform and infrastructure Servicesto:*		

Ref#	Requirement	Comply (Y/N)	Supplier Response
	• *Supplement Platform Services provided as part of initial the takeover of current Server and Storage Services* • *Support migration from current Services to to-be Services* • *As part of supplier's to-be Services solution* *Supplier proposed Services should include:* • *A baseline level of Security management, including encryption and isolation from other tenant activities.* • *A baseline level of Network control (e.g., VLAN mapping, firewalls, overall Supplier intrusion detection/prevention)* • *Provide segregation from other tenants and maintain artifacts (e.g., architectural, design, and policies) that can prove and demonstrate such segregation. This applies to both private and Public Cloud Services.* *Note: Cloud brokerage Services, Hybrid Cloud management tools, and consolidation strategies and Services will be provided by the MSI. The connection (i.e. "pipe") from the Data Center(s) to the Cloud vendors will be provided by the Network Supplier.* *Supplier's responsibilities include:*		
R1355.	1. Document deployment models and compliance to the following NIST Cloud framework characteristics including:	Y	
R1356.	1.1. On-Demand Self-Service	Y	
R1357.	1.2. Broad Network Access	Y	
R1358.	1.3. Resource Pooling	Y	
R1359.	1.4. Rapid Elasticity	Y	
R1360.	1.5. Measured Service	Y	
R1361.	2. Provide in detail the measures Cloud service vendor takes to protect data. Includes how the vendor holds, protects, and disposes of data following completion of any contract Services.	Y	
R1362.	3. Comply with NIST and any other relevant industry standards for supporting different types of data.	Y	
R1363.	4. Ensure that the Storage, Network and processing environment is secure and in compliance to a standard at least equivalent to the Commonwealth SEC525 Security standard. Supplier should also provide a mechanism to Support independent verification.	Y	
R1364.	5. Maintain Security certifications (e.g. CISSP, Certified Cloud Security Professional (CCSP)).	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R1365.	6. Limit all traffic to and from the hosting environment to the continental USA unless otherwise approved by VITA, ITISP Governance, and VITA Customers.	Y	
R1366.	7. Maintain Security practices to secure data and Applications from threats from outside the service center as well as other Customers Colocated within the same service center.	Y	
R1367.	7.1. Provide self-service stateful-firewall	Y	
R1368.	7.2. Provide Distributed denial-of-service attack mitigation	Y	
R1369.	7.3. Provide multi-factor authentication	Y	
R1370.	7.4. Log all Customer changes and provisioning actions	Y	
R1371.	7.5. Log all administrative access	Y	
R1372.	7.6. Retain logs for VITA and VITA Customer specified periods	Y	
R1373.	7.7. Issue administrative credentials for VMs only in a secure fashion	Y	
R1374.	7.8. Perform background checks on all personnel who have physical or electronic access to Facilities that house Infrastructure or the Infrastructure itself used to host VITA and VITA's Customers data and Applications.	Y	
R1375.	7.9. All Storage to be de-provisioned or decommissioned per VITA Rules.	Y	
R1376.	7.10. Provide a mechanism for policy based Network and Storage Configurations	Y	
R1377.	7.11. Provide a mechanism for Network segregation internally within the service to enable consumer systems to be segmented according to VITA's criteria of data classification or Security zones.	Y	
R1378.	7.12. Provide a mechanism for Customers to define firewall rules for communications between the different Network segments.	Y	
R1379.	7.13. Provide a mechanism for both encryption in transit and encryption at rest.	Y	
R1380.	7.14. Provide the ability for VITA or VITA Customers to manage the Security keys used to encrypt data in transit and at rest	Y	
R1381.	7.15. Provide secure data erasure for both Storage and memory before resources are re-assigned to another tenant per VITA Rules.	Y	
R1382.	7.16. Provide amechanism for Network isolation controlsfor both inbound and outbound traffic	Y	
R1383.	8. Ensure data confidentiality standards and practices are in place to prevent of exposure to unauthorized personnel, as well as to manage and review access that administrators have to stored data.	Y	
R1384.	9. Maintain and provide when requested, a list of the Third Party attestations, reports, Security credentials (e.g., FedRAMP), and certifications relating to data Security, integrity, and other controls.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R1385.	10. Document and provide when requested, logging processes that include the types of Services and Devices logged; the Event types logged; and the information fields.	Y	
R1386.	11. Restricts visibility of Cloud hosted data and documents to specific Users or groups.	Y	
R1387.	12. Document and provide when requested, the notification process in the event of a Security Incident, including relating to timing, Incident levels.	Y	
R1388.	13. Provide Security controls, both physical and virtual Zones of Control Architectures (ZOCA), used to isolate hosted Servers.	Y	
R1389.	14. Provide Security Technical Reference Architectures that Support Infrastructure as a Service (IaaS), Software as a Service (SaaS), and Platform as a Service (PaaS)	Y	
R1390.	15. Manage the end of life activities for closing down a service in accordance with the SMM. This includes:	Y	
R1391.	15.1. Safely de-provisioning before or after contract termination	Y	
R1392.	15.2. Maintaining Security of the data during this phase of an SLA	Y	
R1393.	15.3. Providing redundancy during migration when requested or needed	Y	
R1394.	15.4. Providing data portability during migration.	Y	
R1395.	16. Perform an orderly return of data back to the Customer when requested.	Y	
R1396.	17. Provide backup and restore Services.	Y	
R1397.	18. Deploy standard encryption technologies and options to protect sensitive data (while in transit or at rest), appropriate to the service models provided.	Y	
R1398.	19. Dispose and confirm destruction of data when requested by VITA and VITA Customers per approved procedures and processes.	Y	
R1399.	20. Maintain and provide when requested, procedures and schedules for any planned Downtime.	Y	
R1400.	21. Document and provide as requested, compliance with the Cloud Controls Matrix for the three levels below:	Y	
R1401.	21.1. Level 1 CSA STAR Registry Self-Assessment	Y	
R1402.	21.2. Level 2 CSA STAR Registry Assessment Certification	Y	
R1403.	21.3. Level 2 CSA STAR Registry Attestation	Y	
R1404.	22. Provide and meet Recovery Point Objectives (RPO) and Recovery Time Objectives (RTO).	Y	
R1405.	23. Apply legal retention periods and disposition by VITA or VITA's Customer policy and/or legal requirements in accordance with the SMM.	Y	
R1406.	24. Provide potential mitigation strategies for any known inherent Disaster Recovery risks.	Y	
R1407.	25. Provide multiple Data Centers, each of which Supports redundancy, failover capability, and the ability to run large scale Applications independently in case one Data Center is lost.	Y	
R1408.	26. Identify any infrastructure that is outside of the United States.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R1409.	27. Follow the Information Systems Audit and Control Association's (ISACA) 'Guiding Principles for Cloud Computing Adoption and Use'.	Y	
R1410.	28.		
R1411.	29. Provide VITA and VITA Customers with a sandbox (test environment) to enable proof of concepts quickly and inexpensively (e.g., SaaS back office solutions, SalesForce, MS Dynamics, QuickBooks Enterprise.)	Y	
R1412.	30. Comply with, provide or support the following principles:	Y	
R1413.	30.1. In coordination with the MSI, measured continual improvement is demonstrated within all Services and improvements are communicated to the customers.	Y	
R1414.	30.2. Customer view is of an infinite pool of capacity with continuous availability of Services.	Y	
R1415.	30.3. Resource usage is continually optimized and human involvement is minimized as Services evolve.	Y	
R1416.	30.4. A holistic approach design to favor resiliency over redundancy, foster predictability, build in a percentage of the resource failure that can occur before Services are impacted.	Y	
R1417.	30.5. Portal to Services provides easy to use and seamless user interface.	Y	
R1418.	30.6. Use of commodity physical Hardware.	Y	
R1419.	30.7. Infrastructure is virtualized and elastic.	Y	
R1420.	30.8. Shared resources are partitioned and support secure multi-tenancy.	Y	
R1421.	30.9. Service cost is based on consumption (pay for use) and is transparent.	Y	
R1422.	30.10. Security is managed and includes identity management.	Y	
R1423.	**12.2 Analytics Platform Service**		
R1424.	*The Analytics Platform Service may consist of the following components:* • *Big Data (e.g., Hadoop, MapReduce)* • *Business Intelligence* • *Predictive and Prescriptive Analytics* • *Statistical Analysis and Simulation* • *Data Governance* • *Data Warehouse* • *Geospatial Analytics (e.g. ESRI, GIS)* *The Commonwealth is also interested in techniques such as removing Personal Identified Information (PII) using technologies that that enable analysis of diverse depersonalized data sets*		

Ref#	Requirement	Comply (Y/N)	Supplier Response
	(e.g., anonymization and resolution, masking/hashing). Supplier's responsibilities include:		
R1425.	1. Provide Analytics Platform Service component Configuration and Support Services.	Y	
R1426.	2. Provide an Analytics Platform Service Center of Excellence or Competency Center to Support VITA and its Customers.	Y	
R1427.	3. Install, modify, Configure, maintain, Support, and administer Analytics Platform Service component Software as required.	Y	
R1428.	4. Ensure the Installation, maintenance and Configuration of Analytics Platform Service component Software Patchesfor On Premise/Colocated service components.	Y	
R1429.	5. Assist in the testing associated with Patches and Security Updates to Analytics Platform Service component Software Releases for On Premise/Colocated service components.	Y	
R1430.	6. Maintain accurate documentation on the logical Configuration of the Analytics Platform Service components.	Y	
R1431.	7. Provide high Availability and Business Continuity Service as required.	Y	
R1432.	8. Provide Level 2 and Level 3 technical Support for Analytics Platform Service on all technical platforms.	Y	
R1433.	9. Perform backup and recovery activities.	Y	
R1434.	10. Collect and analyze performance and utilization data and tune the Analytics Platform Service to maintain efficiency.	Y	
R1435.	11. Monitor and tune transaction load balancing.	Y	
R1436.	12. Provide VITA and VITA Customer environment isolation as required to meet VITA Rules.	Y	
R1437.	**12.3 Electronic Records Management Service**		
R1438.	Records management refers to a set of activities required for systematically controlling the creation, distribution, use, maintenance, and disposition of recorded information maintained as evidence of business activities and transactions. The Electronic Records Management Service can be hosted by: • On Premise/Colocated – traditional hosting or COV new Private Cloud • Off Premise – community or Public Cloud with appropriate approved Security controls in place Supplier's responsibilities include		

Ref#	Requirement	Comply (Y/N)	Supplier Response
R1439.	1. Provide Electronic Records Management Service	Y	
R1440.	2. Provide Configuration and Support Services.	Y	
R1441.	3. Configure, Support, and administer Electronic Records Management Service Software as required.	Y	
R1442.	4. Maintain accurate documentation on the logical Configuration of the Electronic Records Management Service.	Y	
R1443.	5. Provide high Availability and Business Continuity Services as required.	Y	
R1444.	6. Provide Level 2 and Level 3 technical Support for the Electronic Records Management Service on all technical platforms.	Y	
R1445.	7. Perform backup and recovery activities.	Y	
R1446.	8. Collect and analyze performance and utilization data and tune the Electronic Records Management Service to maintain efficiency.	Y	
R1447.	9. Monitor and tune transaction load balancing.	Y	
R1448.	10. Provide VITA and VITA Customer environment isolation as required to meet VITA Rules and in accordance with the SMM.	Y	
R1449.	**12.4 *Intentionally Left Blank***		
R1450.	**12.5 Additional Database Services**		
R1451.	*Supplier could provide additional Database administration Services including assistance with Database design and development Services as a separate level of service.* *VITA Customers have expressed interest in having DBaaS for the most common Database platforms (e.g, SQL Server, Oracle, Oracle RAC, MySQL) and taking advantage of modern DBaaS capabilities (e.g., self-provisioning, elasticity).*		
R1452.	**12.5.1 Base Database Support**		
R1453.	*Supplier's responsibilities include:*		
R1454.	1. Plan for Changes in the size of Databases that result from business growth and Project implementation based on information supplied by VITA and its Customers, and review plans with the MSI, VITA, and ITISP Governance on a regular basis for comment and Approval.	Y	
R1455.	2. Correct out-of-capacity situations caused by unusual activities in a timely manner (e.g., dataset or table space capacity events, full log files.)	Y	
R1456.	3. Proactively monitor and prevent out-of-capacity situations (e.g., dataset or table space capacity events, full log files.)	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R1457.	4. Develop, document, and maintain physical Database Support and management standards and Procedures based on industry best practices as well as VITA and its Customers' needs.	Y	
R1458.	5. Define Database creation, Configuration, Upgrade, Patching and Refresh requirements	Y	
R1459.	6. Install, Configure, maintain, and monitor Database management systems.	Y	
R1460.	7. Create Databases and Database System Instances to Support VITA and its Customers.	Y	
R1461.	8. Create scheduled and on-demand Database snapshots and clones.	Y	
R1462.	9. Provide Databases with High Availability as defined by business requirements.	Y	
R1463.	10. Assist VITA and VITA Customers with Database management system version Upgrades and migrations.	Y	
R1464.	11. Collaborate with the MSI to assist Customers with determining which Database Service best meets the Customer's requirements.	Y	
R1465.	12. Collaborate with the MSI to assist Customers with determining the feasibility and implementation of high Availability Databases.	Y	
R1466.	13. As directed by the MSI, provide data dictionary expertise, data assistance, data warehouse metadata definition, data mapping functions and creation of data cubes for VITA and eligible VITA Customers' Application developers.	Y	
R1467.	14. Install, maintain, and Support Database Software.	Y	
R1468.	15. Maintain Databases to meet the Service Levels and other performance standards, to maximize efficiency, and minimize outages.	Y	
R1469.	16. Perform control functions to Support existing Systems as of the Effective Date, as well as any planned new Systems development.	Y	
R1470.	17. Implement and administer appropriate Database management tools across all Database Instances (e.g., data masking tools, Redgate SQL Compare.)	Y	
R1471.	18. Performance metrics and historical data must be available for trending and reporting over a minimum of 6 months and be available via the MSI-provided Customer Portal.	Y	
R1472.	19. Provide physical Database Management Support.	Y	
R1473.	20. Test and implement Database Environment Changes in accordance with the SMM.	Y	
R1474.	21. Maintain consistent Database parameters and System settings across all like Instances.	Y	
R1475.	22. Maintain Database consistency in accordance to the established Software Development Lifecycle.	Y	
R1476.	23. Ensure Database consistency via toolsto monitor, predict, and prevent Database corruption.	Y	
R1477.	24. Open, track, and manage the Resolution of Database Problems.	Y	
R1478.	25. As directed by the MSI, provide technical assistance, troubleshooting Support, and subject matter expertise to VITA, VITA Customerdesignee, and Third-PartyVendor Support.	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
R1479.	26. Monitor Database for Incidents and Problems and automatically create Incidents or Problems in the MSI-provided SMS.	Y	
R1480.	27. Provide customizable real-time notifications andalertsto VITA andits Customers via multiple modes of communication.	Y	
R1481.	28. Perform Database administration backup & recovery, Security and Compliance in accordance with the SMM.	Y	
R1482.	29. Perform Database snapshots and clones at request of VITA or VITA Customer.	Y	
R1483.	30. Maintain, operate, and Upgrade automated monitoring tools to monitor Database performance.	Y	
R1484.	31. Employ Database performance analysis to confirm physical Database requirements in Support of VITA's and VITA Customer's business Systems.	Y	
R1485.	32. Identify and Resolve locking conflicts, latch contention, rollback requirements, etc. for all Database Instances in coordination with VITA and eligible Customers' Application developers.	Y	
R1486.	33. Define and execute Database performance and tuning scripts and keep Databases running at optimal performance for the Commonwealth's workloads.	Y	
R1487.	34. Perform Database reorganizations to optimize performance when required via established thresholds or Customer's requests.	Y	
R1488.	35. Execute Database System Configuration Changes, Upgrades and Patches as defined in the SMM.	Y	
R1489.	36. Maintain documentation for Database Instance parameters and System settings.	Y	
R1490.	37. Perform shutdowns and restarts for Database management Systems, Instances, and individual Databases as requested by VITA and its Customers and in accordance with the SMM.	Y	
R1491.	38. Maintain, Update, and implement Database archive Processes and Procedures to recover from an outage or corruption to meet established SLAs in order to meet VITA's business requirements.	Y	
R1492.	39. Execute VITA and its Customers' Database backup schedules, retention periods, andlevels (i.e. full, incremental, or differential)	Y	
R1493.	40. Exercise Database restores from Database exports, dumps, backups, flat files, secondary Databases, and disk based snapshots in accordance with the SMM.	Y	
R1494.	41. Provide granularrestorationoptions toincludethe Server, Instance, Database, table, and row levels at Customer defined recovery points.	Y	
R1495.	42. Provide Security administration including Service Requests, managing role and End-User Database permissions in accordance with Commonwealth and VITA Policies and the SMM.	Y	
R1496.	43. Execute authorization requirements asdefinedby VITA andits Customers (e.g., Users, roles, schemas.)	Y	
R1497.	44. Provide Database management encryption for the entire system or subcomponents in	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
	accordance with the SMM.		
R1498.	45. Provide an interface for VITA and its Customers to delegate Database Security functions.	Y	
R1499.	46. Provide enhanced Security (e.g. physical, information).	Y	
R1500.	**12.5.2 Extended Database Support**		
R1501.	*Extended Database Support adds Database design and development Support functions.* *Supplier's extended Database Support responsibilities includes all requirements in the Base Database Support as well as:*		
R1502.	1. Assistance with design and development for VITA and VITA Customers.	Y	
R1503.	2. Execute schema Changes.	Y	
R1504.	3. Execute authorized Service Requests.	Y	
R1505.	4. Establish Database data definition requirements for business Software (e.g., creation of tables, triggers, stored procedures, and attributes.)	Y	
R1506.	5. Execute Database data definition requirements for business Software Patch Database Software as needed according to established development to QA to production life cycle.	Y	
R1507.	6. Execute the creation of Databases for use in non-production environments masking sensitive information from production environments and assigning appropriate access control.	Y	
R1508.	7. Provide technical advice to the Application development teams and DBA groups and assist development teams in performance testing and operating system and Database performance tuning.	Y	
R1509.	8. Participate in determining physical Database Changes associated with Application development team's efforts, and implement the necessary Changes to relevant Databases, subject to the Customer's Review and Approval.	Y	
R1510.	**12.6 High Availability Services via Multi-site Solution**		
R1511.	*The Commonwealth desires multi-site high availability Services to include active-active and active-passive platforms. This presumes the service components need to be geographically dispersed without degrading latency/performance while also provide enough of separation to ensure continuity of operations in case of a significant Event (e.g., hurricane, flood, tornado).* *Supplier's responsibilities include:*		
R1512.	1. Maintain Application/Network state between all locations (no transaction loss).	Y	
R1513.	2. Provide a solution with no single point of failure.	Y	
R1514.	3. Provide active-active/active-passive Servicesthat allow high bandwidth transactions with	Y	

Ref#	Requirement	Comply (Y/N)	Supplier Response
	extremely low latency to perform.		
R1515.	4. Test and Verify Availability and resiliency with coordination from MSI, VITA, and VITA Customers to ensure no service outage.	Y	
R1516.	**12.7 VITA Customer Infrastructure Supporting Specific Application SLAs**		
R1517.	*VITA Customers have expressed an interest in having an SLA specific to their specific customer application.* *Supplier's responsibilities include:*		
R1518.	1. Implement and report on VITA Customer Infrastructure Supporting Specific Application SLAs and supporting measures.	Y	
R1519.	2. Implement higher levels of remedies for VITA Customer Infrastructure Supporting Specific Application SLAs.	Y	
R1520.	**12.8 Web Application Firewall**		
R1521.	*Supplier will provide a multi-tenant, high availability, scalable web application firewall (WAF) solution for Customer web applications that will protect from web based attacks by external threat actors.* *Supplier's responsibilities include:*		
R1522.	1. Solution will protect against attacks such as those included in the OWASP Top Ten, DDoS attacks, etc. Repetitive DDoS attacks will result in an automatic subscription to the DDoS premium service (payable by VITA).	Y	
R1523.	2. Solution will provide inspection and detection of encrypted web application traffic. If any malicious traffic is detected, the SaaS will trigger an alert for investigation, the investigation is the responsibility of the current MSS.	Y	
R1524.	3. The Supplier will coordinate with the Customer to customize WAF security profiles for custom applications.	Y	
R1525.	4. Solution will provide server cloaking protection to prevent exposure of web server infrastructure details and block web scraping attacks.	Y	
R1526.	5. Solution will export audit logs to the SEIM solution.	Y	
R1526	6. Support the MSI in the SPLM process.	Y	

R1527	**12.9 Secure Rack Hosting Services for Agency 3ʳᵈ Party Equipment**		
R1528	*Supplier will provide solution for hosting agency 3ʳᵈ party equipment that logically resided in an agency site but is hosted in secure racks in a hosting facility that meets the Commonwealth's requirements for tier 3 data center.* *Supplier's responsibilities include:*		
R1529	*Provide a secure rack for hosting equipment*	Y	
R1530	*Provide redundant power supplies, either 30 AMP or 50 AMP as may be required to support the equipment in the rack.*	Y	
R1531	*Provide cross connects from the Secure rack to the hosting provider's network entry points.*	Y	

R1532	**12.10 Cyber Vault Service**		
R1533	*Supplier will provide solution for Secure cloud vaulting of backups.* *Supplier's responsibilities include:*	Y	
R1534	*Provide a Dell Cyber Vault solution on AWS with basic vaulting capabilities*	Y	
R1535	*Provide a single 512 TB Vault that will support up to 25 agencies. Additional vaults can be solutioned as needed.*	Y	
R1536	*Provide automated air-gap. The connection opens for replication of backups and then closes.*	Y	
R1537	*Provide data mover infrastructure in VITA data center using existing rack space*	Y	
R1538	*Provide two separate private subnets for vaulting and management per vault.*	Y	
R1539	*Provide daily replication of backup images for designated applications. Applications and components to be protected and defined by VITA/Agencies*	Y	
R1540	*Provide outbound reporting via AWS Simple Email Service (SES)*	Y	
R1541	*Provide 1-way replication traffic to the vault*	Y	
R1542	*Provide redundant network connection from VITA network to AWS to support replication to the vault in AWS.*	Y	

R1543	**12.11 Google Cloud Platform (GCP)**		
R1544	Supplier will provide 2 solutions/environments for the Google Cloud Platform: SSDC Managed (Dev/Test/Prod) and SSDC Managed Sandbox	Y	
R1545	Supplier's responsibilities include:	Y	
R1546	Design of GCP Virtual Network Infrastructure, providing access to GCP Market Place for Assured Workloads, and monthly reporting and billing by Agency.	Y	
R1548	Establishment of hierarchical organization for access control, configuration settings, policies, etc.	Y	
R1549	Design Network Infrastructure, including VPC Architecture, Inter-VPC connectivity, WAN VPN, Cloud Interconnections, Subnets and VPC FW rules, IAM roles and naming conventions	Y	
R1550	Select and test OS hardened images	Y	
R1551	Shared Services	Y	
R1552	Operations and Managed Services	Y	

R1553	**12.12 Virtual Desktop Infrastructure (VDI)**		
R1554	Supplier will provide solution for Virtual Desktop Infrastructure. Supplier's responsibilities include:	Y	
R1555	Provisioning virtual servers on the Unisys managed primary data center VMware infrastructure	Y	
R1556	Provisioning Unisys enterprise NAS storage on the Unisys Enterprise NAS solution	Y	
R1557	Provide physical administration for SQL database software on Unisys provided and managed servers, as needed.	Y	
R1558	Provide Data Center hosting services for STS partners	Y	