COMMONWEALTH OF VIRGINIA

VIRGINIA INFORMATION TECHNOLOGIES AGENCY (VITA)

SUPPLY CHAIN MANAGEMENT DIVISION

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CHESTER, VIRGINIA 23836

REQUEST FOR INFORMATION (RFI) 2017-14

FOR:

SERVER, DATA CENTER, AND SECURITY SERVICES

Issue Date:	September 29, 2016
Due Date/Time:	October 21, 2016 @ 3:00 pm Eastern
Response Delivery Method:	E-mail attachment to Single Point of Contact
Single Point of Contact (SPOC):	Greg Scearce, VITA Supply Chain Management (SCM)
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NOTE: This public body does not discriminate against faith-based organizations in accordance with the Code of Virginia, §2.2-4343.1 or against a Supplier because of race, religion, color, sex, national origin, age, disability, or any other basis prohibited by state law relating to discrimination in employment.

VITA is committed to increasing procurement opportunities for small, women-owned, and minority-owned (SWaM) businesses, strengthening the Commonwealth's overall economic growth through the development of its IT suppliers.

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1. INTRODUCTION

The intent of this Request for Information (RFI) is solely to gather information; it is not a formal procurement. Responding to the RFI is not a pre-requisite to submitting a proposal for any subsequent procurement. Respondents should not provide any confidential or proprietary information.

Ownership of all data, materials, and documentation originated and prepared for VITA pursuant to the RFI shall rest exclusively with VITA. All information provided to VITA as part of this RFI will not be publicly disclosed, but shall be subject to public inspection in accordance with the §2.2-4342 of the *Virginia Public Procurement Act and the Virginia Freedom of Information Act.*

A. IT Infrastructure Services Program (ITISP) Overview

This procurement event is a component in VITA's overall strategy to implement a new IT Infrastructure Services Program (ITISP). This program will position VITA to fulfill its vision to "deliver agile technology services at the speed of business" by better balancing the needs of the individual agencies and the enterprise in a multisupplier ecosystem. The ITISP is intended to accomplish the following:

- **Maintain and improve service quality.**
    - Develop the capability to address evolving agency needs and create opportunities to improve service performance without degrading service reliability, security, and quality.
- **Ensure cost competitiveness – both now and in the future.**
    - Structure service offerings so they can be more easily compared to market services at market rates; offer a menu of service options to customers.
- **Create a platform view of service delivery that is highly visible and accountable.**
    - Provide for Enterprise and Agency visibility of consumption, cost, performance, and the responsiveness of suppliers. Establish a governance structure and forums to promote stakeholder engagement and improve the balance of agencies and enterprise needs.

Procurement of new services that will transition the Commonwealth from a single supplier model to an integrated multisupplier model is occurring over three waves. VITA has begun implementing Wave 1 of this transition by awarding a contract for Messaging services in July 2016 and a contract for IBM Mainframe services in September 2016. Wave 2 of this transition begins with this Request for Proposal ("RFP") soliciting proposals for the services of a multisourcing service integrator (MSI). That procurement was released on September 29, 2016 under RFP# 2017-03. The Wave 2 procurements are also intended to include services for Server, Storage, Data Center LAN, Data Center Facilities, and Managed Security Services (abbreviated as "Server, DC, and Security").

Respondents to this RFI are encouraged to review the publicly available RFP# 2017-03 documents for additional context. Note also that there will be a Pre-Proposal Web Conference for the MSI RFP, scheduled for Tuesday, October 4th at 2 pm. Information to register for the conference is indicated in the RFP Instructions for RFP# 2017-03.

B. RFI Purpose

VITA has decided to accelerate its MSI implementation, such that the contract for RFP# 2017-03 is awarded while the other Wave 2 procurements are still underway. The initial focus on the MSI RFP allows additional time at the front-end of the timeline to gather further market research for Server, DC, and Security via this RFI. This RFI will allow VITA to improve the quality of the resultant RFP or RFPs to be released around the end of 2016.

Currently, VITA's Wave 2 internal RFP teams are structured around two separate potential RFPs: 1.) Server, Storage and Data Center Services and 2.) Managed Security Services. However, VITA is interested in identifying the most efficient demarcation or bundling of these services between RFPs. For example, perhaps it would be more efficient to separate the Data Center facilities from the other Server services; or perhaps it would be better to include some or all of the Security services with the Server RFP. VITA anticipates resolving these decisions, and other questions as detailed in the Section 5 (Questions) below, in part by considering feedback obtained from marketplace participants via this RFI.

The Commonwealth has the following goals for the procurements:

Server, Storage, and Data Center Services

- Assume all existing Services for Server, Storage, Data Center LAN, and Centralized Data Center facility currently provided to the Commonwealth via the Comprehensive Infrastructure Agreement (CIA) with Northrop Grumman.
- Transition to the next generation of delivery for Server, Storage, and Data Center services to VITA and Customers, taking advantage of the ever-changing technology landscape while decreasing costs to VITA and Customers.
- Provide compute, storage, and Data Center LAN 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.

Managed Security Services

- Replace the existing security services included within the Comprehensive Infrastructure Agreement (CIA) with Northrop Grumman.
- Support VITA's Commonwealth Security and Risk Management (CSRM) directorate by acting as its operational "hands and feet":
    - Advising on risks and standards development
    - Assessing vulnerabilities and compliance (suppliers and agencies)
    - Provide security monitoring and integration tools across the environment
    - Respond to and address security risks and incidents
    - Provide tools and technologies to protect the environment from compromise
    - Provide security services that are adjustable to meet compliance needs of the Customer and adaptable to advancements in both security and technology industries

- Establish, implement and maintain a secure enterprise information technology environment ensuring the confidentiality, integrity and availability of critical Commonwealth information and systems
- Provide VITA and its Customers with access to their data and metadata, in real-time

2. SUBMISSION LOGISTICS AND CONTACT INFORMATION

Issue Date:	September 29, 2016
Due Date / Time:	October 21, 2016 at 3:00 pm EST
Response Delivery Method:	E-mail attachment or CD sent to Single Point of Contact. Note: e-mail must be received by the due date and time; CD must be post-marked by the due date, but can be received later. E-mail attachments must be limited to 10 MB.
Single Point of Contact (SPOC):	Greg Scearce
Telephone:	(804) 416-6166
E-mail Address:	gregory.scearce@vita.virginia.gov
Mailing Address:	11751 Meadowville Lane, Chester, VA 23836
Pricing:	No pricing information should be submitted
Document Format:	Return this document, having populated Section 4 (Respondent Contact Information), Section 5 (Questions) below, and Section 6 (Feedback Regarding RFI Documents)
RFI Questions and Answers:	Suppliers may submit questions regarding this RFI at any time via e-mail to the SPOC.

3. OVERVIEW OF RFI DOCUMENTS

Within this RFI, VITA has chosen to release the following documents, which are drafts of some key documents anticipated for release in a final RFP or RFPs.

- Exhibit 2.1-a: Server, Storage, Data Center LAN Services
- Exhibit 2.1-b: Data Center Facilities Services
- Exhibit 2.1-c: Managed Security Services
- Exhibit 2.2: Cross-Functional Services
- Exhibit 3.1-a: Server, Storage, Data Center LAN, and Data Center Facilities SLA Matrix
- Exhibit 3.1-b: Managed Security SLA Matrix
- Exhibit 3.2-a: Server, Storage, Data Center LAN, and Data Center Facilities SLA Descriptions
- Exhibit 3.2-b: Managed Security SLA Descriptions
- Exhibit 4: Pricing and Financial Provisions
- Exhibit 4.1-a: Server, Storage, Data Center LAN, and Data Center Facilities Pricing and Volumes Matrix
- Exhibit 4.1-b: Managed Security Pricing and Volumes Matrix
- Exhibit 4.2-a: Server, Storage, Data Center LAN, and Data Center Facilities RU Definitions
- Exhibit 4.2-b: Managed Security RU Definitions
- Exhibit 4.4: Form of Invoice

4. RESPONDENT CONTACT INFORMATION

Please provide your contact information in the box below.

Contact Information	**Enter your response here, enlarging the box as needed**
Company Name	Tempus Nova, Inc.
Company Mailing Address	1550 Larimer Street, #217 Denver, CO 80202
Company Website Address	www.tempusnova.com
Name of Contact Person	Abigail Halder
Contact Person E-mail Address	abby@tempusnova.com
Contact Person Telephone #	(319) 400-5517

5. QUESTIONS

Please use the table to respond to the Commonwealth's questions.

Ref#	Category	Question	Supplier Response
A.	**Server/Storage Services**		
Q1.	Server/Storage	The Commonwealth has upwards of 10 non-centralized Data Centers in Agency-operated buildings, primarily in the metro Richmond area. What are examples of Suppliers' best practices in managing the Servers, Storage, Firewalls, and Data Center LANs in non-centralized (Agency) facilities?	Our best practice recommendation is to normalize the environments to the Standard Service Catalog offerings, develop documentation in line with SOPs customized to the unique Commonwealth requirements to provide support services in a consistent and repeatable manner. We would recommend implementing a data security model that is unified across data center locations.
Q2.	Server/Storage	What does the Supplier recommend for the length of the contract for Server, Storage, and Data Center Services? Please describe benefits and trade-offs.	After thoroughly reviewing the requirements in Exhibit 2.1a, 2.1b and 2.1c, we recommend a base period of five (5) years. If VITA desires to purchase all of these service elements through an "as a Service" model with the equipment being owned by the supplier, five (5) years would be adequate to amortize the equipment over the typical useful life of the IT infrastructure. We also recommend having up to five, one year option periods. We believe this approach provides the customer with a high level of control and flexibility over the contract duration.
Q3.	Data Center	What do you recommend for the length of the contract for the Data Center Facility for this type of environment?	We would recommend using third party data center facilities for a period of three to five years, as it is important to maintain contract flexibility with more and more applications moving to the cloud further reducing the need for equipment.
Q4.	Server/Storage	What does the Supplier recommend for technology refresh rate for the different types of Devices in VITA's environment? Is there an impact on the length of the services contract?	A typical refresh rate we have seen is around five (5) years, which is why we recommend at least a five (5) year base period so that VITA can achieve ROI and remain cost competitive. At the end of the base period, VITA should assess a technology / equipment refresh based on service quality and availability metrics.

Ref#	Category	Question	Supplier Response
Q5.	Server/Storage	The Commonwealth is interested in a separate hardware charge in the Server RUs to account for the initial capital outlay for physical servers. Is there a better way to represent the cost differences and hardware refresh cycle in the Server RU structure?	If the Commonwealth is interested in a separate hardware charge for the Server RUs, VITA could own the equipment and would only be charged for the ongoing maintenance and operations of that equipment throughout the life of the contract. We recommend that VITA plan accordingly for additional capacity and hardware needs and evaluate whether an "as a service" model is more appropriate for the Commonwealth's needs. If requested, we would be happy to provide financial pricing comparing the two approaches.
Q6.	Server/Storage	The Commonwealth is proposing tiering of services for Server and Storage in an attempt to align costs with availability and performance. Based on your experience, do these tiers of service have any challenges in developing a solution? Do you have experience with these service tiering model? Do you have any recommendations or enhancements for the Commonwealth to consider?	In our experience, tiering of services present challenges as the IT buyers or purchasing agencies do not always understand the service model and how to properly categorize the requested service. We recommend the Commonwealth develop a service model for Server and Storage services that meets the operational requirements of the customers while also reducing the Commonwealth's administrative burden of monitoring multiple tiers of service availability and performance. We believe server and storage resources are critical resources and should be treated as such. Providing a single tier removes the burden of tracking multiple tiers. Should the Commonwealth desire a tiering service model, we will support the Commonwealth in developing best practices for a tiered service model.
Q7.	Server/Storage	The Commonwealth currently spreads costs across a very simple RU model. Do you have an enhanced RU model that could offer a larger variety of services while minimizing the RUs and their complexity?	We believe the current RU model is beneficial to the Commonwealth, Suppliers, and VITA purchasing agencies due to the simplicity. Other approaches are possible but the added complexity of the approaches often outweighs the benefits.
Q8.	Server/Storage	The Commonwealth is including Bronze thru Platinum service levels for Server as examples of service categories. What would be required to implement this model in the Commonwealth?	Real time and historical performance metrics would be needed on each device or RU with the ability to report, track, and measure proactive maintenance and its impact on the service levels. Maintenance time should not negatively impact service levels and financial compensation.

Ref#	Category	Question	Supplier Response
Q9.	Server/Storage	Do you see a better way to bundle or spilt the services we are requesting, in order to more effectively integrate with other towers (including MSI), and obtain more flexibility in the Commonwealth's IT environment while maintaining appropriate Governance and security?	We agree with the Commonwealth's approach to the Service Towers and MSI structure.
Q10.	Server/Storage	Are their new Storage offerings, like Object Based Storage or predictive storage, that the Commonwealth should include in storage or enhanced services? How do you offer and charge for virtual storage?	We do not have any feedback for VITA at this time.
Q11.	Server/Storage	The Commonwealth is interested in ensuring it provides optimal storage performance and availability for VITA and VITA's Customers. How do you propose to provide and measure this performance?	We recommend that storage options / tiers include guaranteed Input / Output operations per second (IOPS) and availability for optimal storage performance. Performance and availability can be measured by software tools (i.e., vRealize Operations Manager or the Storage vendor's management software).
Q12.	Server/Storage	The Commonwealth has traditional x86 virtual servers, but it is also interested in the capabilities of a private cloud. Could they be combined or left separate? Please describe how this could be accomplished most effectively.	Hybrid cloud architectures can allow for the combination of legacy x86 and private cloud. The defining requirement for integration is network connectivity and addressability between locations with sufficient network Round Trip Time (RTT) to support the deployed applications. To effectively accomplish a combined environment, we would first establish a robust network infrastructure between the environments and then deploy the application into the environment that best matches the response time, security, and interdependencies requirements of each application. For example, stretch Clusters and stretch SANs provide forms of High Availability but with specific network latency thresholds and are less tolerant to delay. While systems in support of mail servers, web servers, and content delivery systems can be distributed due to a higher tolerance for network latency.

Ref#	Category	Question	Supplier Response
Q13.	Server/Storage	How does Database as a Service make sense for an Enterprise like the Commonwealth? Do you have any recommendations for how to charge for enhanced Database services (i.e., Development DBA)?	Database as a Service shifts the burden of responsibility and delivery from the Commonwealth to the Supplier and offers these benefits: • Reduces capital expenditures, operational costs, labor and accounting overhead and provides dynamic on-demand capacity and increased resource utilization. • Provides elasticity, faster deployment, redundancy, failover, Disaster Recovery, Business Continuity, and increased security. The Enhanced Database Service levels can be divided between two database types: 1) development and 2) sustainment. Provisioning charges are typically based on database size, number of instances, reliability, throughput, and response requirements. Monthly recurring charges are typically due to increased administration costs after databases are provisioned, which may result in change orders and increased FTE equivalent hours.
Q14.	Server/Storage	The Commonwealth wants to provide cost effective solutions to VITA and the Agencies. What do you describe as the key cost and value drivers that would help the Commonwealth offer services that are not cost prohibitive to deliver? Do you see any requirements in the description of services in this RFI that would cost more to meet than the business value they provide?	Standardization and repeatability in operations often drives down cost but runs the risk of not meeting customer needs. Ensuring that we deliver the right level of service for the actual business need is imperative to key costs down and value high. For instance, a customer could choose the highest tier storage but pay significantly more not realizing their data requirements require a lower level of storage costs. Conversely, purchasing the lower tier storage when all flash storage is required will cause performance problems, ongoing support issues, and customer frustration.
Q15.	Security	The Commonwealth is interested in an Enterprise Key Management System for compliance and security. How do you propose the Commonwealth request Key Management services?	We will support the Commonwealth in making an informed decision in an evaluation of Cloud based and on-premise Enterprise Key and Certificate management system. We recommend this evaluation consider factors, such as the risk associated with storing keys and certificates in the cloud compared to the risks associated with local management, including any regulatory requirements. Other evaluation factors can include ease of the system's use, and the use of standards based protocols and industry tested and proven encryption algorithms.

Ref#	Category	Question	Supplier Response
Q16.	MSI	Identity and Access Management (IAM) services and the systems supporting those functions are currently split between multiple providers. How do you propose bringing these services together to provide a single integrated service?	The Commonwealth has options when deciding on a single integrated IAM solution. For example, the Commonwealth could use an HR driven workflow (HR Management System) that's fully integrated with the State's Identity and Access Management solution. This solution could provide the single integrated service, similar to the solution that we are implementing within the State of Maryland. Maryland is using Workday and integrating with Microsoft's Identity Management solution, SecureAuth for 2 factor authentication, and their Statewide Directory Service. With the VITA-Tempus Nova MSA, the Commonwealth could leverage the Okta IAM solution to integrate your services across the Commonwealth.
Q17.	MSI	The Commonwealth has defined the cross-functional requirements in Exhibit 2.2. Do you have any comments in the structure and handoffs identified in this document? Do you have any prior experience working with MSIs? Do you have any recommendations regarding the approach for how the MSI should interact with the other suppliers?	Tempus Nova recently was awarded the MSA with VITA for their Messaging, Enterprise Collaboration, and MDM services contract. Our teaming partner, Skyline, also has experience as they have a VDOT contract with a Program Management and reporting structure over multiple contractors/suppliers. For the State of Maryland, Skyline serves as an MSI for some but not all aspects included within the Towers. In our MSI role we provide the project management, technology management, and represent the State in oversight of other contractors performing fiber construction, commercial data centers and third-party contractors delivering services like Desktop as a Service. The key element is as the lead for the State we pull together and maintain the big picture ensuring all other contractors deliver the services required by the State. The contracting authority remains with the State and the revenue does not flow through us but we run the overall program.
Q18.	MSI	Do you see any benefits or challenges in requiring the Data Center facility provider to also be responsible for providing common operating monitoring groups in the same solution (e.g., CMOC, ITOC, SOC, NOC)?	In our experience, we believe this model can be successful, as long as the data center facility provider has core competencies in providing service monitoring beyond basic event monitoring.

Ref#	Category	Question	Supplier Response
Q19.	MSI	The Commonwealth currently has a single traditional DR solution that requires the entire backup Data Center to be failed over. There is a desire to move to a more flexible solution that allows single Agencies or even applications to be failed over individually. This process requires design, development, operations, testing, and coordination. What role should VITA's MSI should play in this effort in relation with the Server Services provider?	We recommend that the MSI play a more significant role in supporting and facilitating a more Agency focused or application-centric approach to the Commonwealth's DR needs. This approach requires that the MSI team participate more directly in understanding and documenting the actual business functions of the Agencies that desire this level of support (greater initial level of effort) and the DR implementation is more efficient (fewer standby resources are required).
Q20.	Data Center	The Commonwealth is interested in Multi-site High Availability and Disaster Recovery Services. At a high-level, what do you recommend on the number and locations of centralized Data Centers the Commonwealth should utilize for that purpose? Any tradeoffs?	We recommend using three (3) data centers; a primary data center and two (2) standby data centers. The standby data centers should be geographically separated from the primary to ensure survivability if acts of nature or man destroys the primary data center. One standby with network Round Trip Time (RTT) sufficient to provide synchronous replication and hot-hot failover. The other standby with network RTT sufficient to support asynchronous replication and hot-warm failover. Cost benefit tradeoffs are determined by the infrastructure needed to meet the Recovery Point Objective (RPO) and Recovery Time Objective (RTO). In our experience, synchronous replication hot-hot infrastructure costs are larger than asynchronous replication hot-warm or hot-cold disaster recovery configurations.
Q21.	Migration	Suppliers will be required to provide an implantation plan to specify how they will take over responsibility for the existing environment. The Commonwealth is also interested in recommendations with regard to how the Commonwealth could migrate or transform to new Service offerings. What do you recommend for this migration plan?	Each defined Service within the Service Catalog should have a migration plan defined by the new Supplier. With any existing Service, enhancements and / or transformations should be reviewed periodically to design new Service offerings to meet emerging customer needs.

Ref#	Category	Question	Supplier Response

Q22.	Enhanced Services	The Commonwealth is interested in receiving proposals to include new enhanced services, (e.g., Cloud, Analytics, Managed File Transfer) Can you recommend any other such enhanced services the Commonwealth should also consider including at the moment? How would you recommend these services be delivered?	We recommend the following enhanced services that the Commonwealth should consider:
			• Cloud Governance as a Service
			  o Automate Policy based cloud consumption governance
			  o Hybrid Cloud Brokering
			• DevOps as a Service
			  o Continuous Integration, Continuous Deploy
			• Cloud consumption optimization, financial management
			• Agile Application Development Services to modernize applications to microservice architecture designed for the cloud as a primary means to transform legacy systems to next generation applications.
			• Backup as a Service
			  o Data Center-centric backup services
			  o WAN/Internet-based backup services
			  o Tiering/Archiving
			• Enterprise Managed Print Services
			  o Unified print services
			• Remote Access as a Services
			• Security as a Service (Firewall, Content Management, Malware, SOC Services)
			• Wireless Services (Unified Statewide Wireless coverage at state facilities for State employees and guests - centrally managed)
			• Development
			
			The Tempus Nova-Skyline Team has the experience and expertise in delivering these services. Should the Commonwealth desire these enhanced services as part of any subsequent RFP, we will provide our best practice recommendations and deliver methodologies.

Ref#	Category	Question	Supplier Response
Q23.	Enhanced Services	As the technology landscape changes in the Commonwealth's environment, could you describe other enhanced services that VITA and VITA Customers should consider in the future?	We recommend a contract approach often referred to as Agile contracting or Adaptive Sourcing. This approach does not attempt to predict future services that are bound in contract language to ensure the contract vehicle is current throughout its term. The commoditization of IT services and the rate of continuous innovation in products / platforms, services and new business models to support them are ever changing. For example, the services and products available on Amazon Web Services Marketplace portal changes almost daily and their pricing structures have changed and been reduced over 40 times in the past three years. Any contract that needed a change modification to update a catalog of services to take advantage of new services and pricing would quickly become entangled in constantly attempting to keep up with such contract updates. Such a process only frustrates consumers if what is available on public cloud and virtually private cloud offerings in the market are not available to the VITA consumers of the service in real time because of contract structure limitations. One such group we recommend for free consulting on this topic is the federal government Department of General Services 18F group, (18F gsa.gov). They have been working with multiple States on contract reform to enable the benefits of Agile development, DevOps automation, as-a-service business model, and cloud. Limited but multiple award IDIQ vehicles where publicly published marketplaces of services which could be consumed by VITA customers would enable a model where future services will continually be available as they hit the general market. An example would be a office supplies contract where Staples / Office Depot and others would provide access to their e-commerce portals for a government account and their suppliers have the freedom to add delete and change items in the catalog as often as they want without a contract amendment. Competitive market pressures ensure the State is continually receiving the best deal, especially since cloud type commodity items are continually dropping in price. In a resale environment, a contract structure would only need to

Ref#	Category	Question	Supplier Response
			define the rate of markup from costs, or rate of discount from a list. To provide a specific example of a new service is the Amazon Lambda service where consumers are not buying a VM, rather compute on demand. Only a JAR or .exe file is provided and the Lambda service manages all the auto-scaling to the exact performance level demanded in real time by the program that is being executed. This provides significantly improved efficiencies and lower costs as compared to dedicated servers, or dedicated VMs.
Q24.	Enhanced Services	What would you propose as a good business case for virtualizing the desktop (offering VDI)?	In our experience, we have seen the market for VDI decreasing rather than increasing. With more and more applications being enabled to be natively delivered as a Service versus a locally installed version (fat client), the need and benefits of VDI diminish. Browser-based or Software as a Service (SaaS) applications with no fat clients eliminates one of the primary advantages of VDI over a traditional desktop, namely, the centralized administration of images and application deployment to desktops. The continuous deployment model in Software as a Service such as Google Docs and Office 365 eliminates such distribution headaches VDI was designed to solve.
Q25.	Data Center LAN	What do you recommend as the best demarcation point between the Data Center LAN and the Network or WAN? The Commonwealth wants to make the cleanest scope separation for a future WAN Network RFP.	Data Centers will typically consist of a network fabric solution that provides layer 2 switching and Layer 3 routing services for all functions/applications supported within the infrastructure. Wide Area Network (WAN) communication services are typically integrated into the Data Center through physically redundant connections. These connections are nominally routed (operating at Layer 3) and support a common standard routing protocol integration point using either Interior Gateway Protocol (IGP), such as Open Shortest Path First (OSPF) or ISIS, or Border Gateway Protocol (BGP) to facilitate route exchange dependent on the trust level between the two (2) entities. This routed boundary provides a distinct demarcation point between the functions provided by the WAN and Data Center and allows each operating entity to remain autonomous from the other. Either operational group (WAN or Data Center) is able to support and make required changes within

Ref#	Category	Question	Supplier Response
			their respective domains of responsibility without requiring coordination. This enables the highest degree of architectural and operational flexibility between the distinct areas of the network while ensuring that there is a well-defined expectation of services facilitated between the communication areas. The demarcation of these two (2) network regions enables the Solutions Architects to pick and choose between the best-of-bread or next generation network technologies within Data or the WAN. Possible examples include • Provide the ability to deploy a hyper-converged Data Center solution, such as VMWare/NSX or Openstack/OpenContrail, that tightly integrates the full stack of capabilities, such as compute, storage, networking, and security, without any required support changes on the WAN. • In addition to supporting fiber-based and traditional carrier WAN services, next generation technologies, such as Software Defined WAN (SD-WAN), or Dynamic Multipoint Virtual Private Network (DMVPN), can be integrated without any imposed requirements on the Data Center. Data Center interconnect solutions, for facilitating virtual datacenter capabilities, is an important element to consider when designing, deploying, and managing a multi-physical Data Center solution suite. It is the responsibility of the Data Center Solutions Architect to define data center interconnect requirements onto the WAN solution (i.e., multicast, additional capacity, or latency SLA requirements); however, the solution must overlay only the Layer 3 routing services provided by the WAN solution.

Ref#	Category	Question	Supplier Response
Q26.	Data Center LAN	In the current RFI, the Commonwealth has bundled Data Center LAN services (e.g., switching, routing, load balancing and firewall) with Server and Storage services. Do you find any challenges, issues, or concerns with this approach and why? Any recommendations?	Hyper-convergence, where the traditional lines between compute, storage, network, and security are far less distinct, is the continuing direction and recommendation for Data Center operations. This highly integrated approach offers significant increases in operational flexibility and security levels over the traditional siloed technology approach. A challenge is that the inherent dependencies of these high integrated services require the implementation of a comprehensive Data Center strategy that encompasses all these aspects (e.g., compute, storage, network, and security). For this reason, it is imperative for the long term success and stability of the solution that the deployment of the solution is designed and implemented as such, a consistent and cohesive set of complimentary services and components.
Q27.	Data Center LAN	The Commonwealth did not bundle Data Center LAN services (e.g., switching, routing, load balancing and firewall) with the Data Center Facility services (e.g., HVAC, power, raised floor). Do you believe this is the correct approach? Do you have any recommendations?	Yes. In our experience, the Data Center LAN and Facilities Services do not need to be bundled and decoupling them is a sound approach. Data Center Facilities services could be provided by a distinct (from the Data Center LAN provider) service provider or outsourced to a third party facility provider as a whole, should the Commonwealth desire this approach. There are financial considerations associated with whether to own or outsource the Data Center facilities and associated Data Center LAN. Outsourced Data Center facility providers typically allocate charge back in fixed increments based on total rack space and delivered power potential. If the expected loads on the Data Center environment are expected to be highly seasonal there are significant cost savings that could be realized with the ability to turn down un-required capacity and resources when possible. This can be automated by the Data Center LAN. However, this capability is only worthwhile if the underlying cost models associated with the physical datacenter allow for these cost reductions (i.e., are usage based versus flat rate). Additionally, the VITA's aggregate Data Center Facilities footprint needs will most likely change (shrink) overtime. It is probably desirable to have the ability to scale up or down that facility footprint as demand requires.

Ref#	Category	Question	Supplier Response
Q28.	Data Center LAN	The Commonwealth is considering decoupling the Data Center Facility services from the Server, Storage, and Data Center LAN services. What do you think of this approach? What do you think are the advantages, disadvantages and tradeoffs of splitting the facility services out versus coupling these services with Server, Storage, Data Center LAN?	As mentioned in our response to Q27, in our experience, it is a sound approach to separate the data center space from the engineering and O&M work with the actual IT infrastructure.
Q29.	Data Center LAN	Supplier is expected to provide centralized Data Center LAN services. Should LANs in non-centralized Data Centers be part of the scope for Data Center LAN services or bid as part of Network/WAN in a future procurement? What would be the pros/cons and tradeoffs?	We recommend that the Data Center LAN services for non-centralized locations be associated with the future LAN/WAN contract support. The network solutions (please reference our response to Q26) deployed in modern day Data Center LAN environments are typically very different than the traditional networking solutions found in LAN infrastructures supporting access networks and smaller distributed Data Centers. The scales involved with the Data Center LAN network fabric solutions typically do not scale down in a cost effective way to support the smaller distributed models and therefore typically these solutions are designed and implemented differently. The smaller Data Center environments are likely to run on more traditional non-data center specific network hardware, which is typically consistent with the LAN/WAN solutions. Additionally, this distinction permits the LAN/WAN solution provider to leverage the required physically diverse staffing profile and expertise to service these distributed small Data Centers much more efficiently as an add-on, rather than require the highly skilled full-stack engineering resources associated with the hyper-converged centralized datacenter to also be required to operate over larger geographic boundaries.
Q30.	Data Center LAN	If the solution includes new Data Centers, who should provision and manage the network connections between the Data Center locations? Should it be the Network Provider, the Data Center Provider or the Server, Storage, Data Center LAN Provider?	Please reference our response to Q25. We believe the Network Provider should manage all connectivity and uptime between Data Center sites.

Ref#	Category	Question	Supplier Response
Q31.	Data Center	How does the Supplier propose to migrate Server, Storage, Data Center LAN services out of the CESC datacenter by June 2019 or earlier? Describe how the Supplier would seamlessly migrate out of CESC like-for-like, transform to new services, or a combination of the two? What are the recommended approaches?	As part of Skyline's work with the State of Maryland, they have migrated a number of agencies away from their own data centers to the State's centralized data center infrastructure. There is a methodical process of doing a thorough assessment, migrating services in a particular order, and then eventually completing the migration for the Enterprise support model. There are other approaches, such as the lift and shift model, for a like for like cloud migration or a re-architecture. Each of these approaches has tradeoffs and benefits.
Q32.	Cloud Services	The Commonwealth is interested in a solution that integrates traditional hosting services with new private, community, and public cloud offerings. How do you propose integrating these services?	We recommend that VITA integrate a hybrid cloud solution by using Identity Management solutions to enable end users to seamlessly work on hybrid cloud scenario wherever the server infrastructure is located. These solutions provide one identity for users to authenticate across SaaS, private cloud, or on premise applications.
Q33.	Cloud Services	What would be the best practice with regard to Suppliers owning the cloud contracts and potentially transferring that contract to the Commonwealth? Should the Commonwealth own that contract outright? Are there any other alternatives to be considered?	The Suppliers should own the cloud contracts but with assignment clauses that would transfer the contract to the Commonwealth if the Supplier loses the Service to VITA.
Q34.	Cloud Services	When the Commonwealth buys cloud services offerings how do you propose to identify where the data and services are located?	Many cloud providers have the ability to pick geographic regions where the data resides for DR or security purposes. This should not be a concern if the Commonwealth wants to keep the data in the US or even Virginia.
B.	**Financial/Server Storage**		
Q35.	Pricing Structure	The Commonwealth is interested in creating the best possible pricing structure for the Services. In light of that fact, Supplier is invited to both comment on the structure described in Exhibit 4.1 and 4.2, and to propose an alternate pricing structure if they believe that it will better serve the interests of both parties. The Commonwealth will contemplate any proposed pricing structure along five dimensions: 1. **Predictable:** To the greatest extent possible, customers should be able to forecast charges ahead of time; changes in pricing that occur over	We are able to comply with the structure described in Exhibit 4.1 and 4.2 but we would like the Commonwealth to consider a per subscriber pricing model. By simplifying the pricing approach, costs could be saved from administering and monitoring the complex pricing model and turned to providing effective service for the user community. Our goal, as the Supplier, would be to work with the purchasing agencies and users to design solutions from the common infrastructure and enable the technology to meet and enhance their mission. By focusing on the individual components, we run the risk of losing the macro view and providing suboptimal performance on the

Ref#	Category	Question	Supplier Response
		time should not be a surprise. 2. **Manageable**: The pricing should not be so complex that it is needlessly difficult to administer. If quantities of work or equipment in the environment must be measured, then those quantities should be as easy and transparent as possible to measure. 3. **Fair:** The service pricing must be a reasonable proxy for a services provider's underlying costs and should adequately recover those costs. Additionally, to the extent possible, the party that causes any incremental cost should bear that cost. 4. **Incentives:** All pricing structures will incentivize certain behaviors and discourage others. The goals of the sourcing program must be kept in mind when considering the behaviors that might be driven by a pricing structure. For example, a goal to encourage server consolidation might include reduced cost at a centralized data center. 5. **Flexible:** As consumption moves up and down, the charges should also adjust. Technology is an evolving industry, and the ability to turn down an old service to turn up a new service is one of the benefits of an efficient IT sourcing agreement. Such adjustments may include minor volume changes month to month, significant scope additions, reductions, or terminations, and ability of large service providers to re-deploy investments.	collective service. For instance, if we focus our efforts on storage tiering metrics related to a single part of the overall infrastructure, we may effectively deliver this resource unit and meet the performance targets but could miss on providing a quality service for the end user. In general, we want to focus and be compensated on providing value and the appropriate solution to our customers and if the pricing is too focused on the individual parts the incentives may be misaligned with excellent customer support and service.

Ref#	Category	Question	Supplier Response
Q36.	Inventory and Volume Collection	The Commonwealth is interested in introducing new Resource Units that do not exist in the current contract; in order to fairly compensate Supplier for service delivered, and support the other goals described in question 36, Supplier is asked to describe their experience and approach to collecting and verifying volumes both before and after contract signing, and the approaches they use to adjusting financials in the event that the initial count is incorrect. For example, today database support is provided by the Supplier, but is not separately billable. The Commonwealth sees an advantage to separating out database support and making it a separate chargeable unit, how would the service provider collect and verify the volumes to support this chargeable unit?	Today, we use the monitoring systems to calculate the active number of resource units for billable purposes. Reports are run through the common reporting tools, available to the supplier and customer, and are verified at month end.
Q37.	Asset Ownership	The Commonwealth consumes certain services today which are underpinned by a set of assets (servers, firewalls, etc.). The Commonwealth (or their designee) has the right to acquire these assets. The Commonwealth has a desire to consume services; rather than own assets, and envisions Supplier acquiring these assets and using them to provide services back to the commonwealth. Please describe experiences acquiring assets from an incumbent, and also describe your recommend financial treatment of their cost recovery for these assets.	We have experience in acquiring assets of another company (i.e., an incumbent) through multiple acquisitions. These asset acquisitions involve determining a detailed list of the assets to be acquired and making a market determination of their fair value based on original cost, age, useful life, and replacement value. The cost of the initial acquisition of these assets inclusive of a time value of money and profit component would be charged back to the Commonwealth over a period not to exceed the lesser of five (5) years or the initial contract term. Since these assets will be technological in nature, their useful life plus the cost to refresh the assets will need to be considered in the pricing. We recommend the Commonwealth understands the transition out and disentanglement clauses of the contract currently in place with Northrop Grumman to ensure that, should the Commonwealth desire to acquire existing assets currently managed by the incumbent, this is the most cost effective approach and does not hinder project timelines to assess, acquire, and refresh, as needed.

Ref#	Category	Question	Supplier Response
C.	**Managed Security**		
Q38.	Security	The Commonwealth's Managed Security description of services includes all the required scope bundled for a single experienced Security Supplier. Do you see any challenges or issues with this bundled model?	From a technology perspective, no, we do not see any challenges with his model. However, if the IT infrastructure is fractured and stove piped, then the single bundled model can be complex to deploy.
Q39.	Security	Do have any concerns or recommendations regarding how to scale Managed Security Services to organizations of the size and complexity of the Commonwealth?	The biggest challenge has more to do with the cultural challenges then with the technical issues. The Commonwealth needs to have a security goal that all interested parties can get behind and they know why it is important.
Q40.	Security	Can you provide examples of comparable environments where you offer security services similar to those required by the Commonwealth?	Skyline established and operates the State of Maryland Government Department of IT's (DoIT) Security Operations Center (SOC). This SOC provides unified security operational awareness and response capabilities associated with the various Security Services the State's agency acquired from DoIT. These Security Services include, but are limited to: • Comprehensive perimeter defense management o Firewall o Intrusion detection o Content filtering o Malware protection o Data loss prevention o Identity-based access o Business-to-Business VPN management • Remote access with Multi-form Authentication • Host protection services o Anti-virus o Host-based intrusion detection systems In addition to the SOC-integrated managed security services capabilities, Skyline provides the following capabilities: • Security policy development and compliance assessments • Vulnerability and penetration testing o Systems-based - tools scanning o Architecture - assess the business operational

Ref#	Category	Question	Supplier Response
			needs relative the possible architecture risk assessment • Incident response Lastly, at the Data Center LAN layer, the State has the ability to enforce adherence to Security Policies by only enabling the provisioning of compute/network services that are "hardened". Yes. We have experience providing these services within these environments for the State of Maryland and the Department of Information Technology.
Q41.	Security	Have you supported Managed Security services in distributed environments - both physical and virtual including on premise and off premise implementations?	Yes. We have experience providing these services within these environments for the State of Maryland, Department of Information Technology.
Q42.	Security	Do you offer solutions supporting geographically diverse locations (e.g., remote location with satellite)?	Yes. We have experience supporting geographically diverse locations. Skyline is currently supporting customers in PA, MD, DC, VA, WV, SC, TN, MO, and MI.
Q43.	Security	How have you implemented solutions similar to those in the Commonwealth making use of a centralized federated environment?	Yes.
Q44.	Security	What do you consider to be the key challenges and tradeoffs for the implementation of Managed Security Services in an environment similar to the Commonwealth?	A central Managed Security Service can become blind and complacent to unconventional cyber-attacks. .
Q45.	Security	What do propose at a high level to be the key strategies and implementation elements of any typical security services solution migration?	Establish true visibility into all aspects of the network and its assets. The pre-deployment of sensors that allow for cost effective analytics and response mechanisms in a timely manner.
Q46.	Security	Can you recommend additional Managed Security Services that are not currently included or considered in the scope of described services?	Establish a conduit to leverage classified threat indicators from the US Government for certain critical infrastructure segments within the Commonwealth.
Q47.	Security	Based in your experience, what are the key challenges with regard to the regulatory requirements included in the scope of services? Do you have any recommendations based on your experience?	The largest challenge has to do with central and agreed upon policies. Develop very well crafted policies that clearly guide the Commonwealth.

Ref#	Category	Question	Supplier Response
Q48.	Security	Do you have any guidelines or best practices regarding whether the various Managed Security Services are better off being remotely hosted or on premise?	We believe Managed Security Services tends to be more effective when they are remotely hosted. This allows for the Service to be more focused and enables the integrity of the effort to be maintained.
Q49.	Security	Do you think you would be able to provide all the described Managed Security Services yourselves or will you require to subcontract any services to other third parties?	Yes. We would be able to deliver the Services as long as there was the ability to perform the work remotely, in addition to onsite access.
Q50.	Scope Demarcation	VITA is interested in identifying the most efficient demarcation or bundling of these services between RFPs. For example, perhaps it would be more efficient to separate the Data Center facilities from the other Server services; or perhaps it would be better to include some or all of the Security services with the Server RFP. Please provide any further experience or suggestions regarding scope demarcation between potential RFPs.	The centralization and deployment of infrastructure in a way that allows for cost effective security services is critical. If security is bolted on as an afterthought, the cost effectiveness of the solution declines and it is much more difficult to effectively monitor the environments.
D.	**Financial/Managed Security**		
Q51.	Pricing Structure	The Commonwealth is interested in creating the best possible pricing structure for the Services. In light of that fact, Supplier is invited to both comment on the structure described in Exhibit 4.1 and 4.2, and to propose an alternate pricing structure if they believe that it will better serve the interests of both parties. The Commonwealth will contemplate any proposed pricing structure along five dimensions: 1. **Predictable:** To the greatest extent possible, customers should be able to forecast charges ahead of time; changes in pricing that occur over time should not be a surprise. 2. **Manageable**: The pricing should not be so complex that it is needlessly difficult to administer. If quantities of work or equipment in the environment must be measured, then those quantities should be	Please see our answer to question 35.

Ref#	Category	Question	Supplier Response
		as easy and transparent as possible to measure. 3. **Fair:** The service pricing must be a reasonable proxy for a services provider's underlying costs and should adequately recover those costs. Additionally, to the extent possible, the party that causes any incremental cost should bear that cost. 4. **Incentives:** All pricing structures will incentivize certain behaviors and discourage others. The goals of the sourcing program must be kept in mind when considering the behaviors that might be driven by a pricing structure. For example, a goal to encourage server consolidation might include reduced cost at a centralized data center. 5. **Flexible:** As consumption moves up and down, the charges should also adjust. Technology is an evolving industry, and the ability to turn down an old service to turn up a new service is one of the benefits of an efficient IT sourcing agreement. Such adjustments may include minor volume changes month to month, significant scope additions, reductions, or terminations, and ability of large service providers to re-deploy investments.	
Q52.	Inventory and Volume Collection	The Commonwealth is interested in introducing new Resource Units that do not exist in the current contract; in order to fairly compensate Supplier for service delivered, and support the other goals described in question 36, Supplier is asked to describe their experience and approach to collecting and verifying volumes both before and after contract signing, and the	We have no additional feedback other than what was listed in questions 36.

Ref#	Category	Question	Supplier Response
		approaches they use to adjusting financials in the event that the initial count is incorrect. For example, today database support is provided by the Supplier, but is not separately billable. The Commonwealth sees an advantage to separating out database support and making it a separate chargeable unit, how would the service provider collect and verify the volumes to support this chargeable unit?	
Q53.	Asset Ownership	The Commonwealth consumes certain services today which are underpinned by a set of assets (servers, firewalls, etc.). The Commonwealth (or their designee) has the right to acquire these assets. The Commonwealth has a desire to consume services; rather than own assets, and envisions Supplier acquiring these assets and using them to provide services back to the commonwealth. Please describe experiences acquiring assets from an incumbent, and also describe your recommend financial treatment of their cost recovery for these assets.	Please see our answer to question 37.

6. FEEDBACK REGARDING RFI DOCUMENTS

Please use the table below to provide commentary regarding specific documents included within this RFI, adding rows as necessary.

Ref#	Document/Section	Supplier Commentary
C1.	Exhibits	There are a vast amount of requirements across Exhibit 2.1a, 2.1b, and 2.1c. across three functional areas, as well as a cross functional services document. We strongly recommend that VITA provide adequate time for Suppliers to respond so that VITA receives comprehensive solutions and responses to each requirement.
C2.		
C3.		
C4.		
C5.		
C6.		
C7.		
C8.		
C9.		
C10.		