

Virginia Information Technologies Agency



**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  
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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

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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 4<sup>th</sup> 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 (CSR)M) 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

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<b>Issue Date:</b>	September 29, 2016
<b>Due Date / Time:</b>	October 21, 2016 at 3:00 pm EST
<b>Response Delivery Method:</b>	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.
<b>Single Point of Contact (SPOC):</b>	Greg Searce
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<b>Mailing Address:</b>	11751 Meadowville Lane, Chester, VA 23836
<b>Pricing:</b>	No pricing information should be submitted
<b>Document Format:</b>	Return this document, having populated Section 4 (Respondent Contact Information), Section 5 (Questions) below, and Section 6 (Feedback Regarding RFI Documents)
<b>RFI Questions and Answers:</b>	Suppliers may submit questions regarding this RFI at any time via e-mail to the SPOC.

## 3. OVERVIEW OF RFI DOCUMENTS

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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

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Please provide your contact information in the box below.

Contact Information	Enter your response here, enlarging the box as needed
Company Name	SHI International Corp
Company Mailing Address	290 Davidson Ave Somerset, New Jersey 08875
Company Website Address	www.shi.com
Name of Contact Person	Meghan Flisakowski – Public Program Manager or Erik Schroeder Account Executive
Contact Person E-mail Address	<a href="mailto:Meghan_flisakowski@shi.com">Meghan_flisakowski@shi.com</a> <a href="mailto:Erik_schroeder@shi.com">Erik_schroeder@shi.com</a>
Contact Person Telephone #	512-517-4088 (Meghan) 804-379-8157 (Erik)

## 5. QUESTIONS

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

Ref#	Category	Question	Supplier Response
<b>A. Server/Storage Services</b>			
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?	<p>We recommend a multi-layer approach to systems management:</p> <p>Implement a lights-out data center Out-Of-Band Management architecture and methodology. ("OOB Management") Eliminate KVM crash carts and manual processes around server deployment and troubleshooting. (Examples: HPE iLO, Dell DRAC, SSH console access, and serial connection concentrators.)</p> <p>Selection of vendor hardware management tools for servers, storage, networking, etc... to deploy, manage, monitor and operate the hardware infrastructure. Selection of a unified tool that can manage the multiple elements of a single or multiple vendor hardware infrastructure is recommended. (Examples: HPE One View, Cisco UCS Director, Lenovo xClarity, VMware vSphere AutoDeploy)</p> <p>Selection of a vendor hardware management tool for power and cooling components that support the infrastructure hardware. Select intelligent and monitored power and cooling devices such as PDUs, PDMs, racks, breakers, outlet connection sensors, temperature &amp; humidity sensors, and video capabilities.</p> <p>Implement a log and events collection service(s) that can retain diagnostic data off device for historical preservation, operational intelligence, analysis, and</p>

Ref#	Category	Question	Supplier Response
			<p>troubleshooting. (Examples: Splunk, LogRhythm, VMware Log Insight)</p> <p>Selection of management tools that export standard interfaces and APIs are recommended, so that they can be integrated and aggregated into higher level management function tool, and therefore able to part of an automation and orchestration framework. (Examples: REST API, JSON, IMPI, SNIA, DTMF, etc...)</p> <p>Decommission legacy hardware. Consolidate to a new and modern converged or hyper converged infrastructure. Consolidate hardware vendors to as few as possible. Design and implement data center pod architectures that represent linear and predictable scalable units of compute. Reduce data center foot print, power, and cooling. Reduce hardware complexity, operational time, and expense.</p> <p>Virtualize <b>everything</b>: Servers, desktops, networks, security services. Virtualization helps reduce the hardware footprint, reduces infrastructure complexity and decouples the applications from the underlying hardware.</p> <p>Evaluation and selection of a Cloud Management Platform (“CMP”) that can seamlessly integrate the various hardware and cloud architectures into a single system. The CMP provides a single pane of glass for operational functions: deployment, monitoring, migration, troubleshooting, reporting, etc... (Examples: VMware vRealize Suite, Red Hat CloudForms)</p> <p>Automate and orchestrate <b>everything</b>: Servers, desktops, networks, security services, and migrations.</p>

Ref#	Category	Question	Supplier Response
			<p>Lastly, reduce the number of facilities under management. Our recommendation is to consolidate from ten to two data centers, with the end design to be either running in a Production and DR mode or Active/Active two-way Prod/DR mode. These two facilities should be within metro distance of each other. Optionally, a third facility or cloud could be considered for long term data storage, backup and DR. This optional facility should be located further away from the first two DCs or hosted in a cloud service. Use the facilities contract expiration dates as milestones in the consolidation plan. Consider colocation and cloud as options for consolidation and DR initially. The long term goal should be to migrate as much as possible to cloud.</p>
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.	<p>Typical length of contract for SHI customers looking at Data Center space in a collocation facility is three years. (36 months) This would be the recommended median point to start evaluating Data Center facilities services.</p> <p>Consider the lifecycle of the assets to be housed within the Data Center space: If a customer typically refreshes hardware every three years, then this makes sense to align the hardware lifecycle to the facility that houses that equipment. If a customer plans on refreshing hardware at a longer length of time, for instance, five years. That customer should invest in the 24x7/5-year support and maintenance options for that hardware up front and also co-term the facility that houses that hardware to the lifecycle of the hardware assets.</p> <p>Today, 100% of x86 workloads are able to be</p>

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			<p>virtualized. With virtualization, server workloads can be abstracted from the physical hardware and can be moved to new infrastructure non-disruptively. At the end of the co-termed hardware and facilities length of services, workloads should be able to be moved instantly without having to resort to a “lift &amp; shift” approach. Do not move physical hardware from one facility to another. Migrate virtual machines to new hardware and/or new facilities seamlessly and with no interruption of services to end-users.</p> <p>The best pricing can be obtained by either renegotiating with the current hardware and facilities providers in a predictable and repeatable cycle or competitive pricing can be obtained from alternate providers of hardware and facilities, including other hardware manufacturers, other managed services providers, colocation providers, and cloud providers.</p> <p>Our best guidance would be to consider a mix of the above solutions: Some physical data center and some cloud with an overarching software management solution that enables the management, operation, provisioning, de-provisioning, automation, and orchestration of server workloads.</p> <p>As the end of the asset lifecycle approaches – consider moving virtualized workloads to carefully considered mix of new hardware and new cloud infrastructures. The legacy hardware should be retired and asset disposal services utilized. Do not continue the cycle of maintaining legacy architectures or moving legacy hardware assets from one facility to another.</p> <p>This strategy can assist the customer in entering into</p>

Ref#	Category	Question	Supplier Response
			<p>bi-modal IT: a state where existing applications are maintained on legacy architecture, and new applications can be created in the cloud using modern software and modern development techniques.</p> <p>This strategy assists with a phased migration from legacy hardware to consolidated, newer, better hardware and this strategy assists with the gradual migration from on-premises IT to cloud without an all or nothing, 100% migration to cloud in one disruptive event.</p> <p>Lastly, this strategy can assist with Data Center facility consolidation is a planned and considered approach. As legacy hardware and applications are virtualized and migrated to newer platforms, those facilities can be seamlessly turned down as hardware assets and existing contracts are retired.</p>
Q3.	Data Center	What do you recommend for the length of the contract for the Data Center Facility for this type of environment?	For a customer in the Public Sector vertical, of the size and scope of a state entity, and with a large on-premises current application foot print, we would recommend a minimum five year (60 month) term for any lease of Data Center space and for that five year time frame to pattern the operational strategy of the infrastructure hardware housed within that facility. A five year data center plan should be incorporated into the strategy for moving first into bi-modal IT operation and inevitably into cloud migration and the creation of new applications and services instantiated in the cloud.
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?	We recommend that the customer virtualize 100% of on-premises applications and invest in new hardware as the target of a heavily consolidated, converged or hyper-converged private cloud infrastructure as the basis for entering into a bi-modal IT operational

Ref#	Category	Question	Supplier Response
			<p>model: maintaining existing applications in flexible, automated private cloud infrastructure and investing in new applications in the cloud.</p> <p>First, the technology refresh term should be equal to or less than the term of the physical facility that houses the hardware. This allows flexibility in choosing new hardware and new facilities independently of overlapping termination dates.</p> <p>Secondly, if an organization can tolerate a shorter refresh rate: the consolidation in private cloud and migration to public cloud will ensure cost saving by running more applications on less hardware: a more modern, higher performance, more capacity hardware platform with additional value-added features. The goal is to retire more legacy hardware, run more applications on fewer modern hardware assets and reduce Data Center footprint, power, cooling, and other associated costs.</p> <p>Therefore, we recommend a three to five year hardware refresh cycle that is equal or less than the term of the facilities contract with a strict commitment to retiring old assets and reducing the hardware footprint through consolidation in private cloud combined with migration to public cloud with each iteration of tech refresh.</p>
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?	The optimal alignment of term lengths and capital costs of the facilities and infrastructure hardware combined with modernization of the infrastructure into linearly scalable and predictable performance, capacity and costs provides the base for cost structures. With this in place, offering an IT service catalog through a Cloud Management user portal that represents standardized and repeatable costs of

Ref#	Category	Question	Supplier Response
			<p>services in a utility model is a better way to represent costs to users and align capital costs to budget cycles.</p> <p>Additionally, moving towards bi-modal IT operations gradually introduces cloud applications and cloud IT services. These cloud services do not carry an upfront or recurring capital cost interval.</p> <p>Changing the cost model to a utility consumption model accounts for both modes of IT – optimized capital expense of on-premises hardware infrastructure and cloud services.</p>
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?	This requirement is why we recommend using a Cloud Management software suite. Tiered services are easier to implement and maintain for the IT operators and tiered services are easier to provision and consume by the end-users. Through a front-end service catalog and a back-end charge back/show back mechanism provided by the CMP – tiers of services can be provided to the consumers of IT services and based on the needs of the application and the budget of the user, an appropriate selection of performance, capacity and where the service is deployed – private cloud or public cloud – can be selected.
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?	Virtualize everything. Implement an IT services catalog using a Cloud Management platform. This foundation provides a flexible framework for the applications and services that you offer end-users today and does not require extensive modification to retire old services or bring new services on line.
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?	Different service levels can be defined in an IT services catalog using a Cloud Management platform. The underlying hardware, cloud, scripts, workflows, automation and orchestration of provisioning those services is abstracted away from the user. Once

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			<p>services and options are defined by IT, those services can be easily and repeatedly consumed by end-users. IT has the additional benefit of predictable resource consumption.</p>
Q9.	Server/Storage	<p>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?</p>	<p>At the hardware level, standardizing and bundling the components of the infrastructure provides the best possible cost savings, governance and security by deploying repeatable, predictable, and scalable architecture. Supporting disparate devices or continuing to deploy applications on dedicated physical hardware increases complexity, and complexity introduces more cost, more governance issues, and more security issues to maintain.</p> <p>From the end-use perspective, consuming standardized services through a Cloud Management suite's service catalog provides security in the form of user authentication, authorization, and accounting so that only authorized users can order services. The service catalog provides cost control, IT governance, and other benefits in that only IT approved applications are provided through the service catalog, approvals can be used to allow/deny users from ordering services, and new services can be easily provisioned, yet reviewed by BU owners, IT, security, finance and other departments involved in the approval of IT services.</p>
Q10.	Server/Storage	<p>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?</p>	<p>Yes, providing new storage services would be key in eliminating wasteful provisioning of traditional file and block based storage services models.</p> <p>Firstly, the underlying physical storage should provide storage efficiency features that maximize performance and capacity utilization.</p> <p>Storage services are provided through the CMP</p>

Ref#	Category	Question	Supplier Response
			<p>service catalog. (Example: An end-user is deploying an application which requires block storage for the VM OS and application, file storage for the database, and object-based storage in the public cloud to store archived results for read-only access to multiple distributed users of that processed information.)</p> <p>Lastly, providing new ways to provision and consume storage, such as object-based storage, elastic storage, and scalable storage would meet the needs of new applications such as Big Data, long term archiving, multimedia storage and streaming.</p> <p>Traditional storage tiers should be offered: bronze to platinum file and block for instance. New storage offerings should be offered alongside these traditional storage services. These two types of storage services are complimentary, and both should be offered through the CMP services catalog.</p>
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?	<p>Operations of a bi-modal IT infrastructure requires providing RAS features (“Reliability, Availability, and Serviceability”) for the on-prem hardware. This is accomplished through parity (RAID, erasure coding) redundant power supplies, redundant storage networks, redundant storage controllers or scalable storage controllers, data integrity checks, etc. Additionally, local and remote data protection methods – snapshots, replication, and backups are crucial.</p> <p>At the virtualization layer, multiple physical storage resources can be combined to offer even more high availability by combining multiple sources of storage into an aggregated pool. (Example: VMware’s Storage DRS and Storage Data Store Clusters help provide optimal availability, performance, and</p>

Ref#	Category	Question	Supplier Response
			<p>capacity elements)</p> <p>For public cloud resources, multiple availability zones and managed # of copies of data can be used</p> <p>All of which is abstracted from the end-user of IT services through the use of the Cloud Management user portal and services catalog. Users are offered choice and flexibility in the degree of availability of their data through the service catalog – unimportant data can be minimally protected at a lower cost and extremely important data can be protected at a higher cost with multiple methods of protection, for instance: replicated in two data centers plus a backup in the cloud.</p>
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.	<p>Our recommendation is the virtualize everything, move into bi-modal IT operation with some private cloud and some public cloud. However, if some physical servers are still required in which 1 app to 1 OS to 1 physical server is appropriate, these should be considered as one-off requests. End-users requesting these services should be encouraged to consume virtualized resources first, and have to justify the request extensively to acquire physical server: “Virtual first/Cloud first,” especially for new services which can be “born in the cloud.”</p> <p>When selecting single server hardware platforms. The deployment of these servers should be alongside the scalable pods for private cloud, not part of them. The single server pods should have exportable interfaces such as IPMI, DTMF, REST API and be able to be incorporated in to the Cloud Management Portal as a base metal asset in the on premises infrastructure.</p>
Q13.	Server/Storage	How does Database as a Service make sense for an Enterprise like the	Database as a Service should be deployed as either a

Ref#	Category	Question	Supplier Response
		Commonwealth? Do you have any recommendations for how to charge for enhanced Database services (i.e., Development DBA)?	<p>PaaS or SaaS offering. Public cloud is the best current offering in the market today. To build a DBaaS on premise would be counter-productive as the public cloud offerings offer best in class security, patching, availability, and accessibility. You could not build a better on-premises solution for less expenditure and without a lot of effort than the public cloud offerings on the market today.</p> <p>Microsoft Azure provides a SQL Server PaaS offering. Microsoft can extend this offering to the on-premises private cloud through various options.</p> <p>Oracle Database Cloud Service offers a public cloud version as well. On-premises Oracle databases can interact with public cloud offerings.</p> <p>Software as a Service options offer an application that uses public cloud servers and databases is another option.</p> <p>Open source databases are provided through private/hybrid/public cloud providers.</p> <p>Many, but not all of these DBaaS offerings can be integrated into a Cloud Management Platform. These are road map items currently from many of the CMP vendors in the market.</p>
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?	Bi-modal IT operations is the most flexible, agile, cost-effective solution to deploy "right now." Utilize, modernize, and optimize what you have now on-premises: applications and infrastructure. Invest in new services in the cloud going forward. Reduce, modernize, optimize, and migrate from the on-premises private cloud to public cloud with each iteration of the hardware lifecycle going forward.

Ref#	Category	Question	Supplier Response
			<p>In our opinion, an on-premises DBaaS would be cost and effort prohibitive. Otherwise, the flexibility and cost advantages of deploying IT services in a hybrid cloud model is the most advantageous model “right now.”</p>
Q15.	Security	<p>The Commonwealth is interested in an Enterprise Key Management System for compliance and security. How do you propose the Commonwealth request Key Management services?</p>	<p>Cryptographic Key Management is complex by design. Any Enterprise-wide key management system should take into account all the diverse encryption requirements currently in place, as well as plan for future-state and growth of the environment. SHI would propose a discovery and assessment engagement to identify what encryption exists today (structured data at rest, IPSec, SSL, etc.), where encryption doesn't exist today (but should), and what commonalities exist between diverse systems lending themselves to a consolidated Key Management platform. The results of the assessment would necessarily include policy and procedure around maintenance and operation (key generation, exchange, storage, and replacement for keys) of the system, system policies, agency/organization/department interactions, etc.</p>
Q16.	MSI	<p>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?</p>	<p>Most significant data breaches in the last 15 years can directly be attributed to weak or non-existent Identity &amp; Access Management services. With that in mind, SHI recommends a strong, dynamic, enforceable I&amp;AM policy design to support all agencies throughout the Commonwealth. This policy should be inclusive of Privileged Account Management, Remote Access, Active Directory (and any other directory service structures required) credentialing, and should include creation, deletion, and rights management functions.</p>
Q17.	MSI	<p>The Commonwealth has defined the cross-functional requirements in</p>	<p>At this time, SHI has no additional comments or</p>

Ref#	Category	Question	Supplier Response
		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?	recommendations.
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)?	At a minimum, raw logging should be maintained for forensically pure datasets to enable incident response and troubleshooting. Consolidating event correlation and notification across the enterprise, while a large undertaking, would generate a tremendously valuable dataset to allow the Commonwealth to integrate with various threat intelligence provider, and dramatically improve incident response (both proactively and reactively).
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?	Virtualize <b>everything</b> . Provide a single strategy and single architecture to provide the foundation for DR. Virtualization, cloud, and their various administrative tools allow for the customization of DR plans and failover/failback runbooks for individual applications or groups of applications. Provide multiple tiers or multiple classes of service for DR categorized by business criticality with appropriate costs and chargeback to the individual business units. Not every application needs to be synchronously replicated with a short RPO/RTO.
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 2 data centers. Our response to previous questions provides additional information.
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?	Migration will involve assessments based on each horizontal technical line and all lines depend on one another. As an example the servers, storage, security, network and applications all depend on one another for migration. This methodology and approach will be very involved as it includes multiple datacenters. Based on assessments, an implementation plan could

Ref#	Category	Question	Supplier Response
			<p>then be developed.</p> <p>Retire legacy hardware assets according to lifecycle schedule. Deploy scalable converged or hyper-converged architecture. Virtualize everything. Decouple the workloads from the underlying hardware. Enter into Bi-Modal IT operation. Maintain existing applications, create new services in the cloud. Consolidate and migrate with each lifecycle iteration of the on-premises infrastructure hardware.</p>
Q22.	Enhanced Services	<p>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?</p>	<p>As part of the migration from legacy on-premises infrastructure to cloud. Investigate deploying new applications in the cloud using microservices and containers.</p> <p>Already included in the recommendation for hardware is the requirement to collect logs and events into an analytics engine. (refer to Q1)</p> <p>We recommend converting existing infrastructure hardware to converged or hyper-converged platforms. Design IT services around scalable, repeatable pod design. TOR switching/routing to be included in the pods. Consider the benefits of TOR L3 boundaries between pods.</p> <p>Incorporate VMware NSX into the equation for Micro-segmentation of security services, secure multi-tenancy, separation of data, control and management plane within the network, and network traffic optimization.</p> <p>Incorporate storage replication technologies into DR plan – consolidate to two (possibly three DCs), use VMware SRM, Zerto or Veeam to manage DR failover.</p>

Ref#	Category	Question	Supplier Response
			<p>Offer migration services/assistance to application owners from on-premise to cloud.</p> <p>Consider incorporating SaaS application offerings rather than develop and support custom applications in-house.</p>
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?	<p>Internet of Things – Gather data from all technology enabled/internet enabled systems. Use data in better decision making for the business.</p> <p>Big Data – for analytics and revenue/funding generating applications</p> <p>DevOps – Design cloud services using new methods, new techniques. Do not “lift and shift” every virtual machines to the cloud.</p> <p>“Cloud first” for new applications/services.</p> <p>Consider existing, scalable cloud offerings first before developing future internal applications.</p> <p>Backup, archiving and data management not mentioned explicitly in RFI – modernizing backup, introducing archiving, and finding usability in that searchable and indexed archival data = tremendous benefit to a customer. Consider a follow-up project to the Data Center migration to modernize data protection and offering data services (as opposed to and in addition to) plain storage services.</p>
Q24.	Enhanced Services	What would you propose as a good business case for virtualizing the desktop (offering VDI)?	<p>In our experience, VDI is a business decision. The technology just enables those capabilities that the business needs. Initially, VDI can present a larger up-front CAPEX investment, but the OPEX benefits over the life time of the architecture can outweigh the</p>

Ref#	Category	Question	Supplier Response
			<p>initial expense:</p> <ul style="list-style-type: none"> <li>• Decreased operational expenses</li> <li>• IT can provide better and faster support – both Helpdesk and ITOPS to end-users</li> <li>• Delivers a universally similar end-user experience to each and every user</li> <li>• Reduced infrastructure costs using storage efficiencies, image management, and cloning technologies</li> <li>• More flexible desktop OS upgrade</li> <li>• More options for patching/rollback</li> <li>• Sensitive data is secure in the data center, not on a laptop, unlocked desktop, USB flash drive, or other undesirable places</li> <li>• Enables BYOD and device enabled applications and desktops possible</li> <li>• Enables a business continuity strategy for secure remote access</li> </ul>
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.	<p>Put the WAN requirements out for RFP separately. There are different providers and different markets for connectivity externally vs. the internal LAN network. There are different technical skillsets for internal LAN networking vs. external WAN networking. Assure you get the best pricing and best talent by separating the network at the customer demarc.</p> <p>SHI can address the WAN connectivity needs through our network of partner services.</p> <p>Exclude perimeter security devices and core LAN network behind the customer demarc from WAN RFP. We recommend a virtualized software-defined network as part of the private cloud architecture.</p>

Ref#	Category	Question	Supplier Response
			<p>SHI is recommending pursuing repeatable scalable compute pods using converged or hyper-converged systems. Include TOR switching with the compute pods. Consider moving to a TOR L3 boundary and Spine/Leaf Data Center network design.</p>
Q26.	Data Center LAN	<p>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?</p>	<p>No, we recommend this approach: collapsed Spine/Leaf core network. Data Center L2/L3 switching and routing at the TOR. Include the network portion with the servers and storage. Network virtualization, using VMware NSX is a na important piece of this architecture.</p> <p>The private cloud infrastructure is the servers, storage *AND* the network. The best technical architectures and best pricing models can be achieve by pursuing converged or hyper-converged infrastructure.</p>
Q27.	Data Center LAN	<p>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?</p>	<p>Yes, we recommend this approach: collapsed Spine/Leaf core network. Data Center L2/L3 switching and routing at the TOR. Include the network piece with the servers and storage.</p> <p>The private cloud infrastructure is the servers, storage *AND* the network. The best technical architectures and best pricing models can be achieved by pursuing converged or hyper-converged infrastructure.</p> <p>We have also recommended co-termining the facilities and hardware contracts to provide the best in application mobility from legacy to new architectures, to other sites, and to the cloud. The LAN network, and more specifically the Data Center TOR LAN is part of that equation. New architecture</p>

Ref#	Category	Question	Supplier Response
			will not perform as well on an outdated network. Network LAN design, upgrades and maintenance must be lock step with the strategy of reducing the DC footprint, optimizing, and migration from the server/storage infrastructure.
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?	Yes, we recommend that the infrastructure hardware deployed within the racks is separate from the facility that it is deployed. We recommend that these services are synchronized to co-term together. Decoupling these services provides more flexibility in mobility of the applications within the current facility and possibly to another facility or cloud.
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?	SHI would be able to address new network requirements in the future. Separating the data center network from the branch office network makes sense. These are two separate network designs and they are two completely different entities to manage and monitor. Providing the right response to each is crucial. Providing the right design and technical resource to accomplish the goals of those networks would be different than the Data Center network.
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?	This should be the responsibility of the WAN service provider. SHI can provide these services.  The build-out or migration to new Data Centers would be the domain the Server/Storage service provider that manages the Data Center LAN services as part of the converged or hyper-converged infrastructure design.
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?	Our responses to previous questions offer our suggestions for this question.  Our recommendation is to enter into a Bi-modal IT operational mode: maintain and optimize the existing infrastructure that you already have, deploy

Ref#	Category	Question	Supplier Response
			<p>new services in the cloud.</p> <p>The first recommend step is to virtualize <b>everything</b>.</p> <p>For the on-premises hardware infrastructure: retire legacy hardware, consolidate to a converged or hyper-converged infrastructure and reduce data center footprint by optimizing existing applications and adopt a strategy of migrating existing applications to the cloud.</p> <p>Once virtualized, workloads can be seamlessly migrated from one Data Center to another non-disruptively.</p> <p>Retire legacy equipment at end-of-support. Do not enter into extended support contracts. Do not move equipment from Data Center to Data Center. Do not plan or tolerate services outages due to Data Center moves. Move virtual machines instead.</p> <p>Plan to move some legacy services to the cloud as virtual machines. Consider application transformation by re-architecting existing applications for public cloud using micro-services and new DevOps techniques, rather than “lift and shift” move to IaaS.</p>
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?	<p>We recommend implementing a Cloud Management Platform, such as VMware’s vRealize Suite or Red Hat’s Cloud Forms.</p> <p>The CMP will assist you in navigating from a virtualized on-premises data center to a mix of on-premises &amp; cloud to all cloud. On-premises services can be integrated into the CMP and cloud services</p>

Ref#	Category	Question	Supplier Response
			<p>can live right next to those on-premises services in a services catalog.</p> <p>The CMP is the central hub for configuration, automation, orchestration, management, monitoring and reporting. Any system that is exporting standardized interfaces and APIs can be incorporated in the CMP and provide resources for the services catalog.</p> <p>The CMP abstracts the experience for the user, and provides a less confusing integration and transformation from on-premises to cloud.</p>
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?	SHI recommends that the customer own the cloud contracts. The best pricing and options are available in this manner. SHI would focus on service delivery and would assist the customer with contract management and pricing, but ultimately not be the owner of those contracts.
Q34.	Cloud Services	When the Commonwealth buys cloud services offerings how do you propose to identify where the data and services are located?	Data locality would be transparent to the customer at all times. Multiple on-premises and cloud data location options are available and this is customizable to the customer's requirements and wishes.
<b>B. Financial/Server Storage</b>			
Q35.	Pricing Structure	<p>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.</p> <p>The Commonwealth will contemplate any proposed pricing structure along five dimensions:</p> <ol style="list-style-type: none"> <li>1. <b>Predictable:</b> 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.</li> <li>2. <b>Manageable:</b> The pricing should not be so complex that it</li> </ol>	As SHI has reviewed exhibits 4.1 and 4.2, we are not in a position to provide a pricing model at this time. SHI will work closely with our designated partners to arrive at the best services offerings as applies to each of the product requirements necessary to fulfill the VITA work streams.

Ref#	Category	Question	Supplier Response
		<p>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.</p> <p>3. <b>Fair:</b> 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.</p> <p>4. <b>Incentives:</b> 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.</p> <p>5. <b>Flexible:</b> 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.</p>	
Q36.	Inventory and Volume Collection	<p>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</p>	<p>SHI does not have the separate chargeable units defined and cannot provide the formula that is needed to support a chargeable unit at this time. SHI does not know what the monthly charges, capital expenditures or maintenance costs and thus cannot translate that into service volumes to support the chargeable units.</p>

Ref#	Category	Question	Supplier Response
		would the service provider collect and verify the volumes to support this chargeable unit?	
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.	<p>SHI would need a legal review in order to determine whether they could acquire the current Commonwealth assets under NG.</p> <p>SHI has a leasing company where we could potentially provide lease options for the assets necessary for the fulfillment of any potential contracts. Detailed information on our leasing options is available upon request.</p>
<b>C. Managed Security</b>			
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?	A single MSSP would provide a consolidate view into the posture and events inherent within the Commonwealth's environment. SHI would recommend periodic assessment of the MSSP's function and operation by a third party assessment provider to ensure proper diligence.
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?	In a word, yes. Given the potential device count, complexity, and ever-changing threat landscape, any MSSP will face challenges in managing such a large environment. Some oversight by the MSI is required to ensure attach rate, maintenance, monitoring, alerting, vulnerability management (patching), and reporting.
Q40.	Security	Can you provide examples of comparable environments where you offer security services similar to those required by the Commonwealth?	We recommend that at the time of RFP vendors respond to this with their experience and the experience of partners being used as part of the solution.
Q41.	Security	Have you supported Managed Security services in distributed environments - both physical and virtual including on premise and off premise implementations?	We recommend that at the time of RFP vendors respond to this with their experience and the experience of partners being used as part of the solution.

Ref#	Category	Question	Supplier Response
Q42.	Security	Do you offer solutions supporting geographically diverse locations (e.g., remote location with satellite)?	We believe this is a good requirement. We recommend that at the time of RFP vendors respond to this with their experience and the experience of partners being used as part of the solution.
Q43.	Security	How have you implemented solutions similar to those in the Commonwealth making use of a centralized federated environment?	Yes. We recommend that at the time of RFP vendors respond to this with their experience and the experience of partners being used as part of the solution.
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?	The biggest challenge will most likely come from a diverse, non-standard set of devices and software in the Commonwealth and all the separate agencies have a mix of makes and models (e.g. Cisco ASA, Checkpoint, Palo Alto for firewalls), different versions or Microsoft platforms (servers and endpoints), and other inconsistent “things” these will challenge monitoring and management while potentially driving up costs.
Q45.	Security	What do you propose at a high level to be the key strategies and implementation elements of any typical security services solution migration?	Communication, documentation and knowledge-transfer will be critical aspects of any transition plan. Whether it be a single provider, or multiple point-solutions, being able to plan for uninterrupted support will rely primarily on the documentation sets created and communicated.
Q46.	Security	Can you recommend additional Managed Security Services that are not currently included or considered in the scope of described services?	Most security services can be outsourced to a qualified MSSP or SAAS (Security as a Service) providers. For example, Zscaler for web proxy, DLP, and VPN, Mimecast for email, various Cloud Access Security Brokers for virtualized environments. All of those SAAS providers could deliver standardized service, as well as consolidated logging, reporting, and notification back to a master NOC/SOC environment. For traditional MSSP, ensure that Vulnerability Scanning and Remediation Prioritization are included in the scope.
Q47.	Security	Based in your experience, what are the key challenges with regard to	Assuming that the well-known Compliance

Ref#	Category	Question	Supplier Response
		the regulatory requirements included in the scope of services? Do you have any recommendations based on your experience?	requirements are in scope (CJIS, HIPAA, and PCI), and barring anything abundantly out of the ordinary, the key to making GRC both consumable and auditable is a programmatic approach to ensuring the requirements and results are measurable, monitorable, and repeatable. Standardization on an overarching framework that encompasses HIPAA, PCI, CJIS, and several other standards would be helpful to ensuring the programmatic approach, and would be usable even by those entities not specifically beholden to a given oversight.
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?	A hybrid approach is most likely the right solution. Some agencies, devices, or systems may require an on premise solution, while some (most) would be able to leverage the cost saving theoretically inherent in a remotely hosted solution.
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?	Most MSS functions would be delivered by SHI's partners, with SHI maintaining a "technical PMO" function to ensure reliability, delivery, and customer satisfaction.
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.	In order to provide the most comprehensive set of services and suppliers, SHI recommends that the datacenter facilities should not be separated out entirely. A holistic approach is recommended. For example, we recommend that in moving to new datacenter facilities, the servers, storage, network and e-mail and security be one RFP. Where you identify areas of demarcation is in how you bring different agencies and their applications over to the new facilities which would create the need for a different set of RFPs. Specific to Security, SHI suggests breaking the section into (at a minimum) two distinct components. MSSP functions and Strategic Consulting functions (assessment, product selection, program development, incident response, etc.) are different

Ref#	Category	Question	Supplier Response
			areas of expertise and, potentially, delivery quality.
<b>D. Financial/Managed Security</b>			
Q51.	Pricing Structure	<p>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.</p> <p>The Commonwealth will contemplate any proposed pricing structure along five dimensions:</p> <ol style="list-style-type: none"> <li>1. <b>Predictable:</b> 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.</li> <li>2. <b>Manageable:</b> 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.</li> <li>3. <b>Fair:</b> 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.</li> <li>4. <b>Incentives:</b> 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.</li> <li>5. <b>Flexible:</b> 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,</li> </ol>	<p>As SHI has reviewed exhibits 4.1 and 4.2, we are not in a position to provide a pricing model at this time. SHI will work closely with our designated partners to arrive at the best services offerings as applies to each of the product requirements necessary to fulfill the VITA work streams.</p>

Ref#	Category	Question	Supplier Response
		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 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?	SHI does not have the separate chargeable units defined and cannot provide the formula that is needed to support a chargeable unit at this time. SHI does not know what the monthly charges, capital expenditures or maintenance costs and thus cannot translate that into service volumes to support the chargeable units.
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.	SHI would need a legal review in order to determine whether they could acquire the current Commonwealth assets under NG.  SHI has a leasing company where we could potentially provide lease options for the assets necessary for the fulfillment of any potential contracts. Detailed information on our leasing options is available upon request.

## 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.		
C2.		

Ref#	Document/Section	Supplier Commentary
C3.		
C4.		
C5.		
C6.		
C7.		
C8.		
C9.		
C10.		