



COMMONWEALTH OF VIRGINIA
VIRGINIA INFORMATION TECHNOLOGIES AGENCY (VITA)
SUPPLY CHAIN MANAGEMENT DIVISION
11751 MEADOWVILLE LANE
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)
Telephone: (804) 416-6166
E-mail Address: gregory.scearce@vita.virginia.gov

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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 (CSRМ) 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 Searce
Telephone:	(804) 416-6166
E-mail Address:	gregory.searce@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	Microsoft Corporation
Company Mailing Address	One Microsoft Way Redmond, WA 98052-7329
Company Website Address	www.microsoft.com
Name of Contact Person	Daniel Johnson
Contact Person E-mail Address	Daniel.johnson@microsoft.com
Contact Person Telephone #	804.307.8560

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?	Partner Response
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.	Partner Response
Q3.	Data Center	What do you recommend for the length of the contract for the Data Center Facility for this type of environment?	Partner Response
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?	Partner 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?	<p>There is no capital outlay with Microsoft cloud services and associated virtual machines. The model of cloud computing in Microsoft Azure is one of customers paying for consumption of services used versus purchasing or permanently owning IT assets or the datacenter environment they operate in. By leveraging the Azure cloud service, an agency can divest its IT assets, removing the need for an initial capital outlay.</p> <p>For on-premises leveraging Microsoft management solutions allows for organizations to define cost for individual services and components that roll up to a showback\chargeback report.</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	Our recommendation is that the Commonwealth considers public cloud infrastructure services which enable the provisioning of highly differentiated tiers

Ref#	Category	Question	Supplier Response
		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?	<p>of service based on detailed performance and capacity characteristics. The Microsoft Azure cloud platform includes a wide variety of server and storage offerings that can be sized to effectively serve the needs of the Commonwealths enterprise solutions.</p> <p>Our experience is that Microsoft Azure's robust monitoring and utilization reporting capabilities enable central IT organizations to deliver tiered services that are closely aligned with the technology needs and budget constraints of their end customers.</p>
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?	<p>The Microsoft Azure cloud platform offers a robust portfolio of over 50 pre-configured server templates and multiple storage options. You can also upload your own custom templates to the Azure catalog, which enables an RU model that can flex over time to ensure alignment with the business needs of your end customers.</p> <p>Microsoft Azure's robust billing and reporting tools can also serve as the foundation of an automated chargeback model that directly reflects a customer's utilization of the various services.</p>
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?	Microsoft Azure supports the concept of galleries that enable you to organize the server and storage resources available to your customers. Leveraging the native galleries provided within the Azure platform provide the flexibility to apply differentiated service levels and resource categories.
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?	The Microsoft Azure service catalog provides a robust set of services that can be bundled or used individually to meet the needs of the environment or individual deployment. Integration with the hypervisor and management solutions, and even traditional physical hardware, through the Hybrid

Ref#	Category	Question	Supplier Response
			<p>Cloud model provides even more flexibility in deployment options and service catalog options. All while maintaining common security and governance standards (Ex. Active Directory for Identity).</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>Cloud computing enables new scenarios for applications requiring scalable, durable, and highly available storage for their data – which is exactly why Microsoft developed Azure Storage. In addition to making it possible for developers to build large-scale applications to support new scenarios, Azure Storage also provides the storage foundation for Azure Virtual Machines, a further testament to its robustness.</p> <p><u>Azure Storage:</u></p> <p>Massively Scalable - so you can store and process hundreds of terabytes of data to support the big data scenarios required by scientific, financial analysis, and media applications. Or you can store the small amounts of data required for a small agency website. Wherever your needs fall, you pay only for the data you're storing. Azure Storage currently stores tens of trillions of unique customer objects, and handles millions of requests per second on average.</p> <p>Elastic - so you can design applications for a large global audience, and scale those applications as needed - both in terms of the amount of data stored and the number of requests made against it. You pay only for what you use, and only when you use it.</p> <p>Auto-partitioning System - that automatically load-balances your data based on traffic. This means that as the demands on your application grow, Azure Storage automatically allocates the appropriate resources to meet them.</p>

Ref#	Category	Question	Supplier Response
			<p>Diverse OS - supports clients using a diverse set of operating systems (including Windows and Linux) and a variety of programming languages (including .NET, Java, Node.js, Python, Ruby, PHP and C++ and mobile programming languages) for convenient development. Azure Storage also exposes data resources via simple REST APIs, which are available to any client capable of sending and receiving data via HTTP/HTTPS.</p> <p>Premium Storage - delivers high-performance, low-latency disk support for I/O intensive workloads running on Azure Virtual Machines. With Azure Premium Storage, you can attach multiple persistent data disks to a virtual machine and configure them to meet your performance requirements. Each data disk is backed by an SSD disk in Azure Premium Storage for maximum I/O performance.</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>With multiple levels of storage options IOPS provide financially backed SLA's in Azure, which means services can be configured with what is needed, and in addition can be monitored and measured through the portal.</p> <p>For on-prem Windows Server provides tiering, Cache, and high performance RDMA fabric so infrastructure can be defined to meet the performance needs of any service. In addition, can be monitored and tracked with traditional Performance measure, Operations Management Suite, and/or System Center.</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.	Traditional virtual environment can be either combined with a private cloud or left stand alone. However, the greatest benefit would be to include these traditional environments. A Private cloud is defined as having common pillars such as self-service, automation, infinite scale, as well as others.

Ref#	Category	Question	Supplier Response
			<p>Microsoft management combined with the hypervisor provides all the technologies needed to build a private cloud. In addition, this stack can be used to integrate with other common Virtualization platforms such as VMWare for management and private cloud expansion. Stretching to the public cloud is easy with the Microsoft Hybrid Cloud approach which extends the capabilities of Self Service, Automation, and deployment options (Scale, burst, etc.)</p>
Q13.	Server/Storage	<p>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)?</p>	<p>Azure SQL DB provides DBaaS, with multiple tier options. Azure SQL Database is a managed infrastructure with automated patching, backups, disaster recovery, high availability, automatic database performance tuning and monitoring to detect security threats with real-time alerts and audit logging freeing DBA resources to focus on design and code. Azure SQL Database also allows for quick database scaling in seconds by eliminating the need to acquire additional servers when applications need more resources and eliminates idle hardware when application load is reduced. In addition, With System Center and Windows Azure Pack DBaaS can be deployed on-prem using your hardware while still providing the same function.</p>
Q14.	Server/Storage	<p>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?</p>	<p>The Microsoft Hybrid Cloud approach provides true choice in service delivery. This means an organization can choose Azure to deliver new technologies or services that may not be available in a customer's service catalog today. Leveraging Azure removes the need for an initial large capital expenditure and reduces the time to deploy new service delivery. Furthermore, since Azure is a consumption based model, you only pay for what you use, and not for what you might use. Where it makes sense, Azure can be paired with on-premise</p>

Ref#	Category	Question	Supplier Response
			<p>datacenter resources to deliver services via a public/private cloud approach with automation and service tiering to deliver cost effective solutions. The requirements in the description of services would cost more to meet than the business value they provide are compute, storage, and network, as well as the incremental FTE Hours to build and configure the infrastructure to support services.</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>The Commonwealth should consider Azure Key Vault as a key management solution. Secure key management is essential to protecting data in the cloud. With Azure Key Vault, you can encrypt keys and small secrets like passwords using keys stored in hardware security modules (HSMs). For added assurance, you can import or generate keys in HSMs. If you choose to do this, Microsoft will process your keys in FIPS 140-2 Level 2 validated HSMs (hardware and firmware). Key Vault is designed so that Microsoft does not see or extract your keys. Monitor and audit key use with Azure logging—pipe logs into Azure HDInsight or your SIEM for additional analysis and threat detection.</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>Identity and Access management are key pillars of the Azure cloud and substantially differentiate the Microsoft platform from our competitors. In fact, the capabilities of Azure Active Directory (AAD) are keys to providing answers to the questions below. AAD supports open standards such as OpenID Connect, OAuth 2.0, SAML 2.0 for sign in REST and OData v3 for directory access. Additionally, Microsoft ships libraries for .Net, JavaScript, iOS, Android, Cordova, Xamarin, Node.js, Java, Ruby, and Python. This means the Commonwealth can provide an identity that crosses platform boundaries.</p> <p>One additional consideration to note is that AAD</p>

Ref#	Category	Question	Supplier Response
			<p>identities can be consumed by on-premises application's hosted in the Commonwealth's data centers. And features such as multi-factor authentication can be activated quickly. New features such as conditional access control can allow the Commonwealth to alter access to applications based upon changing conditions. For example; a user is required to use multi-factor authentication if he/she is logging in from outside the Commonwealth or from another country or perhaps their account can be disabled if an attempt to login is sourced from Tor network.</p> <p>In the market Active Directory is the authoritative source for identity and when paired with Azure Active Directory for Single Sign on to on premise and SaaS applications your organization can support SSO for over 2000 non Microsoft SaaS solutions. Active Directory Federation services should be used to federate with any other Web or client apps supporting SAML and when paired with Microsoft Identity Manager for identity provisioning, de-provisioning, and synchronization to disparate directories and identity stores the Commonwealth would have full IDaaS solution. When paired with Azure DNS and Azure Domain Services you can also improve authentication of Cloud applications.</p>
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?	Partner Response
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)?	Yes, we do foresee challenges for common monitoring groups. We would recommend implementing Microsoft's comprehensive operations management tools that can help monitor and automate both public and private clouds as well as

Ref#	Category	Question	Supplier Response
			provide logs, these logs would be used as a centralized monitoring tool for all Commonwealth resources. In addition, the Microsoft Operations Management platform can be used to provide deep insights into everything from Bare Metal to OS, and 3rd party services which integrate with our management platform.
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?	VITA's MSI should partner with the Server services delivery partner to ensure that the infrastructure they deliver meets the minimum security requirements. In addition, both the MSI and Server partner should use the same toolset to identify security risks and implement remediation technologies and policies. Microsoft Azure Site recovery can provide the ability to protect individual applications by forming protection groups. You can then fail-over to Azure or to another on-perm location. Protection is configured on a per OSE basis, however the protection groups can be everything from individual OSEs to large multi-tier applications and/or entire datacenters.
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 a multi site, multi region approach to High Availability and Disaster Recovery. At minimum we recommend 2 datacenters that are geographically dispersed (at least 500 miles apart) and have multiple levels of redundancy per datacenter including hardware and OSE redundancy. Azure provides the ability to protect services with multi-site high availability and/or Disaster recovery. High Availability can be configured in a Hybrid Cloud deployment model between VITA Datacenters and Azure. In addition, servers in VITA datacenters can have Disaster Recovery to more than one Azure Datacenters. Resources can be protected to be regionally redundant with Azure Datacenters having more than 500 miles of separation. By leveraging

Ref#	Category	Question	Supplier Response
			Azure, the Commonwealth could reduce the need to manage and maintain additional physical facilities.
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?	We recommend the Commonwealth use Azure Site Recovery to migrate between Datacenters or to migrate workloads to Microsoft Azure. The migration plan consists of establishing replication between the source and target, once completed a planned failover is initiated, and once the target comes online, protection is disabled.
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?	<p>We recommend that the Commonwealth consider the following emerging technologies: IoT, Big Data, Advanced Analytics, Media, Machine Learning, CDN. These services are delivered as Platform as a Service, and additional via MicroServices delivery models which provide greater agility and cost efficiencies compared to traditional infrastructure management.</p> <p><u>Project Catapult</u></p> <p>Technology behind Microsoft's hyperscale acceleration fabric, and is at the center of a comprehensive set of investments Microsoft is making to build a supercomputing substrate that can accelerate our efforts in networking, security, cloud services and artificial intelligence. Our work in this area started in 2010 in response to:</p> <ol style="list-style-type: none"> 1. Stresses in the silicon ecosystem driven by diminishing rates of CPU improvements 2. Growing compute demands of AI applications and services. <p><u>Analytics</u></p> <p>Azure Machine Learning is a powerful cloud-based predictive analytics service that makes it possible to quickly create and deploy predictive models as</p>

Ref#	Category	Question	Supplier Response
			<p>analytics solutions. When you use the Azure cloud to run machine learning experiments or build solutions, you don't have to buy expensive hardware or infrastructure.</p> <p>Azure Machine Learning not only provides tools to model predictive analytics, but also provides a fully managed service you can use to deploy your predictive models as ready-to-consume web services. Azure Machine Learning provides tools for creating complete predictive analytics solutions in the cloud: Quickly create, test, operationalize, and manage predictive models.</p> <p><u>Compute</u></p> <p>Service Fabric is a distributed systems platform that makes it easy to package, deploy, and manage scalable and reliable microservices. Service Fabric also addresses the significant challenges in developing and managing cloud applications. Developers and administrators can avoid solving complex infrastructure problems and focus instead on implementing mission-critical, demanding workloads knowing that they are scalable, reliable, and manageable. Service Fabric represents the next-generation middleware platform for building and managing these enterprise-class, Tier-1 cloud-scale applications.</p> <p><u>Networking</u></p> <p>The Azure Content Delivery Network (CDN) caches static web content at strategically placed locations to provide maximum throughput for delivering content to users. The CDN offers developers a global solution</p>

Ref#	Category	Question	Supplier Response
			<p>for delivering high-bandwidth content by caching the content at physical nodes across the world.</p> <p>The benefits of using the CDN to cache web site assets include:</p> <p>Better performance and user experience for end users, especially when using applications where multiple round-trips are required to load content. Large scaling to better handle instantaneous high load, like at the start of a product launch event. By distributing user requests and serving content from edge servers, less traffic is sent to the origin.</p> <p>Microsoft Azure ExpressRoute lets you extend your on-premises networks into the Microsoft cloud over a dedicated private connection facilitated by a connectivity provider. With ExpressRoute, you can establish connections to Microsoft cloud services, such as Microsoft Azure, Office 365, and CRM Online. Connectivity can be from an any-to-any (IP VPN) network, a point-to-point Ethernet network, or a virtual cross-connection through a connectivity provider at a co-location facility. ExpressRoute connections do not go over the public Internet. This allows ExpressRoute connections to offer more reliability, faster speeds, lower latencies, and higher security than typical connections over the Internet.</p> <p>Microsoft Azure Application Gateway provides an Application Delivery Controller (ADC) as a service, providing many layer 7 load balancing capabilities. In simple terms, it works by accepting traffic and based on rules that are defined with it, routes the traffic to the appropriate back-end instances.</p>

Ref#	Category	Question	Supplier Response
			<p>Application load balancing enables IT administrators and developers to create routing rules for network traffic based on the HTTP protocol. The Application Gateway service is highly available and metered. For the SLA and pricing, refer to the SLA and Pricing pages.</p> <p>The Application Gateway applies the routing rules to HTTP traffic, providing layer 7 (HTTP) load balancing. When you create an application gateway, an endpoint (VIP) is associated and used as public IP for ingress network traffic. Azure provides layer 4 load balancing through Azure load balancer working at the transport level (TCP/UDP) and having all incoming network traffic being load balanced to the Application Gateway service. The Application Gateway routes the HTTP traffic based on its configuration whether it's a virtual machine, cloud service, or an external IP address.</p> <p><u>Storage</u></p> <p>StorSimple is an efficient, cost-effective, and easily manageable storage area network (SAN) solution that eliminates many of the issues and expenses associated with enterprise storage and data protection. It uses the proprietary StorSimple 8000 series device, integrates with cloud services, and provides a set of management tools for a seamless view of all enterprise storage, including cloud storage.</p> <p>StorSimple uses storage tiering to manage stored data across various storage media. The current working set is stored on-premises on solid state drives (SSDs), data that is used less frequently is</p>

Ref#	Category	Question	Supplier Response
			<p>stored on hard disk drives (HDDs), and archival data is pushed to the cloud.</p> <p>Site Recovery is an Azure service that contributes to your BCDR strategy by orchestrating replication of on-premises physical servers and virtual machines to the cloud (Azure) or to a secondary datacenter. When outages occur in your primary location, you fail over to the secondary location to keep apps and workloads available. You fail back to your primary location when it returns to normal operations.</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>As outlined above we believe the Commonwealth should consider emerging technologies with a focus on Azure so they can provide the ability to host relational database products in VMs including SQL Server, IBM DB2, and Oracle database servers. In addition, Microsoft's a PaaS offering SQL Database offers a low administrative overhead of SQL Server in the cloud with automated backup and replication options and almost full compatibility with the on premises version of SQL Server. SQL Data Warehouse provides a PaaS data warehouse offering which offers flexible compute options when are query or processing step requires additional horsepower for a point in time to execute analytics. Additional big data processing options are available with HDInsight as a managed version of Hadoop, Azure Data Lake as an infinitely large data store for big data, and the Power BI and Cortana Analytics Suite for processing, analyzing, and visually enterprise datasets without having to be a data scientist. these technologies support the aforementioned emerging technologies.</p>
Q24.	Enhanced Services	What would you propose as a good business case for virtualizing the desktop (offering VDI)?	<p>VDI is a good offering for specific use cases, such as Contractors, Developers, or non-full time\seasonal employees. In some cases, VDI would be appropriate</p>

Ref#	Category	Question	Supplier Response
			for certain applications where bandwidth between the end user and the application are a concern.
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.	We recommend an MPLS network with multiple Internet demarcation points for high availability and no single point of failure. For connectivity to Azure multiple direct connections through ExpressRoute connections should be configured to different regions for high availability.
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?	By bundling LAN services with Server and Storage is could present increased cost to VITA. the most effective way to provide LAN services and Server/Storage is to leverage Azure. Azure provides software based networking and storage capabilities in one services deliver platform, for example Azure provides Load Balancers, Firewalls, VPN devices in the services as does Windows Server, which provides out of the box Network Controller, Load Balancer, Distributed Firewalls, and Network Virtualization.
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?	LAN services are integrated into the Microsoft Cloud Platform and do not require DataCenter Lan services to be considered separately
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?	Utilizing a separate/shorter DataCenter facilities contract would facilitate ongoing reductions in DataCenter footprint as the legacy compute and storage assets are transitioned to the Microsoft Azure Platform.
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?	Datacenter LAN resources are integrated into the Azure fabric, which eliminates the need for separate procurement of those resources. We think about our network in three major components—inside the datacenter, between our datacenters and edge nodes, and our geographic reach throughout the internet ecosystem. Inside our

Ref#	Category	Question	Supplier Response
			<p>datacenters, we connect more than 1 million servers to the network fabric, which contains the routers, load balancing, firewalls, Domain Name Service (DNS) servers, and many other services. The datacenter fabric then connects to the core backbone and our inter-datacenter fabric. At the physical layer, Microsoft invests globally in fiber assets to insure our ability to continuously scale our bandwidth. Our network consists of thousands of 10 and 100 Gb/s links allowing customer traffic to ingress and egress Microsoft's datacenters, as well as supporting inter-datacenter traffic for applications such as data replication for disaster recovery.</p> <p>For more information, please see: http://download.microsoft.com/download/9/9/A/99ADCE75-5F63-4E47-905C-F511EE7D3786/Microsofts_Cloud_Networks_Strategy_Brief.pdf</p>
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?	Partner 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?	<p>Virtual and Physical Server configuration and storage are seamlessly migrated with Azure Site Recovery. Additional storage can be moved to a StorSimple device or leverage Storage Replica from Windows Server.</p> <p>A SQL database native to the cloud, also known as a platform as a service (PaaS) database or a database as a service (DBaaS) that is optimized for software-as-a-service (SaaS) app development. Compatible SQL databases can be easily migrated to Azure PaaS (Azure SQL Database) by using the Deploy Database</p>

Ref#	Category	Question	Supplier Response
			to Microsoft Azure Database Wizard. A variety of common SQL development tools as well as the SQL Azure Migration Wizard will help identify databases that are good candidates for transfer to the PaaS hosting option.
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?	Microsoft Hybrid cloud solution provides seamless integration between Private, Public, and Hosted cloud solutions. This provides users and administrators a consistent experience across cloud offerings. Microsoft database, analytic and reporting tools are designed to run in hybrid environments providing a wide range of configurations and allowing the option to pick-and-choose which services are run on-prem vs. the cloud while not limiting data access or the available feature set.
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?	We consider customer ownership of contracts a best practice to ensure best pricing and flexibility.
Q34.	Cloud Services	When the Commonwealth buys cloud services offerings how do you propose to identify where the data and services are located?	The location of data and services is controlled by the Commonwealth. Azure has multiple datacenter facilities in the US and in Microsoft's Government Cloud environment, the data and services only reside where the Commonwealth places them.
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	Azure is a consumption based Cloud Service model. All pricing is available in the service catalog\Azure Portal at time of service deployment. Azure pricing model provide great cost efficiency and is completely consumption based so you never pay for what you haven't used.

Ref#	Category	Question	Supplier Response
		<p>in pricing that occur over time should not be a surprise.</p> <ol style="list-style-type: none"> <li>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. <li>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. <li>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. <li>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. 	
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	Partner Response

Ref#	Category	Question	Supplier Response
		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?	
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.	Partner 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?	Partner Response
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?	Partner Response
Q40.	Security	Can you provide examples of comparable environments where you offer security services similar to those required by the Commonwealth?	Partner Response
Q41.	Security	Have you supported Managed Security services in distributed environments - both physical and virtual including on premise and off premise implementations?	Partner Response
Q42.	Security	Do you offer solutions supporting geographically diverse locations (e.g., remote location with satellite)?	Azure was built with geo-diversity in mind, with datacenters across the US including both commercial and Government environments.
Q43.	Security	How have you implemented solutions similar to those in the Commonwealth making use of a centralized federated environment?	Partner Response
Q44.	Security	What do you consider to be the key challenges and tradeoffs for the implementation of Managed Security Services in an environment	Partner Response

Ref#	Category	Question	Supplier Response
		similar to the Commonwealth?	
Q45.	Security	What do propose at a high level to be the key strategies and implementation elements of any typical security services solution migration?	Partner Response
Q46.	Security	Can you recommend additional Managed Security Services that are not currently included or considered in the scope of described services?	Partner Response
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?	Partner 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?	Partner Response
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?	Partner Response
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.	Partner Response
D. Financial/Managed Security			
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"> 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 	Partner Response

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. 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.</p> <p>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.</p> <p>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.</p>	
Q52.	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 would the service provider collect and verify the volumes to support</p>	Partner Response

Ref#	Category	Question	Supplier Response
		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.	Utilize tools, services, as well as the partner community to leverage well known processes to take assets and migrate from current state to hybrid cloud services platform. This approach will minimize the need to transfer physical assets and accelerate the commonwealth's ability to consume services without owning those physical assets.

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.		
C3.		
C4.		
C5.		
C6.		
C7.		
C8.		
C9.		
C10.		