

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

**Single Point of Contact (SPOC):** Greg Searce, VITA Supply Chain Management (SCM)

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NOTE: This public body does not discriminate against faith-based organizations in accordance with the Code of Virginia, §2.2-4343.1 or against a Supplier because of race, religion, color, sex, national origin, age, disability, or any other basis prohibited by state law relating to discrimination in employment.

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

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## 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 (CSRM) directorate by acting as its operational "hands and feet":
  - Advising on risks and standards development
  - Assessing vulnerabilities and compliance (suppliers and agencies)
  - Provide security monitoring and integration tools across the environment
  - Respond to and address security risks and incidents
  - Provide tools and technologies to protect the environment from compromise
  - Provide security services that are adjustable to meet compliance needs of the Customer and adaptable to advancements in both security and technology industries

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

## **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
<b>Telephone:</b>	(804) 416-6166
<b>E-mail Address:</b>	<a href="mailto:gregory.searce@vita.virginia.gov">gregory.searce@vita.virginia.gov</a>
<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.

## **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

## 1. 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	Capgemini America, Inc.
Company Mailing Address	Capgemini America, Inc. Headquarters: 623 Fifth Avenue 33rd Floor New York, NY 10022
Company Website Address	<a href="http://www.capgemini.com">www.capgemini.com</a>
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*Capgemini America, Inc.*

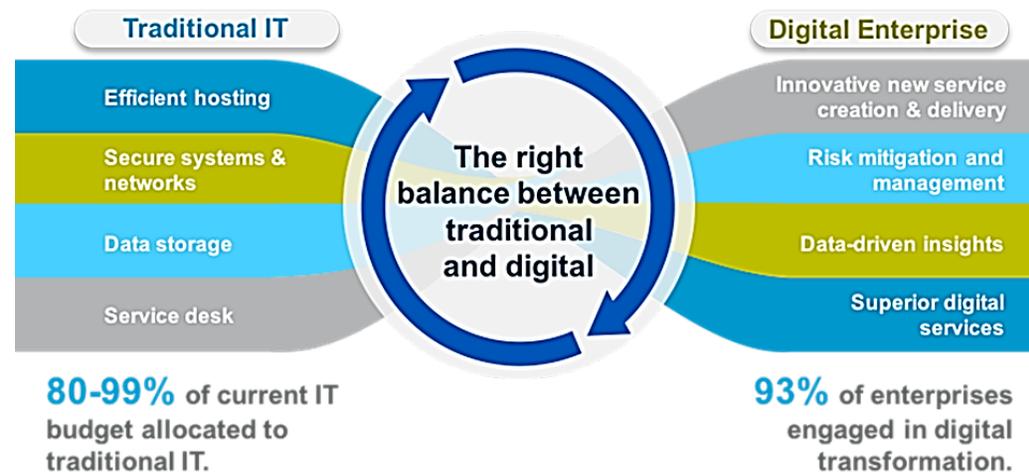
## 2. QUESTIONS

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

### Our Vision for VITA

VITA is structured in a very typical organizational model, in that it is built to deliver and manage technology assets and capabilities that power business processes. This capability-centric model depends on heavy investment in people, processes, and technology to deliver and maintain what has become the “*systems of record*” fabric for the enterprise. This alignment directs individual Agencies to focus on their own operational culture and process irrespective of their neighbors. This, in turn, leads to the loss of focus on the ultimate role of IT delivering services that make the Commonwealth of Virginia more efficient in delivering services to citizens. In order to participate and enable an agile model, VITA must change from a technology and project-centric organization to a new **service-centric** ecosystem. VITA must also be oriented around “*systems of engagement*”<sup>1</sup> that connect Agencies and people that consume their services in new ways and by creating new experiences and innovation opportunities for them.

### Multi-Modal IT



<sup>1</sup> systems of engagement refers to the transition from current enterprise systems designed around discrete pieces of information ("records") to systems which are more decentralized, incorporate technologies which encourage peer interactions, and which often leverage cloud technologies to provide the capabilities to enable those interactions

The inflection points of mobility, big data and bring-your-own-device (BYOD), coupled with the explosion of cloud-based services, has provided business professionals and IT practitioners with new requirements and new means of sourcing business and technology capabilities. We believe that this disruption is having a significant impact on the Commonwealth, VITA and Agency organizations and has become a driving force for a new IT model – a model that:

- Supports a multi-sourced service economy.
- Enables new experiences in driving the self-sourcing of services that power innovation.
- Is a new style of IT where VITA is required to be more of a business innovation center.
- Is measured by the innovation it delivers, not the cost it consumes.

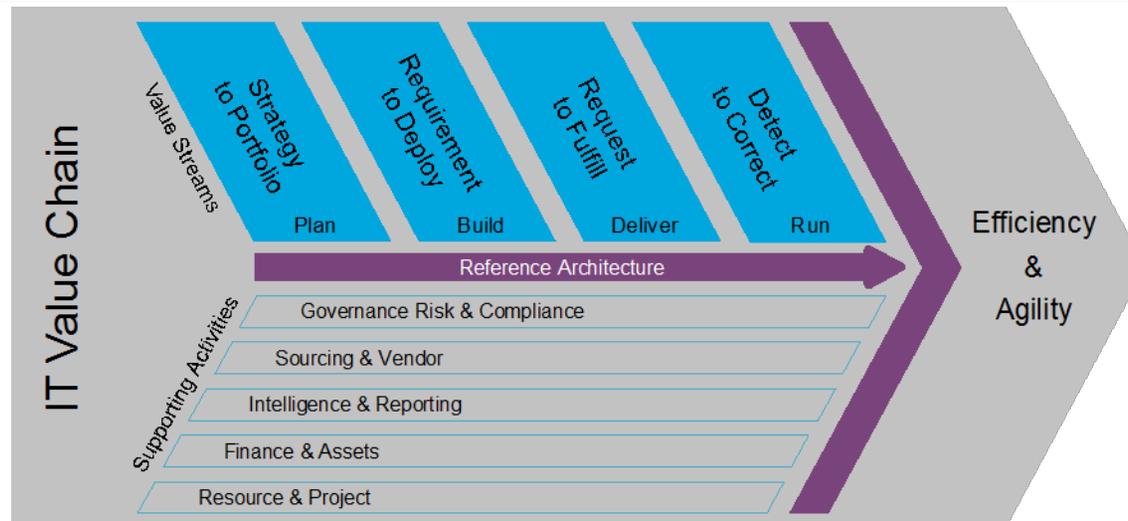
### **The New IT Operating Model**

Where should VITA start on its transformation journey? The required changes do not start with people, process and technology in isolation. Instead the changes must go hand in hand with the structure and focus of the VITA organization, which in turn impacts roles, processes, and the automation and technology landscape. What is required is a new IT operating model—one that modernizes IT in the following four key areas:

- **Engagement model:** moving from exclusively project-led fulfillment to a self-service experience that puts the control over the pace of innovation in the hands of the Agency and end state service consumer (IT or business consumers).
- **Deliverables:** shifting from the traditional “systems of record” focus driven by monolithic, process-focused applications to a new service-centric orientation powered by hybrid, composite applications and information that evolve rapidly and continually.
- **Life-cycle:** moving from a technology-centric, project life-cycle to managing the end-to-end service model. This opens the door for using new development methodologies like Agile and release methodologies such as DevOps.
- **Operating model:** moving from a technology delivery organization focused on silos to a value chain model that promotes value-based consumption, greater cost transparency, outcomes-based Service Level Agreements (SLAs) and multi-sourced delivery from a broad-based service portfolio.

In the new IT Operating Model the functional components of the IT Value Chain are grouped into four primary value streams and five supporting activities, as depicted in the graphic below:

## IT Value Chain in the New IT Operating Model



The Value Streams:

1) **From strategy to portfolio**

Drive IT portfolio to business innovation.

**From requirement to deploy**

Build what the business wants, when it wants it.

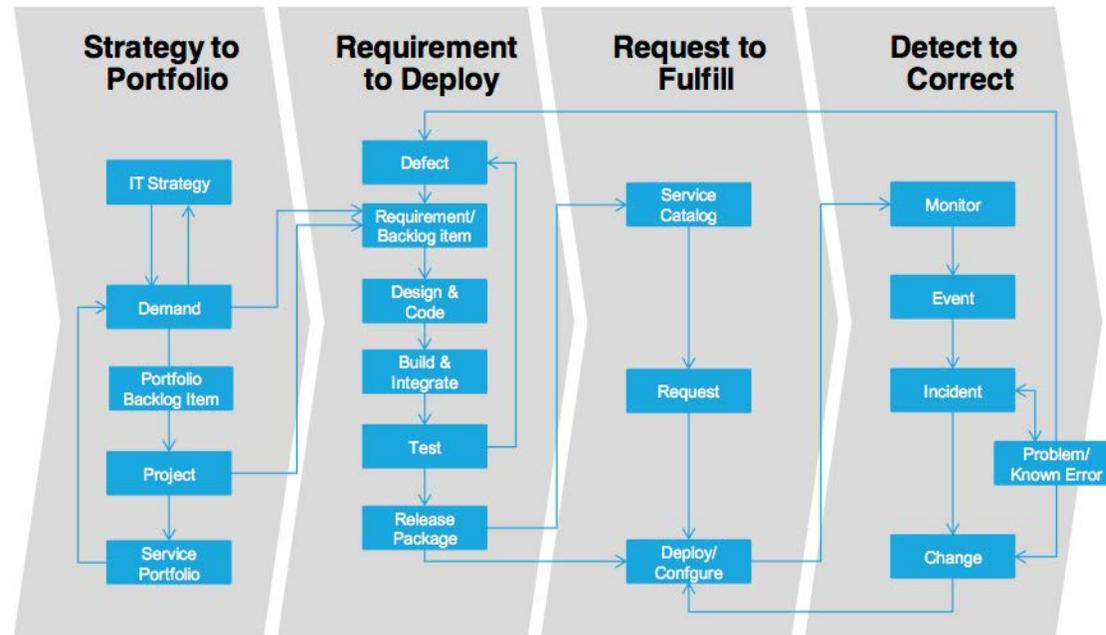
**From request to fulfill**

Catalog, fulfill, and manage service usage.

**From detect to correct**

Anticipate and resolve production issues.

## Connecting the Dots Across the IT Value Chain



The Value Streams are primary activities which have a vital role in helping run the full service life-cycle holistically. These streams reside within the VITA organization and help facilitate the efficiency and effectiveness of the Value Streams. These activities and functions are resident in the Capgemini Service Integration and Management (SIAM) service offering.

Capgemini's SIAM encompasses and manages the entire value chain that aligns business and IT goals. It addresses functional areas such as the digital customer experience, ERP, applications and analytics, end-user computing, data services, the cloud, and the network. Our SIAM service unifies processes, tools, and standards, integrates the service desk, and it integrates experience and capabilities in specific areas including Governance, Risk & Compliance, Enterprise Planning and Programs, Service Management and Delivery, Service Performance Management, Business Relationship Management, and Contracts & Commercial Management.

Finally, the SIAM solution extends to business process integration—from the VITA-retained IT team to Agency customers, and finally to Commonwealth end-customers. This creates a fully integrated value chain that delivers specific VITA business objectives and the required business outcomes.

Organizing along the new IT Operating Model defined by SIAM allows VITA to:

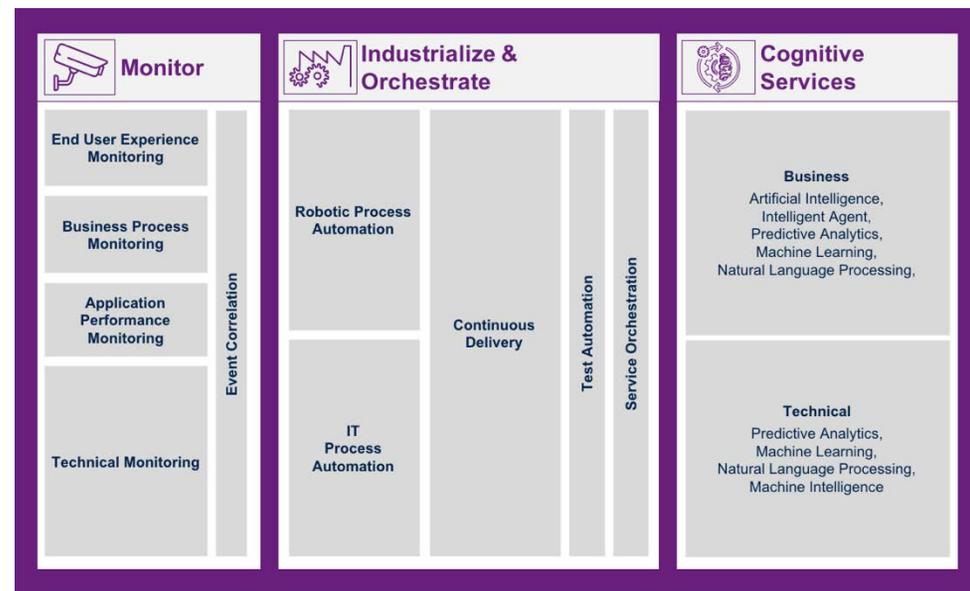
- Focus on the true role of IT: to deliver added-value services that makes the Commonwealth more efficient and innovative.
- Become more responsive to deliver changes and act upon a continuously changing technology and Agency landscape (becoming a Lean and Agile IT function).
- Support the multi-sourced service IT landscape; enable new experiences in driving the self-sourcing of services that power innovation.
- Improve the overall performance and efficiency of the IT function and its capabilities to deliver exceeding expectations.
- Create an efficient and streamlined IT service organization by automating IT activities from an end-to-end value stream perspective.
- Attract and retain the vital IT skills and competences required to manage the new IT ecosystem.
- Control risks associated with IT to provide secure and reliable operations for the business.
- Be ready for digital government transformation to redefine the relationship between government and the citizen life-cycle.

In addition, success in the digital era is all about speed and agility. Differentiation, efficiency, and superior business outcomes depend on accelerating the cadence of everything from application release cycles to customer service to internal support. These processes depend on a faster, more cost efficient allocation of the IT infrastructure.

What is the key to accelerating provisioning and deployment? In a word, it is automation. By taking an integrated, practical approach to automating IT processes and adding intelligence to automation, VITA can reduce complexity, drive operational improvements and efficiencies, and keep the digital transformation initiative moving ahead at full speed.

Application and Infrastructure automation is key to reducing the total cost of delivering high-quality services and improving the end user experience. It helps eliminate errors and outages, and it enables VITA to optimize Service Tower Suppliers (STS) and resource capacity and consumption across the entire IT supply chain.

Like VITA, most IT departments have been implementing automation gradually and incrementally for years, yet very few have achieved a level of maturity that allows them to take advantage of advanced automation capabilities such as



service orchestration, cognitive autonomies, and artificial intelligence (AI).

What is needed is a faster, smarter, more complete way to approach infrastructure automation. To achieve this, SIAM should be extended to provide the centralized governance processes and tooling for Automation. VITA can help improve IT services and reduce overall cost of service delivery and the Service Tower Suppliers by centralizing and taking control of Event Correlation, Service Orchestration and some Cognitive Services.

In summary, using the material provided in the RFI, as well as adding our own knowledge of VITA's current and future position, we believe that the four key themes for VITA to follow are:

- **Standardizing** the infrastructure to reduce the technology diversity,
- **Consolidating** platforms to reduce footprint,
- **Automating** to reduce errors while improving on time to market, and
- **Focusing** on the management and delivery of end-to-end services with the Agencies and their IT service providers.

These four key themes, coupled with SIAM and Automation, will enable the Commonwealth to:

- Design and embrace a **new operating model** that transforms VITA, the services it offers and the way it delivers them, to provide an operating advantage to the Agencies, consisting of:
  - SLA, Cost and operational transparency across all towers
  - Easy interface and governance when onboarding and off boarding STSs
- Create a **substantial IT economic** and performance lift through forward-looking leading practices.
- Push each and every available technology lever to maximize **"bang for the buck"** in routine, commodity IT service delivery.
- Enable the **Agencies to excel** by creating the opportunity for VITA to conceive of and provide innovative IT capabilities that directly enhance differentiation and efficiency.
- Effectively **manage operational risk** while materially **changing** the shape and behavior of **VITA**.

## 5. QUESTIONS

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

Ref#	Category	Question	Supplier Response
<b>Server/Storage Services</b>			
Q1.	Server/Storage	<p>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>	<p>Ideally the Commonwealth would embark on a program to consolidate and optimize the non-centralized Data Centers to reduce cost and improve efficiency.</p> <p>The management of non-centralized resources is a mature practice among service providers which has been developed over many years across regional and global clients. Typically, Service Tower Suppliers (STS) will have a mature centralized and industrialized operations center to manage non-centralized resources.</p> <p>For example, in leveraging our experience and collaborative approach, Capgemini delivers efficient and cost-effective Remote Infrastructure Managed (RIM) services. Capgemini designs custom services and augments them with standardized, tried-and-tested modular offerings to meet individual clients' IT infrastructure management challenges. Meanwhile, our cross-discipline and multivendor insights feed innovation.</p> <p>Capgemini takes a full lifecycle approach to Service Management and adapts our solutions and delivery to client requirements over the life of the contract. Most importantly, Capgemini recognizes that beneficial long-term partnerships are founded on shared risk and measurable performance indicators, and builds them into every engagement.</p> <p>Our leading practice and general approach to the delivery of infrastructure services is to use Infrastructure Management Operation Centers (IMOC™s), a concept that Capgemini pioneered. These are remote centers (i.e., not on customer premise) designed to meet the infrastructure and support requirements of one or more clients. The IMOC provides a central "command and control" function for IT operations, with key SIAM and ITIL service management functions embedded in the operations center. We have made significant investments in IMOCs throughout the world to bring the industry leading capabilities in delivering these services. Where required we also provide infrastructure services on client sites.</p> <p>For most clients, Capgemini takes an operation that works and makes it work better at a lower cost. At the heart of our RIM services is the IMOC, operated globally along our Rightshore® network. Capgemini's global delivery model, Rightshore® brings together our talent from the right balance of</p>

Ref#	Category	Question	Supplier Response
			<p>onshore, nearshore and offshore locations and work as a unified team.</p> <hr/> <p><b>Infrastructure Management Operations Center (IMOC)</b> <b>IMOC Model</b></p> <hr/> <p>The IMOC is a control room which provides comprehensive displays of the health and status of infrastructure and networks. The IMOC is set up onshore, near shore or offshore to address the client needs.</p> <p>Our IMOC model not only has 24x7 operational monitoring, 1st line support and problem escalation, it also delivers 2nd line support, base-level technical support, automation, and client liaison. Team members who are part of IMOC leadership, management and high-end service support functions look at more complex issues to add value and re-engineer clients' services.</p> <p>Capgemini's IMOC provides:</p> <ul style="list-style-type: none"> <li>• Reduced management overhead.</li> <li>• Integrated tools to manage network, server monitoring and security.</li> <li>• One team shift-left approach to combine knowledge management with incident, problem and change management to improve implemented processes and procedures.</li> <li>• Fully integrated ITIL processes for operational efficiency, combined with service level and availability management.</li> </ul> <p>The IMOC provides a flexible environment for the management of multiple IT infrastructures using a common approach. It also provides an effective, focused method of managing critical systems and is based around a core team of technicians supported by second and third line specialists from separate</p>



Ref#	Category	Question	Supplier Response						
			<p>skills groups.</p> <p>We supplement existing toolsets with our standard automation toolsets and link them to the IMOC monitoring environment. IBM Tivoli Monitoring is used as the delivery focal point, providing the Manager of Managers (MoM) with integration to the existing server management tools.</p>						
Q2.	Server/Storage	<p>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>	<p>The goal for the length of contract is to provide the Service Tower Supplier (STS) the ability to spread the investment required to deliver the service over a period of time to achieve the most cost effective pricing.</p> <p>Typical contract terms have shortened in the new IT age, from 7-10 years a decade ago to 3-5 years. If VITA follows our suggested new IT operating model with Service Integration and Management, this will reduce the required investment in tools and processes for the Service Tower Supplier and thus the length of contract can be kept reasonable. For example, in a MSI environment, you could reduce the contract life to three years to achieve a good balance of consistent service delivery and market-competitive rates for the Commonwealth.</p> <p>There have been many academic papers written on the advantages and disadvantages of short-term and long-term IT contracts, however the following provides an overview.</p> <table border="1" data-bbox="701 846 1917 1385"> <thead> <tr> <th data-bbox="701 846 856 883"></th> <th data-bbox="856 846 1356 883">Advantages</th> <th data-bbox="1356 846 1917 883">Disadvantages</th> </tr> </thead> <tbody> <tr> <td data-bbox="701 883 856 1385"><b>Short Term Contract</b></td> <td data-bbox="856 883 1356 1385"> <ul style="list-style-type: none"> <li>A shorter term contract will provide the Commonwealth with greater flexibility in being able to take advantage of advancements/changes in IT services and the changing pricing economies.</li> <li>The ability to test pricing economies more frequently.</li> <li>The ability to change contractors to obtain the desired performance.</li> </ul> </td> <td data-bbox="1356 883 1917 1385"> <ul style="list-style-type: none"> <li>More frequent procurement, increasing costs for the Commonwealth and bidders in the market place.</li> <li>Less security and comfort for VITA in the provision of a long term solution for IT services.</li> <li>The Contractor may not be able to offer as good a price (compared to a longer term contract where the Contractor would have greater certainty in terms of income stream).</li> <li>The shorter the contract term,</li> </ul> </td> </tr> </tbody> </table>		Advantages	Disadvantages	<b>Short Term Contract</b>	<ul style="list-style-type: none"> <li>A shorter term contract will provide the Commonwealth with greater flexibility in being able to take advantage of advancements/changes in IT services and the changing pricing economies.</li> <li>The ability to test pricing economies more frequently.</li> <li>The ability to change contractors to obtain the desired performance.</li> </ul>	<ul style="list-style-type: none"> <li>More frequent procurement, increasing costs for the Commonwealth and bidders in the market place.</li> <li>Less security and comfort for VITA in the provision of a long term solution for IT services.</li> <li>The Contractor may not be able to offer as good a price (compared to a longer term contract where the Contractor would have greater certainty in terms of income stream).</li> <li>The shorter the contract term,</li> </ul>
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Ref#	Category	Question	Supplier Response	
				<p>the less likely bidders are to commit investment.</p> <ul style="list-style-type: none"> <li>• Provides the Commonwealth and the Contractor with long term certainty.</li> <li>• Could achieve a larger variety of bidders as the longer contract term would provide greater predictability of supplier revenues.</li> <li>• Less frequent procurement for VITA throughout the term of the contract, saving costs for the Commonwealth.</li> <li>• Provides a complete solution for a longer period with predictable costs.</li> </ul> <ul style="list-style-type: none"> <li>• May not provide maximum flexibility for the Commonwealth to take advantage of advancements in IT Services.</li> <li>• Prevents the Commonwealth from taking advantage changes is competitive pricing.</li> <li>• Places a burden on VITA to ensure that it is able to deliver the contracted output and composition for the full contract term to the value of the Commonwealth while taking into account changes in requirements.</li> </ul>
Q3.	Data Center	What do you recommend for the length of the contract for the Data Center Facility for this type of environment?	<p>Our recommendation for hosting is an asset-lite strategy, incorporating cloud services, which reduces the need for investment in Data Center Infrastructure and facilities.</p> <p>If VITA follows the new IT Operating Model with Service Integration and Management, this will reduce the required investment by the Service Tower Supplier, thus reducing the required length of contract. Therefore, the contract term must consider the desired hosting strategy.</p> <p>For third party Data Centers or Co-Location (CoLo) services, the recommendation is 5-7 years, aligning to the useful life of the facility equipment. For Facility Management-only for owned Data Centers, we recommend 3 years to achieve a good balance for the Commonwealth and Service Tower Supplier.</p>	
Q4.	Server/Storage	What does the Supplier recommend for technology refresh	<p>As previously stated in question 3 response, our recommendation for hosting infrastructure is an asset-lite strategy, incorporating cloud services, which reduces the need for the management of asset refresh.</p> <p>However, if VITA continues to invest in its own Data Centers and Infrastructure, then additional thought</p>	

Ref#	Category	Question	Supplier Response
		rate for the different types of Devices in VITA's environment? Is there an impact on the length of the services contract?	<p>must be given during the IT strategy planning phase to match the capital investments with the useful life of the application and its components. Typically the industry does not do this and uses a defacto five year term to depreciate server and storage assets. The problem with this approach is that the capital investment of the applications and infrastructure is misaligned. This can lead to an inability to invest in new innovative IT services in a targeted manner.</p> <p>We recommend an aligned approach which considers the application life-cycle and the supporting technology. By using a method such as Gartner's Market Clock, to make decisions in the strategic planning cycle aligning Application and Infrastructure investment, you improve capital investment across your entire IT value chain. This approach can then be tied to the service contract term allowing for an updated service contract to address technology transformation as needed.</p> <p>Replacing servers and other critical hardware allows VITA to deploy updated equipment intended to improve reliability, enable new and anticipated capabilities, and save money in the long term. When contemplating a technology refresh the following should be considered:</p> <ul style="list-style-type: none"> <li>• Does the replacement technology offer new features and functionality with an ROI?</li> <li>• Does the replacement hardware offer performance that can be related to an improved IT Service?</li> <li>• Will the hardware replacement result in improved system distribution and cooling for an improved DC cost model?</li> <li>• Will the new Technology provide a large enough ROI to recoup the investment before the next replacement becomes due?</li> <li>• Does a cloud model prove more economical benefit than purchasing outright or lease?</li> </ul> <p>In all cases, technology refresh needs to be carefully considered as it relates to Service Tower Supplier contracts as the impact of new technology for the Supplier should be taken into account. It should not have a material impact on contract length as long as manufacturer support is still provided.</p>
Q5.	Server/Storage	The Commonwealth is interested in a separate hardware charge in the Server RUs to account for the initial capital	<p>Separating the Hardware Service Charge (HSC) from the cost of managing a server, gives you the ability to host your applications on a variety of platforms aligned to the useful life of the application. Further, it allows you to easily compare the cost benefit analysis of hosting your applications on owned or leased equipment versus using cloud services.</p> <p>We believe that separating the HSC is appropriate only if the associated costs of the Data Center</p>

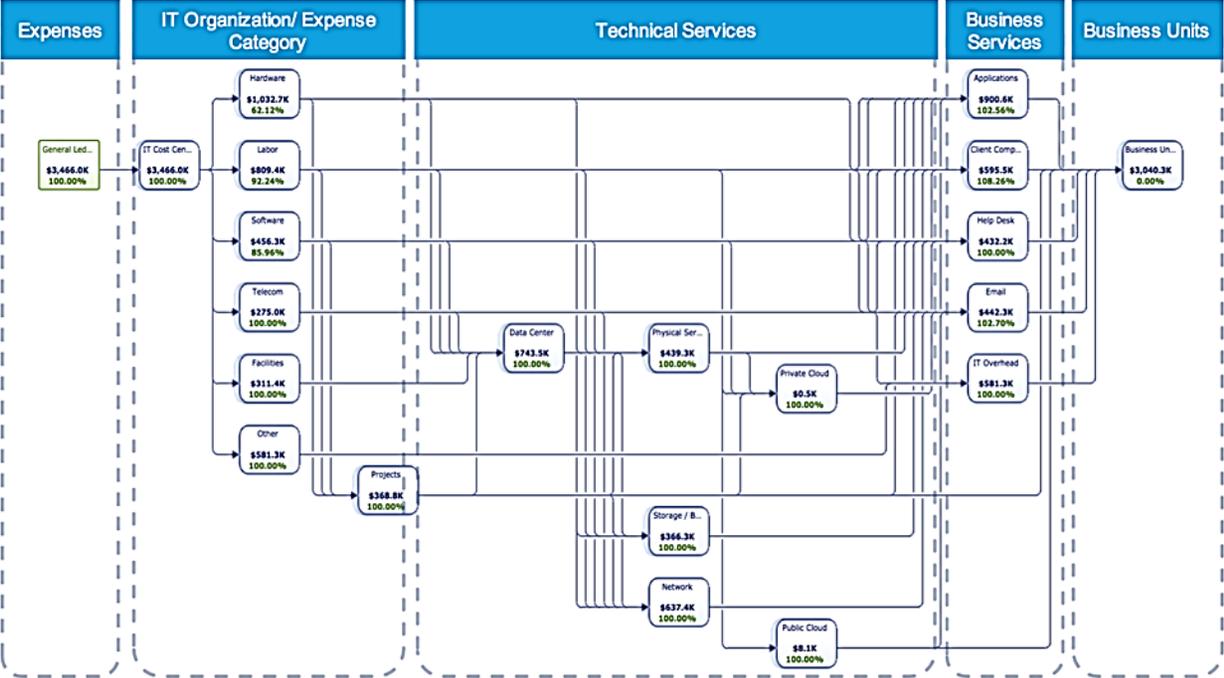
Ref#	Category	Question	Supplier Response
		outlay for physical servers. Is there a better way to represent the cost differences and hardware refresh cycle in the Server RU structure?	<p>facility, cooling, power, and facility environment management are included in the HSC. This allows you to create and compare a variety of differentiated HSC RUs.</p> <p>It should be noted that public and STS cloud based models obviate the need for server refresh.</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?	<p>Tiering is just one aspect that needs to be considered for IT Services. Infrastructure services should have standard building blocks (like server, storage and network) as well as additional components that are constructed from these building blocks (like web server, pre-production environment etc.).</p> <p>Each standard building block and the additional components should be able to cater for different SLAs and KPIs without modifications. For instance:</p> <ul style="list-style-type: none"> <li>• a Web Server <ul style="list-style-type: none"> <li>○ a simple web server compliant with Bronze SLA or</li> <li>○ a web server complaint with Platinum SLA</li> </ul> </li> <li>• a Data Storage solution that <ul style="list-style-type: none"> <li>○ is enhanced for standard database storage or</li> <li>○ can provide enhanced capacity or</li> <li>○ is highly available and highly performant</li> </ul> </li> <li>• a full application environment <ul style="list-style-type: none"> <li>○ to develop the application further</li> <li>○ to perform full load and performance testing or</li> <li>○ to run critical training for end users</li> </ul> </li> </ul>

Ref#	Category	Question	Supplier Response
			<div data-bbox="688 240 1428 820"> <p><b>1</b> Use Server Building Blocks based on performance characteristics</p> <p><b>2</b> Select the required SLAs and KPIs</p> <p><b>3</b> Use Storage Building Blocks based on performance characteristics</p> <p><b>4</b> Select the required SLAs and KPIs</p> <p><b>5</b> Use Network Building Blocks based on performance characteristics</p> <p><b>6</b> Select the required SLAs and KPIs</p> </div> <div data-bbox="1480 240 1864 820"> <p>Web Server</p> <p>Environments</p> </div> <p>One key component of this “shopping list Lego based approach” are the service level characteristics that provide the ability to align costs with availability and performance. These Service Level Characteristics should be derived from the Business Service Characteristics and the Component Performance Characteristics.</p> <p>Critical to the success of any service delivery process is defining the Service Level Characteristics by focusing on finding, defining, agreeing the Business Service Characteristics and the Component Performance Characteristics, that are made up of non-functional and performance requirements. This drives that the delivered service complies with the derived Service Level Agreement (SLA) and Key Performance Indicator (KPI). Our recommendation is to focus on defining the Service Level Characteristics to give the ability to align costs with availability and performance.</p> <p>A function of the Requirement to Deploy Value Chain is to validate and verify the appropriate non-functional and performance requirements have been agreed to and that during the design these requirements are being used alongside the functional requirements.</p> <p>Both Service Level Characteristic and the non-functional requirements can be translated into very</p>

Ref#	Category	Question	Supplier Response
			<p>specific infrastructure related requirements from which standard Lego based infrastructure components can be defined.</p> <p><b>Component Performance Characteristics (Tiers)</b></p> <p>Each component needs to have its performance characteristics defined and documented. For example the following is an example for a Tier 1 storage tier.</p> <p><b>Tier 1: Highly Available, High Performance</b></p> <p>This storage tier provides high performance storage. This tier is especially suited for applications requiring a high number of IOPS in combination with limited capacity requirements. Typically used for demanding database applications, intensively used files, cache data etc.</p> <p><b>Example Characteristics</b></p> <ul style="list-style-type: none"> <li>• IOPS of 15,000.</li> <li>• Storage attached network (SAN) fabric redundancy.</li> <li>• Full remote management.</li> <li>• Array caching algorithms to provide high-cache hit rate for read/write.</li> <li>• Intelligent tiering to provide enhanced performance characteristics.</li> <li>• Online replication to the primary or secondary Data Center.</li> </ul> <p><b>Business Service Characteristics</b></p> <p>Non-functional requirements are all requirements that deal with the so-called “-ilities”:</p> <ul style="list-style-type: none"> <li>• Scalability: Provide a solution that supports the current and projected business volumes.</li> <li>• Reliability: Verify the solution provides an appropriate level of robustness in support of business processes.</li> <li>• Manageability: Validate the solution can be managed and maintained efficiently and effectively.</li> <li>• Availability: Confirm the solution provides the required levels of service as well as performance characteristics.</li> <li>• Security: Verify that the solution provides all security related measures and controls to limit any security related risks (critical for cloud based solutions).</li> <li>• Typical non-functional requirements are: <ul style="list-style-type: none"> <li>○ 99.99 % availability per year outside maintenance windows (2h every month and 12h</li> </ul> </li> </ul>

Ref#	Category	Question	Supplier Response
			<p>every 3 month).</p> <ul style="list-style-type: none"> <li>○ 2h RTO (Return To Operation).</li> <li>○ 30min RPO (Recovery Point Objective).</li> <li>○ 24*365 operation with P1 response of 1h and fix target of 2h.</li> <li>○ 8h DRP (Disaster Recovery Process).</li> <li>○ IL3 data (Impact Level 3).</li> <li>○ Data retention 4 years with archiving of 6 month.</li> </ul> <p>Generically these non-functional requirements can be categorized into 7 main Business Criticality areas to determine the tier levels:</p> <ul style="list-style-type: none"> <li>● Service Criticality (6 different levels)</li> <li>● Service Availability (7 different levels)</li> <li>● Service Reliability (4 different levels)</li> <li>● Service Responsiveness (5 different levels)</li> <li>● Service Demand Frequency (4 different levels)</li> <li>● Service Demand Profile (5 different levels)</li> <li>● Service Reporting (4 different levels)</li> <li>● Regulatory Controls (2 different levels)</li> <li>● Existing Automated Systems Support (4 different levels)</li> </ul> <p>To aid design and planning activities these 9 characteristics (in total 41 aspects) can be grouped in 4 main groups: Platinum, Gold, Silver and Bronze.</p>

Ref#	Category	Question	Supplier Response							
			Platinum	Gold	Silver	Bronze				
			1 Service Criticality	1	CR1	Mission Critical	X			
				2	CR2	Very High				
				3	CR3	High		X	X	
				4	CR4	Medium				
				5	CR5	Low				X
				6	CR6	Very Low				
			2 Service Availability	7	AV1	7 days 24 hours	X	X		
				8	AV2	6 days 24 hours				
				9	AV3	5 days 24 hours			X	
				10	AV4	Extended Weekend Office Hours				
				11	AV5	Weekend Office Hours				
				12	AV6	Extended Office Hours				X
				13	AV7	Standard Office Hours				
			3 Service Reliability	14	RL1	Annual	X	X		
				15	RL2	Monthly				
				16	RL3	Weekly			X	
				17	RL4	Daily				X
			4 Service Responsiveness	18	RS1	Immediate	X	X		
				19	RS2	Interactive				
				20	RS3	Message			X	
				21	RS4	Next Day				X
				22	RS5	Scheduled				
			5 Service Demand Profile	23	DM1	Peak	X			
				24	DM2	Rhythmic		X		
				25	DM3	Stable			X	
				26	DM4	Constant				X
			6 Service Demand Frequency	27	FQ1	Very High	X			
				28	FQ2	High		X		
				29	FQ3	Medium			X	
				30	FQ4	Low				X
				31	FQ5	Very Low				
			7 Service Reporting	32	RP1	Mandatory Essential	X			
				33	RP2	Mandatory Non-essential		X		
				34	RP3	Ad-hoc Essential			X	
				35	RP4	Ad-hoc Non-essential				X
			8 Regulatory Controls	36	RG1	Regulated	X	X		
				37	RG2	Unregulated				
			9 Existing Automated Systems Support	38	AS1	Completely Automated	X			
				39	AS2	Mostly Automated		X		
				40	AS3	Some Automation			X	
				41	AS4	No Automation				X

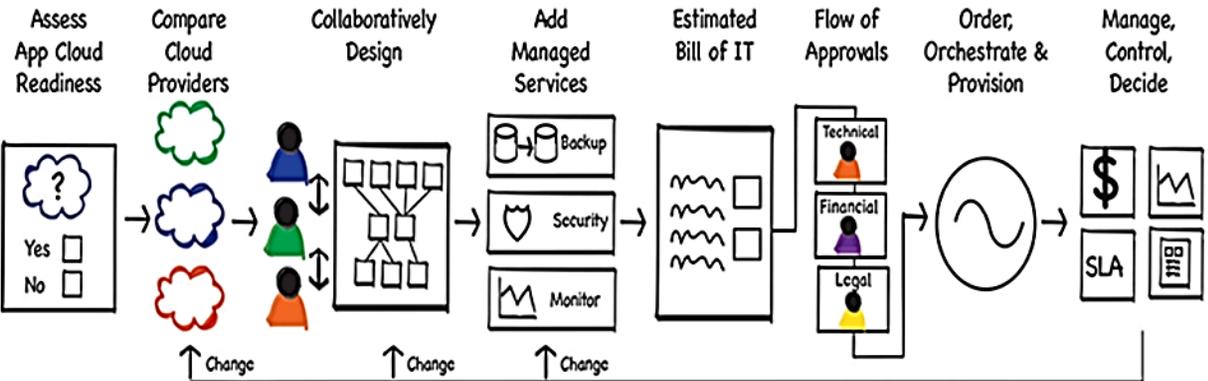
Ref#	Category	Question	Supplier Response
Q7.	Server/Storage	<p>The Commonwealth currently spreads costs across a very simple RU model. Do you have an enhanced RU model that could offer a larger variety of services while minimizing the RUs and their complexity?</p>	<p>IT Financial Management is a key component of Capgemini’s SIAM. The key challenge is to disaggregate the consumption cost from the various STS and reaggregate to produce charge-back RUs to the consuming Agencies. The cost RUs do not necessarily have to match 1-to-1 to the Chargeback RUs and therefore, could be modelled at a consumable IT Service (e.g. Database-as-a-Service, Infrastructure-as-a-Service, etc.). For example the email IT service consumes compute, network, storage, database components all with their own CAPEX and OPEX related STS RU charges. These can then be modelled in the ITFM module to a Messaging-as-a-Service.</p>  <p>Capgemini’s SIAM removes the complexity of the RU structure of STS cost and user chargeback through automated processes that govern and validate the consumption of the STS RUs and user services while automatically reconciling the volumes.</p> <p>Capgemini does have an enhanced RU model that allows us to address a large variety of services from the multiple STSs while simplifying consumption RUs for IT services by the Agencies.</p>
Q8.	Server/Storage	The Commonwealth	Please refer to Q6 and Q7. Once you have defined the service components and their characteristics,

Ref#	Category	Question	Supplier Response
		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?	<p>automated the aggregation of the components, then the remaining pieces of the puzzle are Service Design and Service Catalog.</p> <p>The Service Design function continually manages the Service Design Characteristics and matches that to the evolving needs of the Agencies IT services. The Service Catalog is the mechanism by which the services are offered to the consumers and provides platform to orchestrate the fulfillment by one or more Service Tower Suppliers.</p>
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?	<p>Some models align service lines along technologies. The intent of the Tower approach is to align services with those available from pre-determined procurement frameworks, in order to support better understanding of price and performance.</p> <p>Most Tower models have a single supplier providing the Tower service, but it is possible to have multiple suppliers in a single Tower to provide competitive tension, with the integration between them being managed by the SIAM provider. Taking this approach can provide reduced service complexity, but is likely to increase integration complexity. The services consumed by many users are likely to depend on all of the Towers, with consequent high levels of interaction between the Tower suppliers and consequent SIAM provider workload.</p> <p>A typical example has the following Towers/service lines:</p> <ul style="list-style-type: none"> <li>• Hosting</li> <li>• End User Computing</li> <li>• Application Management</li> <li>• Network</li> </ul> <p>If a technology aligned model like this is adopted, the following challenges must be considered when contracting with a SIAM provider and suppliers:</p> <ul style="list-style-type: none"> <li>• It is more likely that a Tower supplier will use a sub-contractor, where it does not have the specific capability for one aspect of the service, e.g. support for a particular niche application. This subcontracting can lead to a loss of transparency in the supply chain, with a risk that issues with subcontractor delivery may be hidden from the SIAM provider</li> <li>• There are likely to be a high number of dependencies between services. This increases daily</li> </ul>

Ref#	Category	Question	Supplier Response
			<p>interactions, costs and complexities. In turn this increases the workload of the SIAM provider and of the suppliers, and crucially can affect service. For example delaying incident resolution as incidents have to be passed between suppliers</p> <ul style="list-style-type: none"> <li>• The End User Computing and Application Management suppliers may each provide a large number of individual services. This makes it more challenging to change the supplier of one of these services, reducing the flexibility that SIAM approaches can offer.</li> </ul> <p>The better approach is to align service towers with available services instead of technologies. This can be particularly applied to cloud services such as Platform-as-a-Service (PaaS). Hosting would create unnecessary interfaces and complexities in addition to legacy services that cross multiple towers. It is also usefully applied where there is a one to one relationship between the business service consumed by users and the service provided by the supplier, e.g. a Payroll Software-as-a-Service.</p> <p>Our recommendation is that the design of services and design of service towers should be done together using the following considerations:</p> <ul style="list-style-type: none"> <li>• Group services into a service tower only where that provider offers the higher value and quality of service, for example, where one supplier specializes in those services.</li> <li>• Review system architectures in order to take advantage of pre-existing commodity services (for example Hosting, and Cloud storage).</li> <li>• Match service lines to supplier offerings and capabilities (for example, different service lines for IaaS and PaaS).</li> <li>• For a custom legacy application consider retaining a single service provider for all aspects required to support it.</li> <li>• Create a single service line for a self-contained service provided to a specific customer or group of customers (for example, email).</li> </ul> <p>A typical example could include the following service lines, each provided by different suppliers. An example has a mix of technology alignment (IaaS and PaaS), and service alignment. This mixture is often the preferred approach to defining appropriate service lines taking into account legacy IT:</p> <ul style="list-style-type: none"> <li>• Cloud email (includes hosting)</li> <li>• Infrastructure hosting (IaaS)</li> <li>• Infrastructure hosting (IaaS) Support – the supporting services for compute, storage and backup etc.</li> <li>• Platform hosting (PaaS)</li> </ul>

Ref#	Category	Question	Supplier Response
			<ul style="list-style-type: none"> <li>• Platform hosting (IaaS) Support – the supporting services for database, messaging, web etc.</li> <li>• Application support</li> <li>• Payroll application hosting and support</li> <li>• Legacy application hosting and support</li> <li>• Desktop support</li> <li>• Network – WAN and LAN (moving to Software Defined Networking (SDN) will move LAN support into the Infrastructure hosting (IaaS) Support service line with physical LAN being kept in the network service line.)</li> </ul> <p>This alternative approach is likely to result in a greater number of suppliers, but if carefully designed can achieve controlled integration complexity and hence higher service quality and lower overall costs. Capgemini's SIAM model can accommodate any number of suppliers and service lines.</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>New Storage offerings are available both on premise and off premise from Cloud service providers:</p> <p><b>Object Based Storage</b></p> <p>A storage architecture that manages data as objects, as opposed to other storage architectures like file systems which manage data as a file hierarchy and block storage which manages data as blocks within sectors and tracks. Can be used for backup and recovery, tiered archive, user-driven content (like photos, videos, music and files), data lakes for Big Data analytics and data warehouse platforms, or as a foundation for server-less computing design.</p> <p><b>Block Storage</b></p> <p>Provides block-level storage that serves as a virtual hard drive for Servers.</p> <p><b>Archive Storage</b></p> <p>Typically allow-cost and highly durable storage service for long-term backup and archive of any type of data.</p> <p><b>Storage Gateway</b></p> <p>An appliance that seamlessly links on-premises environments to cloud storage. It provides low-latency access to frequently accessed data and maintains durable remote volumes. It can be used with existing backup and recovery applications to replace tape automation without disrupting existing processes, or supplement “bursty” on-premises workloads with storage capacity on</p>

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			<p>demand.</p> <p><b>Software Defined Storage</b></p> <p>Abstracts storage from disparate arrays into a single pool of storage capacity. Enables end-to-end monitoring and analysis of storage services through analysis of real-time metrics for applications, hosts, switches, and arrays.</p> <p>Storage is typically charged per GB based on storage type, tiers if applicable and service level.</p>
Q11.	Server/Storage	<p>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>	<p>Capgemini provides a Software Defined Storage offering – Storage Resource Management (SRM) – that abstracts the storage from disparate on premise arrays into a single pool of storage capacity. This allows end-to-end monitoring and analysis of all storage services through real-time metrics for applications, hosts, switches, and arrays. SRM enables assurance of storage services by managing and responding to service-level deviations through custom thresholds and dashboards across heterogeneous storage.</p> <p>Capgemini SRM enables visualization of applications for storage dependencies, analyze configurations and capacity growth, and enhance the environment to improve return on investment (ROI). Capgemini SRM provides three key elements:</p> <p><b>Visualize:</b></p> <p>SRM provides detailed relationship and topology views from virtual or physical hosts down to the logical unit number (LUN) to identify application to storage dependencies. It also shows performance trends across the data path to help IT Operations to understand the impact that storage has on applications.</p> <p><b>Analyze:</b></p> <p>SRM allows Capgemini and IT Operations to quickly spot service-level agreement (SLA) problems through custom dashboards and reports that meet the needs of a wide range of users and roles. SRM can track storage consumption across data centers with built-in views that help visualize who is using capacity, how much they're using, and when more will be required.</p> <p><b>Improve:</b></p> <p>SRM displays historical workloads and response times to help determine the right storage tier. It tracks capacity use by service level or automated storage tiering policy, enabling show-back or charge-back reports to align application requirements with costs.</p>

Ref#	Category	Question	Supplier Response
Q12.	Server/Storage	<p>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>	<p>The Capgemini Cloud Services Brokering (CSB), which can be incorporated within the SIAM model, acts as an intermediate layer between cloud vendors and its consumers providing various services such as selection, design, support, performance management, security, etc.</p> <p>CSB bundles services and connections to other clouds, aggregates, standardizes and enhances service information; and avoids many point-to-point interfaces with a management ‘hub’.</p>  <p>We have built a catalog populated with standardized service descriptions, which means that different Service Tower Suppliers’ offers (including private as well as public cloud options) can be objectively compared. It’s very much like using an insurance comparison site - you can view the whole market through a single plane of glass.</p> <p>Our selection engine helps put together the right service with the right attributes. For example, a consumer might need certain data to be stored in a specific location such as a Government only public cloud – they can instantly see whether a service provider offers that and how it compares with other services in terms of price and other attributes.</p> <p>Capgemini provides a single pane of glass for selecting the right solution, Capgemini also provide one pane of glass for seamlessly monitoring and managing the solution once it’s in use. This “service layer” enables visibility of the overall cloud infrastructure while shielding consumers from the complexity of</p>

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			<p>the individual underlying elements; it provides a simple, straightforward interface to all of them.</p> <p>CSB has a Discovery and Sync for VMware functionality that allows VITA to easily consolidate the management of VMware farms, VMware private clouds and public clouds into a common multi-cloud platform that drives standardization and simplification. It provides a streamlined way to import key attributes of a VMware cloud such as the vApps and vApp templates. The sync feature allows VMware admins to continue to use VMware consoles alongside CSB platform.</p> <p>Using CSBs Service Templates for Private Clouds, VITA can mimic public cloud providers such as Amazon, Google, Terremark and Savvis in how they display and offer private cloud services. Service templates provide common pricing models (pay-as-you-go, reserved and pre-paid) as well as the definition of the configuration parameters of private cloud resources (vCPUs, memory and storage). This means VITA can greatly improve the buying and consumption experience of private clouds with the use of public cloud-like pricing and packaging that consumers desire.</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>An on-demand, secure and scalable self-service database platform that automates provisioning and administration of databases and can be used by developers and non-technical personnel makes perfect sense for the new IT Operating Model. In essence, VITA users gain access to the database resources they need without VITA having to procure, set up and maintain the infrastructure and software for each request. Database as a Service is a foundational service in Platform as a Service used for DevOps</p> <p>Database support services can be a separate Service Tower Supplier to the DBaaS, however, most DBaaS can be managed by the developers themselves.</p> <p>Capgemini provides enhanced support RUs per month for DBaaS as part of our CSB offering. The actual DBaaS is typically charged in a similar way to VM's using vCPU, Memory (GB), IOPS and Network Performance as cost drivers. E.g. Memory Optimized Xtra Large would have 4 vCPU, 32 GB memory, IOPS optimized and Moderate network performance</p>
Q14.	Server/Storage	<p>The Commonwealth wants to provide cost effective solutions to VITA</p>	<p>In our vision we highlighted the constant pressure that the IT function is under to reduce costs, become more innovative, and support the Commonwealth in its journey to increase efficiencies and deliver faster with higher quality services. The VITA organization needs to reinvent itself and become a service broker and integrator of IT services sourced from many different cloud service providers and Service</p>

Ref#	Category	Question	Supplier Response
		<p>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>Tower Suppliers. But to realize this new IT organization, it is vitally important to implement an IT management system, Capgemini’s Service Integration and Management (SIAM), providing a unified framework of processes, data, and IT solutions needed to enable this new role. The new IT organization is also much more dependent on automated tools and end-to-end processes, with improved transparency and visibility by using a common information model.</p> <p>In addition, a new IT operating model is needed which describes how the IT function can be automated and supported. SIAM provides a fundamentally different approach to manage IT services across the entire IT Value Chain enabling better, faster, and cheaper IT service delivery with reduced risk. The following cost and value drivers are common of SIAM:</p> <ul style="list-style-type: none"> <li>• Improve the value of IT delivered to the Commonwealth; for example, supporting innovation and enabling new services.</li> <li>• Transform and automate business processes.</li> <li>• Enhance customer experience.</li> <li>• Deliver insight (by providing better information).</li> <li>• Faster delivery of new or enhanced IT services aligned with Commonwealth priorities.</li> <li>• Lower unit costs with more flexible sourcing and cost models to adapt to changing demands.</li> <li>• Reduced risks through improved controls and transparency.</li> <li>• Faster response to potential security issues or other issues (limiting the impact on the Commonwealth).</li> <li>• Better quality of services aligned with business requirements.</li> <li>• Improved transparency of IT.</li> <li>• Improved collaboration and communication between the business and IT.</li> </ul> <p>We do not see any requirements in this RFI that we believe that would cost more to meet than the business value they provide. However, consideration needs to be made regarding balancing the procurement of and individual IT Service with actual consumed volumes. For instance, a service with a small volume consumption might be more preferably procured from an existing STS rather than entering into a new procurement cycle.</p>
Q15.	Security	The Commonwealth is interested in an	<p>Capgemini is dedicated to maintaining increasing levels of security at each phase of the life of data. Data encryption remains a key piece of the equation. Each piece of data has its level of significance and</p>

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		Enterprise Key Management System for compliance and security. How do you propose the Commonwealth request Key Management services?	<p>leaving that data vulnerable without encryption mechanisms in place would be a huge detriment to the protection profile. Given the complexity of data security and security key management, Capgemini can aid the Commonwealth through industry leading practices and institutional “know how” of injecting Enterprise Key Management into the environment.</p> <p>What follows are some of the industry leading practices that should be followed while implementing encryption mechanisms and data security.</p> <p><b>A. Central Key Management Approach with Distributed Execution</b></p> <p>In a more conventional approach a deployed solution based on the hub-spoke architecture yields greater results for a centralized key management deployment. The strength of this architecture allows the encryption/decryption appliance to reside on virtually any segment within the architecture. Added flexibility allows for the “hub-spoke” key management component to be easily deployed onto different nodes and leveraged with many encryption applications. Upon completion of deployment with spoke nodes intact, the encryption/decryption mechanisms are available at the node level, where the encryption/decryption task is performed. This particular approach has many benefits to include a decrease in network utilization and increased availability with multiple nodes in place. An effective key manager shifts its focus to critical key management functions to include but not limited to:</p> <ul style="list-style-type: none"> <li>• Generational management of the key space.</li> <li>• Secure storage and expiration of the keys which are used by and within the spoke environment.</li> </ul> <p><b>B. Centralized User Profiles for Authentication</b></p> <p>Similar to providing true auditability and accountability throughout the entirety of the landscape, it remains pivotal to have an appropriate authentication source in place. Access should be provided based on the user profiles defined in the key manager. Our goal is to verify and validate that only the authenticated users can perform the various encryption/decryption functions within the key management ecosystem.</p>
Q16.	MSI	Identity and Access Management (IAM) services and the systems supporting those functions are	Capgemini’s portfolio of success within IAM stems from its ability to perform the proper requirements analysis and product evaluation against our customer’ environment. With regard to VITA’s IAM structure existing as a decentralized system; we would first focus on decoupling the current structure to bring the associated environments and systems together to enable true accountability and auditability at the Identity level. For Capgemini, this begins at the most granular stage in examining the

Ref#	Category	Question	Supplier Response
		currently split between multiple providers. How do you propose bringing these services together to provide a single integrated service?	<p>current AD structure/forest to confirm the composite backend is designed to handle an expansive Identity domain.</p> <p>What we've found in some case examples is that previously established AD structures were created initially to support a given entity. This effort may have been augmented from there to couple with another AD forest to support an additional environment. Our approach would consist of first consolidating the AD structures to create one true source of repository data. Capgemini would then normalize the AD data, followed by federating it. An additional key element of the IAM deployment would be the appropriate selection of an IAM solution to serve as the Identity Directory. Capgemini's stance on the solutioning approach is an agnostic one, allowing the requirements of the solution to dictate the appropriate selection. Capgemini understands "Identity" within the security space as it has become the focal point of the "new perimeter" of the security landscape.</p> <p>The key delineation for the Commonwealth is specifying the need for a central encompassing tool in conjunction with embedded process.</p>
Q17.	MSI	<p>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?</p>	<p>Each Service Tower Supplier has the challenge to develop and maintain interfaces between their IT management systems and the IT management systems of the Commonwealth. This is a complex assignment as each has different processes and tools.</p> <p>Integration and data exchange between Service Tower Suppliers and customers is one of the biggest challenges. Most Service Tower Suppliers have implemented their own proprietary integration platforms to exchange data with customers; for example, to:</p> <ul style="list-style-type: none"> <li>• Receive incidents from customers (and provide status updates and resolutions).</li> <li>• Synchronize service catalogs with customers.</li> <li>• Receive service requests.</li> <li>• Federate configuration data to/from customer CMDBs.</li> <li>• Exchange knowledge, known errors, and documents.</li> <li>• Publish SLA reports and supplier performance data.</li> <li>• Synchronize or publish the change and release schedule (for approval and impact assessment).</li> <li>• Inform customers of major incidents (e.g., outages) or planned changes.</li> <li>• Provide consumption and cost data (billing and charging data and related evidence).</li> <li>• Receive demand and project requests.</li> </ul> <p>The disadvantage of having these proprietary interfaces is that each integration with a new customer is</p>

Ref#	Category	Question	Supplier Response
			<p>very expensive and cumbersome. Often customers rely on manual integrations resulting in reduced customer experience and increased work on for everyone. One of the biggest complaints related to outsourcing is the inability of service suppliers to provide relevant insight in the performance and costs of IT services delivered. This is mainly due to the lack of standard and open communication providing the ability to easily exchange information. By using SIAM, collaboration will be improved significantly through standardized interfaces of OLAs and SLAs along with standardized processes.</p> <p>Capgemini has deployed MSI solutions for many customers including other US State Administrations, foreign Government agencies as well as the private sector. Capgemini has a mature set of IT processes, shared SLAs and OLAs developed over many years and are proven within our existing engagements.</p>
Q18.	MSI	<p>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)?</p>	<p>As data centers become larger and more sophisticated, it becomes increasingly important to know exactly what all the assets in the data center are, where they all are, and how they relate to each other and to information technology. The advent of data center infrastructure management (DCIM) has been a big step in bringing under control the patchwork of assets that has built up over time in many data centers. Capgemini asserts that what DCIM has done for organizing the physical assets of a data center can now also include managing the workflow processes within the data center while integrating this physical information with the logical or virtual level assets of the IT Service.</p> <p>This new, higher level of control and integration, data center service management (DCSM), should either be an independent STS or part of the MSI. Incorporating into the MSI extends the MSI services to provide the following Data Center facility services:</p> <ul style="list-style-type: none"> <li>• <b>Capacity Planning</b> - Enhance the use of data center assets, space and energy</li> <li>• <b>Asset Management</b> - Know what you have and where, and improve asset tech refresh cycles</li> <li>• <b>Reporting</b> - Automate the measurement and evaluation of data center operations</li> <li>• <b>Monitoring &amp; Alarming</b> - Manage thresholds and alarms with real-time data collected from assets, cabinets and data center facilities incorporating into the centralized event correlation engine.</li> <li>• <b>Connection Management</b> - Avoid downtime troubleshooting connections with robust power and network visualization</li> <li>• <b>Workflow Management</b> - Execute changes more efficiently down to the data center floor</li> <li>• <b>Virtualization Integration</b> - Link your virtualization layer to your physical and logical layers with hypervisor connectors for VMware, Microsoft and Citrix</li> </ul>

Ref#	Category	Question	Supplier Response
			<ul style="list-style-type: none"> <li>• <b>CMDB Integration</b> - Synchronize configuration item information to the MSI centralized CMDB</li> <li>• <b>Change Management Integration</b> - Centralize workflow process management and communication with ITSM within the MSI layer</li> </ul> <p>Key benefits of this approach are</p> <ul style="list-style-type: none"> <li>• Bolster ITSM with new information to manage end-to-end IT Value Chain coverage</li> <li>• Keep existing information current</li> <li>• Greater control of change process in data center including onboarding and offboarding of assets</li> <li>• Enforce leading practices</li> <li>• Improved incident resolution</li> <li>• Improved measurement of costs</li> <li>• Increased accuracy of SLAs</li> </ul>
Q19.	MSI	<p>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,</p>	<p>As discussed in Q.6 critical to the success of any service delivery process is defining the Service Level Characteristics which should be derived from the Business Service Characteristics and the Component Performance Characteristics.</p> <p>The DR Plan should result from the business requirements and should be aligned and integrated with the overall business continuity plan of the agency for each application and the resulting infrastructure components.</p> <p>The MSI should provide Architecture Governance, Management and Oversight in the development and maintenance of the DR Plans and the coordination of the tests along with providing the tools to manage the plans.</p>

Ref#	Category	Question	Supplier Response
		development, operations, testing, and coordination. What role should VITA's MSI should play in this effort in relation with the Server Services provider?	
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?	<p>It is important for the Commonwealth to undergo a thorough risk assessment that looks at many factors including environment, climate and electrical power but also other forces like pandemic diseases, natural disasters, facilities like nuclear plants and military zones. The risk assessment will determine number and locations.</p> <p>As a starting point, the Commonwealth should consider two DCs in the region and one out of region for a total of three. Three is preferable for Multi-site High Availability and Disaster Recovery. These DCs could be a combination of Public Cloud, CoLo facilities or Commonwealth owned. Further Commonwealth investment in new facilities is not recommended unless there is a significant ROI. New DC facilities require significant CAPEX when there are already mature DC facilities with public cloud providers and independent DC facility providers.</p>
Q21.	Migration	Suppliers will be required to provide an implantation plan to specify how they will take over responsibility for the existing environment. The	<p>Transition is key to the effectiveness in migrating towards a delivery model spanning across several Service Tower Suppliers. Capgemini has developed a comprehensive approach to transitioning the services from current state to a proposed target end state delivery model. Capgemini's methodology, tools and experience enables the initial service establishment which then provides the foundation for the achievement of service levels. Our approach and capabilities drive the acceleration of transition to steady state operations, while mitigating risk and business disruption.</p> <p>Based on an understanding of objectives, constraints and solution requirements, we apply the following guiding principles in designing the transition solution:</p>

Ref#	Category	Question	Supplier Response
		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?	<ul style="list-style-type: none"> <li>• <b>Risk Mitigated Transition (ADOPT).</b> Balancing speed with value without compromising on risk control is hallmark of our Global Transition Method (GTM). Our proprietary GTM method and tools coupled with a dedicated global transition organization delivers the most consistent, measurable and an on time transition experience for our clients and our delivery organizations as illustrated in our track record of delivery around 100 transitions globally with 97% reported on time.</li> <li>• <b>Continuity and Business Acceptance (ADAPT).</b> While we implement and adapt to the new IT delivery model, it is essential to preserve critical business and functional knowledge across the transition, and to maintain continuity as perceived by the business in order to not only achieve business acceptance for the transitioned scope but be able to provide uninterrupted support to the on-going operations and other transformation activities carried out by other strategic suppliers or other retained functions. The transferred staff is key to maintain continuity, and our Organizational Change Management approach drives a process to achieve business acceptance. It is also equally important to collaboratively work with other vendors towards a common business goal.</li> <li>• <b>Evolutionary Transition into a transformed model (TRANSFORM).</b> Upon completion of Transition and Consolidation, we have achieved considerable transformation. We have implemented managed services for the ADM, ITSM and Infrastructure scope, initiated a dynamic core/flex approach for Application Development, rationalized and consolidated the Applications supplier landscape, and implemented all of this on Capgemini's Next Generation platform for globally distributed work, across multiple locations and Capgemini's delivery centers globally.</li> </ul> <p>Capgemini utilizes our <b>DELIVER</b> methodology to provide structure, governance and flexibility during transition journey. A core part of our <b>DELIVER</b> methodology is our ADOPT-ADAPT-TRANSFORM approach that is described above.</p> <p>Capgemini's experience is the transition plan must be an integration of all the transition plans of the service providers and the MSI to move to the new model.</p>
Q22.	Enhanced Services	The Commonwealth is interested in receiving proposals to include new enhanced services, (e.g., Cloud, Analytics, Managed	<p>Some government departments are working hard to achieve radical transformation in order to deliver improved government services, focusing on citizen needs. In order to deliver true citizen centricity they need to take a genuinely radical leap forward in achieving the digital agenda.</p> <p>Many current digital initiatives are specific to the remit of an individual department or Agency and its need for transactional improvements, instead of being based around real user needs and the citizen's life events. These approaches are ineffective because they focus on individual transactions within a</p>

Ref#	Category	Question	Supplier Response
		<p>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>department or Agency rather than on citizen events.</p> <p>From the citizen’s point of view, it doesn’t make sense that a life event triggers multiple interactions. There is just one government, and providing government with the required information once should be enough. In other words, the biggest opportunity is the cross-government approach.</p> <p>To make radical improvements, each government department or agency should consider not only a specific interaction that needs to be improved, but also the whole context of that interaction. This involves asking what the citizen is trying to achieve, what life event has triggered the interaction, which related government services may be needed, and then creating a user experience that seamlessly and efficiently transacts across multiple government bodies.</p> <p>Achieving citizen centricity requires a top down approach or Digital Transformation. In addition to Digital Transformation there is a need to drive a bottom up transformation providing the basis for new IT services enabling citizen centricity services. These IT Services fall into x areas</p> <ul style="list-style-type: none"> <li>• Digital Services</li> <li>• Platform Services</li> <li>• Infrastructure Services</li> </ul> <p>Starting with the foundational elements and applying what we know of VITA today we suggest the following four transformation categories and subsequent solution building blocks to form the basis for individual Infrastructure Services Transformation programs.</p> <hr/> <p><b>Transformation Solution - Building Blocks</b></p>

Ref#	Category	Question	Supplier Response
			<div data-bbox="682 240 1906 716" style="border: 1px solid black; padding: 5px;"> <p>The diagram illustrates a four-level transformation framework:</p> <ul style="list-style-type: none"> <li><b>Level 4: New Capabilities</b> (top layer) consists of DevOps, Microservices, MyWorkspace, SDN, and Managed Print.</li> <li><b>Level 3: Consolidation</b> (second layer) consists of Data Center Consolidation and Optimization (DCCO), OS Concurrency, Consolidate Storage, and Autonomics.</li> <li><b>Level 2: Assessment</b> (third layer) consists of Application &amp; Cloud Assessment.</li> <li><b>Level 1: Foundation</b> (bottom layer) consists of IT Strategy, CSB, Architecture, Innovation, and Service Integration and Management (SIAM).</li> </ul> </div> <p>These Transformation building blocks will help VITA to move from a heterogeneous, disparate and aging environment to a more standardized, consolidated and rationalized environment able to be scalable, efficient and agile.</p> <p>To address VITA’s current challenges and to arrive at an outlined target solution, people, process and technology changes are needed. Therefore, at the core of a Transformation Plan are foundation related projects followed by assessment related activities. Next, are consolidation related projects that pave the way to then embark on new capabilities.</p> <p>The following are outcomes of our Transformation Solution:</p> <ul style="list-style-type: none"> <li>• <b>Standard Services</b> – to drive speed and consistency.</li> <li>• <b>Reduced</b> operational cost and <b>outages</b>– more competitive pricing.</li> <li>• <b>Cycle Time</b> Improvements – automated service delivery.</li> <li>• <b>Velocity</b> Product Development – increase innovation of IT services.</li> <li>• <b>Enhanced Self-Service and Request</b> - more responsive in assisting customer needs and to improve customer satisfaction.</li> </ul> <p>We believe that a transformation program should focus on 3 key themes:</p> <ul style="list-style-type: none"> <li>• <b>Standardizing</b> the infrastructure to reduce the technology diversity.</li> </ul>

Ref#	Category	Question	Supplier Response
			<ul style="list-style-type: none"> <li>• <b>Consolidating</b> platforms to reduce footprint.</li> <li>• <b>Automating</b> to reduce errors while improving on time to market.</li> </ul> <p>These key themes are aligned in our transformation solution building blocks. We also believe that there are three key ingredients to meet this transformation program:</p> <ul style="list-style-type: none"> <li>• <b>Plan</b> - plan the transformation and its implementation.</li> <li>• <b>Governance</b> - manage the transformation program and implementation.</li> <li>• <b>Solutions</b> - include actual transformation solution(s).</li> </ul> <p>The first major phase is the Transformation Approach Plan.</p> <hr/> <p><b>Defining the Transformation Approach Plan</b></p> <div style="display: flex; align-items: flex-start;"> <div style="background-color: #008000; color: white; padding: 5px; margin-right: 10px;"> <p><b>Key Objective:</b></p> <ul style="list-style-type: none"> <li>• Complete Input Material needed to scope and design the project phases</li> </ul> </div> <div style="background-color: #008000; color: white; padding: 5px; margin-right: 10px;"> <p><b>Key Objective:</b></p> <ul style="list-style-type: none"> <li>• Complete Plan and Commercial aspects to initiate and deliver overall Transformation Programs</li> </ul> </div> <div style="flex-grow: 1;"> </div> </div> <p>We consider three foundational projects should be executed as early as possible, after initial transformation approach planning, to achieve success of the overall transformation journey:</p> <ul style="list-style-type: none"> <li>• Service Integration and Management</li> <li>• Architecture Services Office</li> <li>• IT Strategy</li> </ul>

Ref#	Category	Question	Supplier Response
			<p>The timelines, sequencing and durations of the remaining transformation building block projects are validated together with VITA during the Transformation Approach Plan (transformation strategy and design).</p> <ul style="list-style-type: none"> <li>• Innovation as a Service</li> <li>• Cloud Service Brokerage</li> <li>• Microservices</li> <li>• Application and Cloud Assessment</li> <li>• Storage Rationalization</li> <li>• Autonomics</li> <li>• Data Center Consolidation and Optimization</li> <li>• Microsoft OS Concurrency</li> <li>• My Workspace – End User Services</li> <li>• Software Defined Networking (SDN)</li> <li>• Managed Print</li> <li>• DevOps</li> </ul> <p>Any transformation plan requires a clear blueprint as a target. We believe that the below outlined Infrastructure BluePrint is the right target for VITA to address todays challenges and to provide for tomorrow’s demands.</p> <hr/> <p><b>The Infrastructure BluePrint</b></p> <hr/>

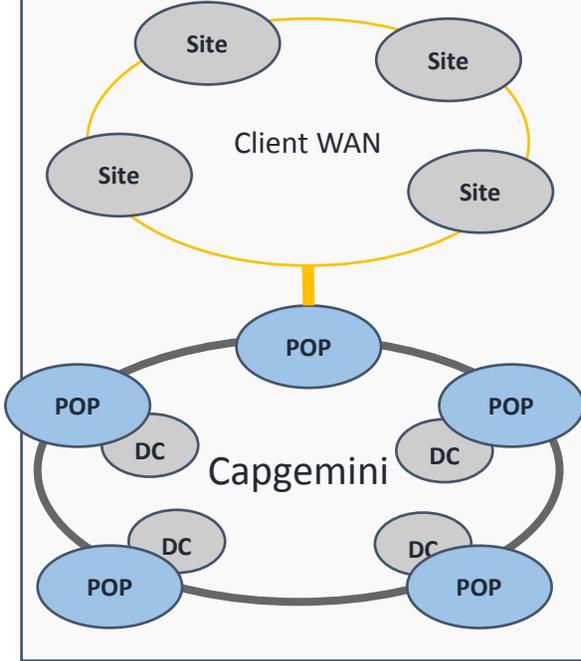
Ref#	Category	Question	Supplier Response
			<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid gray; padding: 5px; width: 45%;"> <p style="text-align: center;"><b>2016 DC – current</b></p> <p style="text-align: center;"><b>1<sup>st</sup> and 2<sup>nd</sup> Platform based</b></p> </div> <div style="border: 1px solid gray; padding: 5px; width: 45%;"> <p style="text-align: center;"><b>2018 DC – everywhere as a Service</b></p> <p style="text-align: center;"><b>3<sup>rd</sup> Platform</b></p> </div> </div> <p>Designing and building new cloud platforms using converged infrastructure radically alters IT economics. Applying the 3<sup>rd</sup> Platform concept the future infrastructure continues to de-couple “policy intelligence” from the underlying hardware. This is a better and more extensible solution as it allows logic and policy management to be abstracted into a distributed software layer that can be automated and controlled centrally and distributed globally. As services are software-based, data center management teams can provision new services on-demand anywhere in the infrastructure without adding hardware. It also allows for legacy and new systems to live side by side.</p> <p>This BluePrint can be used for all transformation projects so that challenges are addressed and VITA paves the way to digital transformation.</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	<p>Public sector digital transformation must address the needs of the citizen from birth to death with everything in between. A lifecycle view enables government to provide joined-up support for citizens at key moments in their lives, such as moving to a new home, getting married, setting up a business, giving birth, or even getting a fishing license. Further, this approach facilitates solutions that lead the citizen through the different implications of the event, reminding them of any additional actions they might need to take with any part of government.</p> <p>That end-to-end view benefits government organizations as well as citizens. It increases data consistency and accuracy, improves real-time perspectives on citizen and business interactions, and</p>

Ref#	Category	Question	Supplier Response
		consider in the future?	<p>enables targeted, real-time support and services while reducing operational costs.</p> <p>Estonia's Tax and Customs Board implemented an end-to-end digital approach to citizen interactions, with spectacular results in terms of citizen satisfaction: the Board was ranked fifth in the 2015 Trust in Public Institutions survey, only behind three emergency services and the defense agency.</p> <p>A success in the UK is the enablement of data sharing between DVLA (Driver and Vehicle Licensing Agency) and the passport office so that the same photos and identity information can be used by both. While relatively modest in ambition, this change has made a huge difference to the citizen's journey.</p> <p>This is true digital transformation. But what is the recommended way to switch thinking away from the old, tried-and-tested approach? It's all about taking an organization and its employees, as well as citizens, on a transformational journey in a managed and focused way.</p> <p>The answer is that there are new methods and approaches to engage everyone on this journey. The most powerful strategy is to make the citizen's digital lifecycle the driving force for the whole organization. Once this happens, operating models can be radically changed so that they reflect citizen-centric thinking, planning and execution.</p> <p>There are many new services in the new "as a Service" IT economy to enable this digital transformation, however, to address technology changes a comprehensive and persistent transformation program needs to be put in place to verify any new services are aligned to business outcomes.</p> <p>Any Transformation approach starts with a Transformation Strategy. The main purpose is to achieve key stakeholder alignment as well as to set out the main direction of travel (the strategy) for the overall Transformation story. Basically, translating the citizen's digital lifecycle into a comprehensive IT Transformation Strategy.</p> <p>The objective for the Transformation approach is to create a strong alignment between Agency objectives and IT capabilities and to direct and guide the right solution at the right time, considering all dependences. This can only be achieved by defining a strategic direction architecture and engagement model through which VITA works in conjunction with Agency management to design a set of IT-enabled solutions to support each initiative to deliver a consistent set of applications, data and technology infrastructure in which to implement the solutions.</p> <p>As part of our approach, the Transformation Building Blocks establish governance related aspects so that solution related dependencies, as well as Agency priority objectives and milestones, may be</p>

Ref#	Category	Question	Supplier Response
			<p>managed and controlled.</p> <p>Our Infrastructure Transformation Program approach focuses on 3 key aspects:</p> <ul style="list-style-type: none"><li>• Focus on the “What”<ul style="list-style-type: none"><li>○ What IT related changes have to be implemented in order to support the business change?</li><li>○ What are the dependencies to other business change programs?</li><li>○ What is the solution / are the solutions details to execute the transformation?</li><li>○ What is the scope of each project – what is in and what is out of scope?</li></ul></li><li>• Focus on the “How”<ul style="list-style-type: none"><li>○ How are the various projects, included in the overall program, phased?</li><li>○ How are the various projects structured – milestones, dependences and outcomes?</li></ul></li><li>• Focus on the “Manage”<ul style="list-style-type: none"><li>○ How are changes to business strategy, IT Strategy and emergence of new technology handled?</li><li>○ How are dependencies between projects and related solutions being managed?</li></ul></li></ul>

Ref#	Category	Question	Supplier Response
Q24.	Enhanced Services	What would you propose as a good business case for virtualizing the desktop (offering VDI)?	<p>The business case for Virtual Desktop Infrastructure (VDI) is an analysis of ROI in several key areas. These are: decreased energy bills, lower support and testing resources, more efficient OS update cycles, better and faster application management, disaster recovery capabilities, business compliance and increased security. The ROI analysis can be a complex process and requires a strategy that takes into account many factors like PC refresh cycles, OS update cycles, licensing models, current patching and application deployment processes. Taking a long view of 3, 4, and 5 years we then compare the capital cost of the VDI investment with the cost savings in hardware, power savings and staffing reductions to show the tangible benefits of a potential transition to VDI.</p> <p>To enhance the ROI for VITA and limit the risk of a bad investment for Agencies considering VDI, Capgemini would develop an approach to assess the current operating environment through an extensive assessment process that looks at the entire estate from networks and endpoints, application usage metrics, locations and device type usage. Through the assessment we develop “personas” and gain a great understanding of which roles can benefit the most from VDI and which applications can be virtualized whilst balancing each use case with real time performance data. The assessment output provide a representation of hard costs like licenses, hardware, PC costs, power consumption and soft costs like staffing, productivity gains, and decreased PC downtime. Patching and application updates or installations are then compared with current run and support costs to round out and determine the final ROI. This data is often very granular and provides the business with the necessary detail to choose the correct time and personnel to move forward with VDI if it proves viable.</p> <p>The business case should also focus on the following key benefits:</p> <ul style="list-style-type: none"> <li>• Enhanced End User Productivity</li> <li>• Increased Flexibility and Agility</li> <li>• Modular Architecture</li> <li>• Reduced Risk</li> <li>• Reduced Costs</li> <li>• Reduced risk of security breaches</li> <li>• Increased user satisfaction</li> </ul>
Q25.	Data Center LAN	What do you recommend as the	Earlier thinking involved having a separate router in the Data Center to terminate the WAN links and interconnect to the Data Center LAN, providing support for clear demarcation. This allowed each

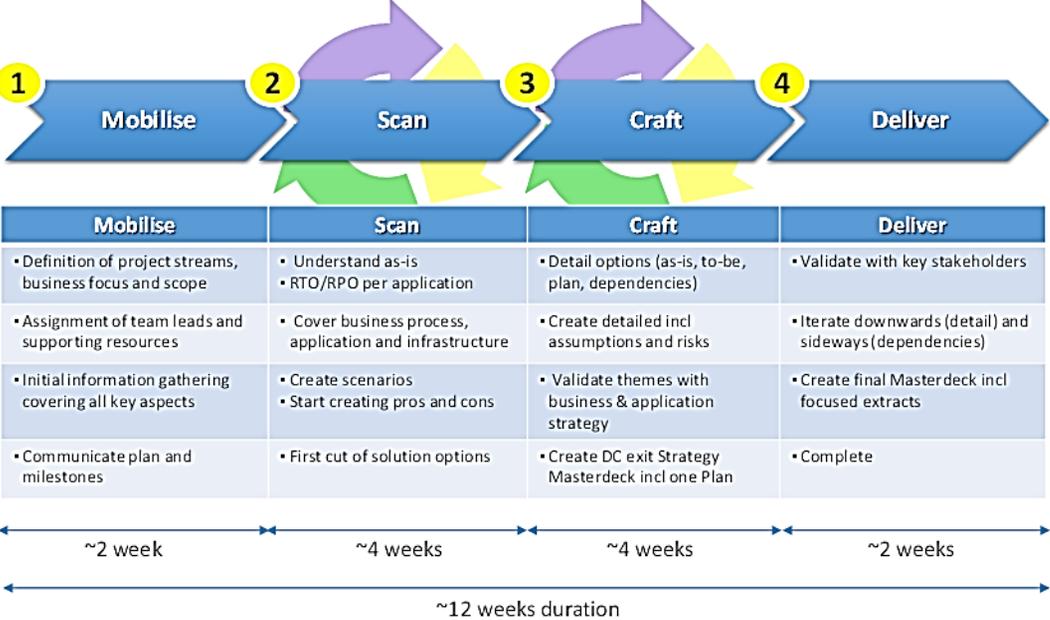
Ref#	Category	Question	Supplier Response
		<p>best demarcation point between the Data Center LAN and the Network or WAN? The Commonwealth wants to make the cleanest scope separation for a future WAN Network RFP.</p>	<p>supplier to focus on their area and interaction between the two network environments to be coordinated. This helped verify that no single party was likely to introduce network routing problems.</p> <div data-bbox="879 337 1684 932" data-label="Diagram"> <p>The diagram illustrates a network architecture. At the top, four 'Site' nodes are arranged in a ring, connected by red lines, labeled 'Client WAN'. Below this, three 'DC' nodes are enclosed in a dashed oval, labeled 'Capgemini'. Red lines connect each of the four 'Site' nodes to one of the three 'DC' nodes. To the right of the diagram, two text annotations are present: 'WAN operated by a Local Data operator.' and 'Multiple client dedicated DC lines, operated by a local Data operator'.</p> </div> <p>Our thinking today has evolved to a more enterprise class perspective as we ourselves have made course adjustments on our own WAN that we are currently deploying into our Capgemini Backbone data centers. For example in our own network, there are no changes on the WAN infrastructure, but local access is purchased at wholesale pricing. Lines between our client sites and the Capgemini DC are replaced by connections between client sites and the Point Of Presence (POP), which is less expensive as the POP connects into the Capgemini Backbone. The Backbone is operated by Capgemini which allows us to offer more competitive connection pricing and acts as an enabler to reduce the number of client connections and managed cross-connects coming into the Data Center. Capgemini believes this will also result in less tag-and-locate requests with the Local Exchange Carrier (LEC) and enable more timely connections.</p>

Ref#	Category	Question	Supplier Response
			<div style="border: 1px solid black; padding: 10px;">  <p style="text-align: center;">Client WAN</p> <p style="text-align: center;">Capgemini</p> </div> <p>No change on the WAN infrastructure, but local access purchased at wholesale price</p> <p>Backbone between Capgemini Data Center, operated by Capgemini</p> <p>The client interconnection with Capgemini Data Center is operated through a POP. The connection between client and POP is at a regulated price</p> <p>We believe this is the preferred practice and have seen this deployed at other states and private organizations and works as a good point of demarcation between a STS of telecommunications services and network the individual STSs that make up your IT service catalog.</p>
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	<p>Questions 26 through 30 are like trying to develop a consistent description of the interior of a house by looking through different windows. As a result we've chosen to attempt to combine the discussion of our answers to provide a simplified and consistent response.</p> <p>We find that servers and storage are tightly integrated with the LAN infrastructure in the Data Center. We believe having multiple Service Tower Suppliers in this space likely leads to inefficiencies and a much more challenging support model as tools, processes, and people are not as closely aligned and can make implementation and troubleshooting more complex. The exception to this is Software</p>

Ref#	Category	Question	Supplier Response
		and Storage services. Do you find any challenges, issues, or concerns with this approach and why? Any recommendations?	<p>Defined Networking (SDN) which may be implemented within a private Cloud and managed by the Service Tower Supplier supporting the cloud infrastructure.</p> <p>Obtaining data center facilities services from the same provider as described above allows focus on SLAs on the Server, Storage, and LAN. The provider really becomes internally focused on meeting the Data Center facility/environmental requirements to support the overall goals of the Service Tower Supplier's availability SLAs for the above services. This is a much more common approach but we're starting to see enterprise services contracted independently from the facility with the adoption of Cloud and Hosting services. While some suppliers may have a wide skillset, splitting these responsibilities may allow the Commonwealth to obtain better pricing. This approach also allows the Commonwealth to obtain the specific capabilities needed to support VITA platforms and applications without being tied to a long term lease. This has the additional benefits of not tying up Opex spend on facilities and maintenance or capital on critical environmental infrastructure.</p>
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?	<p>Capgemini does see some advantages to decoupling the Data Center Facility services from the Server, Storage, or Data Center LAN services. Decoupling may in fact compliment your auditing and physical security processes slightly, however, as discussed in Q18, a higher level of control and integration, data center service management (DCSM), should either be an independent STS or part of the MSI.</p> <p>Capgemini has observed how suppliers have followed poor processes with the consequence that assets are left in place after retirement, still using rack space, cooling, electricity etc. which then results in continuing RU charges. Incorporating DCSM into the MSI extends the MSI governance and processes to Data Center facility services.</p>
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	<p>As applications become more distributed for resiliency we find that keeping the same support skillsets together even across multiple sites to be the preferred approach as they typically are linked together, both through their technology and monitoring. We are finding that networking specialties are diverging and recognize that having separate suppliers for supporting Enterprise DC LAN and WAN is becoming more common. The skillsets required to support the Enterprise Campus and Branch LAN no longer converge where they once did. Technologies such as SDN/NFV, Container networking, Firewalling and Load Balancing are unique in the Datacenter and require a specific application style focus that is found in the Enterprise LAN.</p> <p>Generally speaking, we see most customers that use an Enterprise MPLS network have whoever is managing and supporting that contract provide the connections to the Data Centers. This eliminates</p>

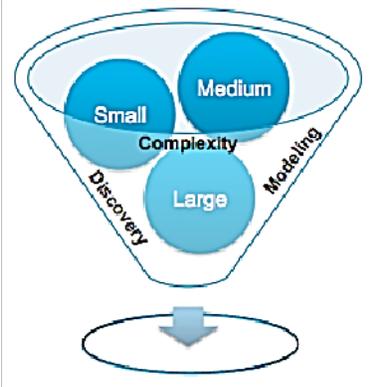
Ref#	Category	Question	Supplier Response
		advantages, disadvantages and tradeoffs of splitting the facility services out versus coupling these services with Server, Storage, Data Center LAN?	the need for a third party agreement to allow another supplier to order services to an existing contract.  LAN service providers should be well positioned to provide the connectivity from the POP through their backbone to their Data Center where the equipment is hosted, including secondary Centers, as long as it's available from a POP on the backbone. This design should make it easier to get those connections in place with the resiliency and redundancy required.
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?	
Q30.	Data Center LAN	If the solution includes new Data Centers, who should provision and manage the network connections between the Data Center locations?	

Ref#	Category	Question	Supplier Response
		Should it be the Network Provider, the Data Center Provider or the Server, Storage, Data Center LAN Provider?	
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>Any Data Center Consolidation and Optimization (DCCO) project requires significant planning to achieve success, therefore, to enable the preferred options to be considered, we use a 4-Phased approach:</p> <ul style="list-style-type: none"> <li>• Mobilize – kick-off including a stakeholder on-boarding</li> <li>• Scan - perform full top down and bottom up “As-Is” assessment</li> <li>• Craft – create options, solutions and business cases</li> <li>• Deliver - final report out including the “To Be” suggested way forward</li> </ul> <hr/> <p><b>Data Center Exit Approach</b></p> <hr/>

Ref#	Category	Question	Supplier Response								
			 <table border="1" data-bbox="751 446 1801 738"> <thead> <tr> <th>Mobilise</th> <th>Scan</th> <th>Craft</th> <th>Deliver</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> <li>• Definition of project streams, business focus and scope</li> <li>• Assignment of team leads and supporting resources</li> <li>• Initial information gathering covering all key aspects</li> <li>• Communicate plan and milestones</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>• Understand as-is</li> <li>• RTO/RPO per application</li> <li>• Cover business process, application and infrastructure</li> <li>• Create scenarios</li> <li>• Start creating pros and cons</li> <li>• First cut of solution options</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>• Detail options (as-is, to-be, plan, dependencies)</li> <li>• Create detailed incl assumptions and risks</li> <li>• Validate themes with business &amp; application strategy</li> <li>• Create DC exit Strategy Masterdeck incl one Plan</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>• Validate with key stakeholders</li> <li>• Iterate downwards (detail) and sideways (dependencies)</li> <li>• Create final Masterdeck incl focused extracts</li> <li>• Complete</li> </ul> </td> </tr> </tbody> </table> <p data-bbox="751 771 1801 860">                 ~2 week      ~4 weeks      ~4 weeks      ~2 weeks                  ~12 weeks duration             </p> <p data-bbox="674 893 1879 958">                 To achieve success, we would approach this from both top down (business and application) and from bottom up (facilities and infrastructure).             </p>	Mobilise	Scan	Craft	Deliver	<ul style="list-style-type: none"> <li>• Definition of project streams, business focus and scope</li> <li>• Assignment of team leads and supporting resources</li> <li>• Initial information gathering covering all key aspects</li> <li>• Communicate plan and milestones</li> </ul>	<ul style="list-style-type: none"> <li>• Understand as-is</li> <li>• RTO/RPO per application</li> <li>• Cover business process, application and infrastructure</li> <li>• Create scenarios</li> <li>• Start creating pros and cons</li> <li>• First cut of solution options</li> </ul>	<ul style="list-style-type: none"> <li>• Detail options (as-is, to-be, plan, dependencies)</li> <li>• Create detailed incl assumptions and risks</li> <li>• Validate themes with business &amp; application strategy</li> <li>• Create DC exit Strategy Masterdeck incl one Plan</li> </ul>	<ul style="list-style-type: none"> <li>• Validate with key stakeholders</li> <li>• Iterate downwards (detail) and sideways (dependencies)</li> <li>• Create final Masterdeck incl focused extracts</li> <li>• Complete</li> </ul>
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Ref#	Category	Question	Supplier Response
			<div style="text-align: center;"> </div> <p>The Capgemini DCCO methodology is an iterative approach and process over many engagements</p>

Ref#	Category	Question	Supplier Response
			<p>The chart illustrates a six-phase project process:</p> <ul style="list-style-type: none"> <li><b>0. Due Diligence:</b> Discover baseline figures, processes.</li> <li><b>1. Pre-study:</b> Establish scope, budget &amp; program plan.</li> <li><b>2.1 High Level Planning:</b> Define system &amp; change batches, batch move plan.</li> <li><b>2.2 Detailed Planning:</b> Create RFC, align organization for work.</li> <li><b>2.3 Execution:</b> Execution of work orders, hand-over to operations.</li> <li><b>2.4 Decommission:</b> Decommission of servers &amp; systems.</li> </ul> <p><b>Main focus areas:</b> Data Collection Review, Analysis &amp; assessment, Business justification, Technology status &amp; input, Budget, Business Case, KPIs, resource planning, Relocation scenarios, work methods, time plans, Risk handling &amp; mitigation, Define system and change batch candidates, Physical inventory, Resource planning, time plans, Service windows negotiations, Detailed planning per individual change batch, Develop Run Schedule, Test &amp; verification, Prepare RFC to tech teams, Create work orders, Hand-over to IT Operations.</p> <p><b>Main output:</b> Key recommendations, High level business case, Proposal Phase 1 and 2, Program plan incl. budget, Capacity &amp; resource plan, Total scope &amp; inventory list, Risk handling &amp; mitigation, Change batches, Planning &amp; resource allocation, Service window approval, RFC, Run Schedule, Relocated systems, Updated documentation, Close down of servers &amp; infrastructure, Close down of facilities.</p> <p><b>Project Management:</b> Manage Program, Communications and Stakeholder management.</p> <p><b>Physical Layer (if not in place):</b> Site survey &amp; equipment inventory, Mark up inventory &amp; Inventory list compilation, Reconciliation meetings, Equipment placement in existing &amp; new DC, Physical move/relocation Documentation handover, Pre-cabling process, reconciliation meetings, Decommission.</p>
			<p>The outputs of the planning phases allow for detailed migration scenarios to enhance both in terms of risks and costs.</p>

Ref#	Category	Question	Supplier Response
			<p>Windows Physical Windows Virtual Mainframe Solaris AS400 Linux Telephony Tandem Teradata</p>  <p><b>Fresh install</b></p> <ul style="list-style-type: none"> <li>Mainframe → New HW/Install</li> <li>HP Non-stop → New HW/Install</li> </ul> <p><b>Move</b></p> <ul style="list-style-type: none"> <li>Windows/Solaris/Linux/ Teradata/Telephony/ Network/AS400 → As-is</li> </ul> <p><b>Virtual move</b></p> <p>Solaris</p> <ul style="list-style-type: none"> <li>Physical to virtual / Virtual to virtual → Small / Medium / Large</li> </ul> <p>Windows</p> <ul style="list-style-type: none"> <li>Virtual to virtual → Small / Medium / Large</li> <li>Physical to virtual → Small / Medium / Large</li> </ul> <p style="text-align: right;"><b>New data center</b></p> <p style="text-align: center;"><b>Service Transformation</b> →</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>As described in Q12. The Capgemini Cloud Services Brokering (CSB), which should be incorporated within the SIAM model, acts as an intermediate layer between cloud vendors and its consumers providing various services such as selection, design, support, performance management, security, etc.</p> <p>However before embarking on a cloud journey Capgemini suggests we develop a strategy in concert with the Commonwealth that facilitates ubiquitous access, rapid deployments, increased collaboration and productivity and addresses business, technical, and security requirements while mitigating cloud supplier “lock-in”. The strategy will assist VITA in their evolution to managing services rather than IT physical assets and will adhere to the following criteria:</p> <p><b>Cloud suitability:</b> Selecting applications for migration, depending on their complexity, business value and sensitivity.</p> <p><b>Cloud options:</b> Selecting a cloud destination (IaaS – public or private, PaaS, SaaS), using tools to assess how each application will perform in a cloud environment and determine the right migration</p>

Ref#	Category	Question	Supplier Response
			<p>pattern.</p> <p><b>Business case:</b> Demonstrating the business value of the rationalization design.</p> <p><b>Proof of concept planning:</b> Defining migration patterns and an initial migration roadmap.</p> <p>Capgemini will consider the following when developing a cloud strategy with VITA:</p> <p><b>Deployment Model:</b> Capgemini assesses and ascertains the appropriate deployment model for applications and data. The Cloud Assessment methodology provides a comprehensive pathway to cloud migration. It involves four highly collaborative phases:</p> <ul style="list-style-type: none"> <li>• <b>Plot:</b> multiple work streams collect application metadata, then scope definition and strategy execution.</li> <li>• <b>Scan:</b> dimensional analysis divides applications into eight decisions vectors.</li> <li>• <b>Craft:</b> a filter identifies appropriate cloud deployment for each application.</li> <li>• <b>Solve:</b> end-state architecture, business case and deployment roadmaps are delivered in six to eight weeks.</li> </ul> <p><b>Integration with existing enterprise systems:</b> Capgemini’s Service Integration solution enables enterprises to focus on business outcomes instead of IT service management challenges. Our coherent end-to-end approach enables companies to increase IT effectiveness and efficiency by overseeing the integration of the following:</p> <p>Governance, Risk and Planning  Enterprise Planning and Programs  Service Management and Delivery  Service Performance Management  Relationship Management  Ecosystems  Contract and Compliance Optimization</p> <p><b>Connectivity Requirements:</b></p> <p>Managing the integration and connectivity between data, hardware, and software across both the traditional and agile IT estates, confirming they work together seamlessly so that they can be shared, managed, combined and collaborations can take place.</p> <p>Fully assess the requirements of each link between components that spans two or more cloud services</p>

Ref#	Category	Question	Supplier Response
			<p>or on-premises systems, and confirm that appropriate connectivity is available to support those requirements.</p> <p>Evaluate the use of network abstraction/virtualization if applicable.</p> <p>Align connectivity capabilities with disaster recovery requirements.</p> <p><b>Develop governance policies and service agreements:</b></p> <p>Develop cloud lifecycle management strategy.</p> <p>Define cloud onboarding and off-boarding requirements.</p> <p>Confirm design portability and interoperability.</p> <p>Assess existing compliance and governance frameworks, identify gaps and harmonize processes.</p> <p>Drive thorough and efficient change management and communications given the potential of multiple cloud service providers.</p> <p>Allow adequate time to educate and habituate changes across the organization.</p> <p>Identify gaps in measurement and management visibility.</p> <p><b>Security and Privacy:</b></p> <p>Integration with existing MSI systems and tools at most levels.</p> <p>Maintain and enhance existing levels of governance and security with current tools and processes.</p> <p>Support for all regulatory and compliance requirements.</p> <p><b>Orchestration:</b> In a hybrid cloud model, orchestration exists between public, community and private clouds resulting in a consolidated process or workflow. Capgemini engineers utilize orchestration tools to create declarative templates that orchestrate these processes into a single workflow, so that the “new environment” workflow described above becomes a single API call. These technologies will enable bureaus, agencies and departments to seamlessly run mission-critical workloads or sensitive applications on the traditionally hosted or private cloud while using the public cloud for high volume workloads that must scale on demand.</p> <p><b>Cloud Management:</b> Integration of traditional hosted services with cloud based offerings are facilitated through the use of an improved cloud management platform (CMPs) to ease the burden of balancing security and thereby driving that targeted benefit and control is exerted. Benefits derived include:</p> <p>Standard Provisioning</p> <p>Self Service, Workflow</p>

Ref#	Category	Question	Supplier Response
			Governance and Security
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?	<p>With Capgemini Cloud Services Brokering (CSB), the Commonwealth can utilize the cloud service provider contracts negotiated and included in CSB or utilize their own direct contracts. In general we believe it is preferential to contract directly with the cloud service providers and not bundle sub contracts within STSs. However, the utility of the CSB approach allows the consumer the flexibility to make the decision based on the service component characteristics and resulting pricing.</p>
Q34.	Cloud Services	When the Commonwealth buys cloud services offerings how do you propose to identify where the data and services are located?	<p>There are three levels to govern and identify where data and services are located.</p> <p>The first is at the level of the service provider, for instance Capgemini contracts with public cloud providers who support U.S. Government compliance requirements, including the International Traffic in Arms Regulations (ITAR) and Federal Risk and Authorization Management Program (FedRAMP). These types of 'Government cloud' offerings are operated by employees who are vetted "U.S. Persons" and root account holders of public cloud provider accounts must confirm they are U.S. Persons before being granted access credentials to the region.</p> <p>The second level is the policy decision of what service components and their characteristics should be procured and made available to the consumer of the service. It is up to the business and application provider to make policy decisions as to what services are offered in the offer catalog.</p> <p>The third level is a business policy that can be put in place to govern the provision of the service components themselves. For instance another state government that we work with has made the</p>

Ref#	Category	Question	Supplier Response
			<p>decision that confidential data should never be stored on a public cloud service and should only be stored on the state-owned data center. This policy can be enforced at provisioning time to confirm that the policy, data and service location are aligned.</p>
<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. The Commonwealth will contemplate any proposed pricing structure along five</p>	<p>With the possible exception of database RUs being added, the currently proposed RU structure allows for the Service Tower Supplier to tie cost drivers to RU charges in a sufficient manner as an initial approach. However as discussed in Q5, 6, 7 and 8 the balance between the number STS RUs vs the aggregated user service charges is a complex subject. We welcome the opportunity to share the experiences we have had with both state government and private sector organizations on how to manage this complexity.</p> <p>The five dimensions are understood with no additional comments.</p>

Ref#	Category	Question	Supplier Response
		<p>dimensions:</p> <ol style="list-style-type: none"> <li data-bbox="411 272 644 727">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 data-bbox="411 750 644 1416">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</li> </ol>	

Ref#	Category	Question	Supplier Response
		<p>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</p>	

Ref#	Category	Question	Supplier Response
		<p>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</p>	

Ref#	Category	Question	Supplier Response
		<p>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</p>	<p>Every attempt would be made to validate the associated volumes during the due diligence/contracting phases. A true-up period (normally four months in duration) can also be agreed to by the parties, where the actual counts for an RU can be verified. If at the end of the true-up period there is a material variance in the baseline volumes, an adjustment to the baseline volumes and charges can be agreed to, with a more material variance allowing for a change to the ARC/RRC pricing. This allows both parties to be fairly protected from the results of an unknown volume.</p> <p>Further, by maintaining all service information in a single CMDB across all support towers there is a single source of the truth from which all parties can work. If associated volumes are correctly maintained via an integrated change process then the CMDB can drive accurate invoices between parties and associated billing out to the Agencies.</p>

Ref#	Category	Question	Supplier Response
		<p>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</p>	

Ref#	Category	Question	Supplier Response
		the volumes to support this chargeable unit?	

## The Role of Security

It is important that security is integrated into each IT value stream to provide the confidentiality, integrity and availability of the end-to-end IT value chain. Security, from the resulting set of technologies and controls, should be designed into the functional components themselves and not an afterthought to be bolted on. Leading practices integrates security to the extent that technology is shared among the Development, Operations and Security domains. This provides a more secure and cost-effective system for managing risk and compliance.

Some IT Services will require more security resources than others depending on several factors including:

- The types of actors that will interface with the functional components, for example employees, partners and customers will all require different levels of access
- The classification of the data that is being handled. For example, is it Top Secret, Confidential, Private, Unclassified?
- The availability requirements of the services
- The regulations associated with the services or agency.

Key aspects of security technologies include:

- Security testing (both source code analysis and penetration testing) to make sure that new applications and services are developed without vulnerabilities, and that existing applications can be tested for vulnerabilities
- Network security to prevent intrusions that cause: denial of service, viruses, and theft or corruption of data
- Encryption for data at rest and data in flight and key management process' to protect sensitive data, signed artefacts and generation of certificates for access control
- Security Information and Event Management Functional Component (SIEM) to identify complex attack signatures that can disrupt operations and affect compliance
- Identity and Access Management (IAM) to manage users of the Value Chain
  - Threat and vulnerability assessments

Each security technology must be treated as a peer to all the other functional components in each value stream. These security technologies need to be integrated at the time each value stream is being designed. Adding security afterwards often leads to increased integration costs

and reduced protection. Security must to be considered during design, development, test and operations. Too often, security is only considered as a way of providing protection in operations. If security is implemented during design, development and test, the requirements on the operational environment are reduced and overall security is increased. This builds security within the applications and no longer relies on defense being provided at the perimeter.

It is important to note that the Security controls that are part of the IT Value Chain are consistent with those defined in standards and leading practices such as ISO 2700x, ISF Standard of Good Practice, PCI-DSS, COBIT, ITIL, etc. These standards provide consistency with the security controls that may already be in place in VITA and the Agencies, and will provide more streamlined integration with the security teams.

## Key Areas for Security Integration

One of the most important aspects of integrating security into the IT Value Chain is leveraging existing value stream functional components. This way, security becomes tightly integrated, delivers stronger protection and improves operational efficiency (using the same technology with the same staff managing it). This technology-sharing is valid in all value streams and covers: Requirements, Development, Test and Operations. Some of the key areas for integrating security include the following:

- Writing security requirements
- Software security assurance
- Enhanced test functional component
- Consolidating event functional component
- Tiered analytics
- Unified incident tracking
- Consolidated real-time knowledge base
- Centrally-managed access controls

## Writing Security Requirements

Many new requirements focus on specific functional areas (for example, new business logic, process changes to add new approvers, additional reporting, etc.) It is equally important to verify security requirements are managed as peers to all other functional requirements. Examples of Security requirements can include:

- Verifying Personally Identifiable Information is encrypted before external backups are performed
- Event Functional Component systems generate alerts when more than 10 records from the customer accounts database are copied in sequential transactions

- Two factor authentication is required to access applications that handle transactions in excess of \$10,000.

At the Service Design Functional Component stage, security requirements should be created to validate the confidentiality, integrity and availability of all the value stream functional components.

### **Software Security Assurance**

Limiting risk in the overall IT Value Chain relies on having a formal Software Security Assurance (SSA) methodology. This provides for applications to be designed with a security perspective and include the appropriate security controls aligned with the sensitivity of the applications and data. In addition to secure design, applications should undergo Static Application Security Testing to make sure that no vulnerabilities exist in the source code. Once this testing is complete, dynamic application security testing is undertaken to detect any vulnerabilities that may still exist when the application is in production. Implementing the SSA methodology is an important step to decrease application security risks in the IT Value Chain.

### **Enhanced Test Functional Component**

Adding static and dynamic security testing to functional testing identifies and removes vulnerabilities from applications and services, delivering more resilient services. Once identified, a security vulnerability should be managed as a peer to a functional defect and should be prioritized against all defects. This requires security vulnerabilities to be integrated into the Defect Functional Component system and any other processes that track and address the lifecycle of a defect.

### **Consolidating Event Functional Component**

Often clients store events according to operational silos—security events to the SIEM, application events to an IT operations database, and so forth. Current large-scale IT environments, such as the Commonwealth, should consolidate all events and analyze these events within the proper business context. For example, server events, network events and security events associated with a SaaS-based HR application should all be correlated and analyzed together – not separately in their respective repositories. This enables a more accurate understanding of the cause of a performance issue and allows Agency analysts to assess from a larger surface perspective the business impact holistically.

### **Tiered analytics**

Each silo in the IT organization has specialized analytics platforms built to perform event analysis and identify potential issues. Since a platform designed to understand application faults cannot identify complex application attacks from a security perspective, it makes sense to leave analytics capabilities within the operational silo. But if this analysis is tiered and creates data to feed the application fault data to a central analysis platform—and do the same for other siloed data stores—you can normalize and detect patterns and issues across silos. It is important

to implement this capability in a way that allows each system to function independently to identify silo-specific issues, while providing an overarching analysis of the state of operations.

### **Unified Incident tracking**

To make sure each operational silo is not tracking and handling incidents independently without context—or duplicating the efforts of some other team—a unified incident tracking system must span all teams. The preferred tool to accomplish this task is an issue-tracking system implemented with tiered levels of security (through role-based access), data masking, automated issue routing and consolidated alerting. This platform must provide a real-time method to collaborate across teams and provide feedback, and support automated next-step and critical path routing that can adapt to organizational change.

### **Consolidated Real-Time Knowledge Base**

Last but not least, this approach incorporates real-time learning feedback directly to independent operational teams. This builds real-time knowledge bases that are useful to the operational teams as well as to end users who can resolve issues themselves, or at least be alerted to an issue already in progress, without escalating the calls to the support desk.

### **Centrally Managed Access Controls**

All value streams include systems that need access controls. In Requirement to Deploy, for example, only certain administrators are authorized to make changes and deploy new applications. Access controls should receive careful planning in Request to Fulfill, since the spectrum of users is more diverse with employees, partners, customers and system administrators all requiring access. Providing a centralized Identity and Access Management (IAM) system that covers all value streams provides consistent and improved security and the necessary logging of user activity for Incident Functional Component and audits.

## **Summary**

Quality of Service (QoS), Availability, Data Protection and Compliance are all critical aspects of an IT Value Chain. Without integrated security, none of these characteristics can be effectively delivered. Security must be designed into each relevant functional component within each value stream. It is not an option to think about security after the value stream has been deployed. By sharing technologies across security, development and operations, greater levels of security can be delivered more effectively because management systems and processes are unified. Administrators have visibility across all domains and are able to gather more comprehensive data when diagnosing problems.

Integrating technologies simplifies processes and management and leads to the desired levels of QoS, Availability, Data Protection and Compliance.

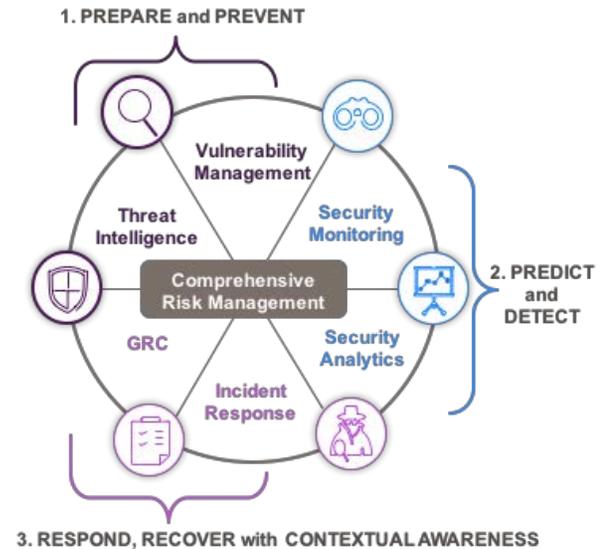
Despite increasing investments in security, breaches are still occurring at an alarming rate. Traditional security protection is far from sufficient to secure valuable assets as traditional SIEMs have not evolved sufficiently to meet the security challenge and combat sophisticated cyber-attacks. What is needed is an advanced Security Operations Center (SOC) or 3<sup>rd</sup> Generation SOC either embedded as part of the MSI governance layer or as an independent third party to the STS ecosystem. The advanced SOC is comprised of four elements:

**Incident prevention:** Threat intelligence– Vulnerability management

**Incident detection and analysis:** detect and analyze even the most advanced attacks before they damage the business

**Incident response:** take targeted action against the most serious incidents. Creating a strong link with the IT Service Management (ITSM)

**Security Analytics:** advanced data analysis focused on User Behavior, Applications and DNS Malware Analysis



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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?	<p>Capgemini’s approach to security requires that we become part of the security equation. We effectively put “skin in the game” creating standardized and repeatable security processes through a single and experienced Security Supplier. Therefore, taking a bundled approach with Managed Security Services is our preferred method. Many organizations frequently expend a large amount of resources on creating a Managed Security Service through the implementation of multiple security suppliers. Unfortunately, the effectiveness of that approach is dependent upon the various levels of security prowess within each given supplier.</p> <p>More often than not, the included systems are complex in nature and require integration with various suppliers and log sources in order to stream information</p>

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		<p>across the enterprise. These disparate streams must be correlated to provide an accurate picture of the systems and network landscape. At the most rudimentary level, the experience of integration and cross functional adaptability drives that effort. Some organizations fall short in implementing this vision. A successful Managed Security Service that passes the scrutiny of audit and compliance, and fuses the vision of the Commonwealth is required and is Capgemini’s delivery objective.</p> <p>Capgemini can assist in achieving this objective through diligent planning of the integration of not only security systems and systematic data, but with the initial implementation of core security plans and a gradual fine-tuning of those plans to evolve with the security posture of The Commonwealth. Our Security personnel are highly trained and experienced specialists, possess both technical and process-driven certifications in various technologies, and understand the applicability of security frameworks.</p> <p>In summary, when Managed Security Services lack a single bundled experienced provider, the underlining processes and procedural steps associated with security governance and program management becomes fragmented by the delivery stance of “numbers only”.</p>
Q39.	Security	<p>Do have any concerns or recommendations regarding how to scale Managed Security Services to organizations of the size and complexity of the Commonwealth?</p> <p>Capgemini does not have any concerns with the scale and complexity of the Commonwealth when using a 3<sup>rd</sup> generation SOC as we described in the introduction. 3rd generation SOCs provide the automated tooling and analytics providing horizontal scale for volume.</p>
Q40.	Security	<p>Can you provide examples of comparable environments where you offer security services similar to those required by the Commonwealth?</p> <p>Capgemini is the MSI to a number of US state and foreign governments as well as private sector organizations. Our approach to the design of a security solution in a comparable environment is to focus on our core models:</p> <ul style="list-style-type: none"> <li>• Improved Service Delivery</li> <li>• Innovation and Evolution</li> <li>• Cost Competitiveness</li> </ul>

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		<ul style="list-style-type: none"> <li>• Transparency</li> </ul> <p>Taking this approach allowed Capgemini to focus on the “pain points” of the State entities as described below:</p> <p><b>Client Challenges:</b></p> <ul style="list-style-type: none"> <li>• The State Government entity had a need to establish an end-to-end view of security provisions</li> <li>• The increasing need to establish a centralized management entity for security incidents</li> <li>• Needed to build a demonstrable, compliance-driven entity, purposed to carry the mantle of compliance effectively by providing broad-based governance processes and procedures</li> </ul> <p><b>Capgemini Mission/Solution:</b></p> <ul style="list-style-type: none"> <li>• Governance Risk and Compliance</li> <li>• Introduced an Information Security Management Service (ISMS) that supplied the core components of an ISMS team (from IS Manager to Security Team)                             <ul style="list-style-type: none"> <li>○ This team focuses on the consideration of information security of all parts of the enterprise.</li> <li>○ Confirms that information security interests are addressed in a consistent and coherent manner.</li> <li>○ Approves of information security policies and standards/procedures.</li> </ul> </li> <li>• Emphasizes the importance of information security to the</li> <li>• Security Clearances program to provide strategic on boarding and off-boarding.</li> <li>• Fully involved Risk Management Program with a governance foundation.</li> <li>• Implementation of an IT Service Continuity structure.</li> </ul> <p><b>Results/Benefits:</b></p> <ul style="list-style-type: none"> <li>• Increased the end-to-end vision through a formal Risk management and compliance framework with added focus on Device change management / Configuration management, Problem, Incident management</li> <li>• Technical / business risks reports and dashboards which resulted in greater insight into the risk landscape</li> </ul>

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		<ul style="list-style-type: none"> <li>• Improved support of defined governance structure by enabling the ability to understand each party’s commitment with active shaping and management of governance</li> <li>• Realigned the Compliance management / policy conformance, Security automation and security management structure</li> <li>• Delivered effective Process improvements and implemented a plan that raised the capability maturity model to an advanced state</li> </ul> <p>This is only a small portion of several client environments where Capgemini has delivered services similar to those required by the Commonwealth. Please refer to questions 41, 42, and 43 for additional examples of how Capgemini leveraged various solutions stemming from a Managed Security Service Provider with an embedded SOC.</p>
Q41.	Security	<p>Have you supported Managed Security services in distributed environments - both physical and virtual including on premise and off premise implementations?</p> <p>Capgemini thrives in the selection, design and delivery of Managed Security services. Our experience allows us to effectively align with the requirements of our current client base and demonstrate the breadth of our “know how”. We have supported both physical and virtual in on-premise and off-premise client environments as well as have conducted a significant number of Cyber Security Consulting engagements. The following example highlights how one of Capgemini’s solutions solved the challenges of a large, UK-based financial enterprise which was divested from its parent company as part of an overall restructuring. More than 70,000 employees needed to be supported securely and on a global basis, which was comprised of 20+ operating countries.</p> <p><b>Client Challenges:</b></p> <ul style="list-style-type: none"> <li>• The global financial company had a significant need to streamline and integrate its current disparate security tools, processes and methodologies spread across its IT estate</li> <li>• There was a requirement to meet the ISO 27001, PCI-DSS and Data Protection Act requirements</li> <li>• The IT environment suffered from the lack of, or partial, security governance and incident handling mechanisms</li> <li>• Another critical requirement was for real-time event monitoring and</li> </ul>

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		<p>investigation processes</p> <p><b>Capgemini Mission/Solution:</b></p> <ul style="list-style-type: none"> <li>• The solution Capgemini delivered was a "Managed Security Services with Security Operations Center (SOC)"</li> <li>• As a first step, our security team assessed the company's security posture and identified ISO27001, PCI-DSS and Data Protection Act requirements to build an information security program</li> <li>• Design / implementation of a multi-layered security architecture (5 Layers)</li> <li>• Greenfield implementation of 11 security management tools</li> <li>• High availability (HA) mirrored design for redundancy in the environment</li> <li>• Fully Integrated security infrastructure with overarching SIEM and e-Governance</li> <li>• ITIL aligned end-to-end security incident management processes</li> <li>• Strong delivery governance via periodic security reviews and reporting</li> <li>• Implementation of effective security management toolsets and security governance program</li> </ul> <p><b>Results/Benefits:</b></p> <ul style="list-style-type: none"> <li>• Effective threat management framework via identification and mapping of severity, probability of threats</li> <li>• Thorough investigation of correlated events to determine the impact of threats.</li> <li>• Implementation of effective control recommendations, which resulted in protection of networks, computers and data from unauthorized access</li> <li>• Proactive fraud and threat management to reduce business risks</li> <li>• Improved information security and business continuity management processes, which enhanced the stakeholder confidence in the company's information security arrangements</li> <li>• Faster recovery times in the event of disruption; reduced operational cost by increased operational efficiency</li> </ul> <p><b>Size (Duration/Workload/Integrations):</b></p> <ul style="list-style-type: none"> <li>• 60-month contract, providing 24*7*365 real-time security and response; delivery is a combination of near-shore and off-Shore service delivery model (20.5 FTE offshore support)</li> </ul>

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		<ul style="list-style-type: none"> <li>Tools used include: RSA Security Analytics , HP TippingPoint, Prolexic DDoS, F5 ASM, Sophos, QualysGuard , CyberArk , Thales HSM , RSA Archer, ITSAM.</li> </ul>
Q42.	Security	<p>Do you offer solutions supporting geographically diverse locations (e.g., remote location with satellite)?</p> <p>Capgemini has broad capabilities within our service portfolio and the ability to support network connectivity securely across multiple geographical locations. Another success was delivered to a leading Scandinavian road transport fuel retailer with over 100 years of operations. This client has a broad retail network that extends across Scandinavia, Poland, the Baltics, and Russia with approximately 2,300 full-service (fuel and convenience) or automated (fuel only) stations.</p> <p><b>Client Challenges:</b></p> <ul style="list-style-type: none"> <li>The client required the establishment of a Managed Security solution consisting of end-to-end Security Governance, PCI DSS and SOX compliance, 24*7 Security Operations, Enterprise Risk Management and Business Continuity Planning (BCP) / Disaster Recovery (DR) to address its overall information security program management.</li> <li>A necessary framework to manage the security posture, compliance and strengthen the Client’s apps and infrastructure.</li> </ul> <p><b>Capgemini Mission/Solution:</b></p> <ul style="list-style-type: none"> <li>The solution Capgemini delivered was a “Managed Security Services with SOC”</li> <li>Our security team designed an in-depth defense strategy using a multi-layered security approach to provide a comprehensive information security framework for the client.</li> <li>This included a robust perimeter, network, application- and system-level security implemented through a complete architecture and solution design that met business and regulatory requirements.</li> <li>Establishment of a holistic security governance, policy and processes framework and approach.</li> <li>Proactive security event and threat monitoring, to include global threat-mapping and design of a continuous risk evaluation program.</li> <li>Implementation of an effective control measurement process and periodic internal audits.</li> </ul>

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			<p><b>Results/Benefits:</b></p> <ul style="list-style-type: none"> <li>• Successfully managed and reduced associated business risks with an integrated managed security solution.</li> <li>• Implemented ongoing security assessments, planning, implementation, proactive solutions for security management and response.</li> <li>• Created a cybercrime / fraud resilient business environment.</li> <li>• Enhanced data protection practices.</li> <li>• Reduced the frequency and impact of security incidents.</li> <li>• The client provided a strong Business endorsement to their parent company for the security services designed and implemented by Capgemini. .</li> </ul> <p><b>Size (Duration/Workload/Integrations):</b></p> <ul style="list-style-type: none"> <li>• Capgemini hosted Infrastructure-as-a-Service (IaaS).</li> <li>• Approximately 70 resources working to manage and deliver the services.</li> <li>• 60-month contract duration</li> <li>• Providing managed security services and Hosted platform.</li> <li>• Sourcefire NIDS, IP 360 –VA, McAfee SIEM, FEP– AV, Forefront UAG &amp; TMG , MS PKI , Tripwire FIM.</li> <li>• Delivers PCI DSS and SOX Compliance.</li> </ul>
Q43.	Security	How have you implemented solutions similar to those in the Commonwealth making use of a centralized federated environment?	<p>Yes, Capgemini has implemented several federated solutions that are comparable with the size and likeness of the Commonwealth’s environment.</p> <p>Capgemini’s experience as an experienced Managed Service provider includes service delivery to a Global Accounting organization recognized as a premier player by capital markets, regulators and international standards bodies. This client required a Managed Security Services solution that included a robust SOC component.</p> <p><b>Client Challenges:</b></p> <ul style="list-style-type: none"> <li>• Recent business-wide changes and increased exposure to cyber threats drives the need for an enhanced, integrated security approach.</li> </ul>

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		<ul style="list-style-type: none"> <li>• Heterogeneous and disparate security solutions currently exist.</li> <li>• Lack of network-wide visibility to respond to sophisticated attacks.</li> <li>• Missing controls to protect sensitive corporate data.</li> <li>• Need for contextual awareness to client’s security risks, applications and data.</li> </ul> <p><b>Capgemini Mission/Solution:</b></p> <ul style="list-style-type: none"> <li>• Phase I: Capgemini performed an “as-is” takeover of end-to-end support of the existing security solutions: SIEM, Identity and Access, Intrusion prevention, Anti-virus, PKI, Web content filtering, vulnerability mgmt. etc.</li> <li>• Implementation of a more mature SIEM solution for a centralized view of security and risk posture across the IT estate.</li> <li>• Implementation of incident and forensics analysis processes.</li> <li>• Phase II: Build of security solutions to promote enhanced security posture: 2 F authentication, DLP, Security Analytics and GRC.</li> </ul> <p><b>Results/Benefits:</b></p> <ul style="list-style-type: none"> <li>• Establishment of critical core security solutions to provide comprehensive coverage: strong first line of defense.</li> <li>• Unified view of different SOC activities under a ‘single pane of glass’.</li> <li>• Solutions to counter advanced threats (APTs) with actionable intelligence.</li> <li>• Stringent user access controls, automation of identity lifecycle; protection of admin privileges.</li> <li>• Protect against data exfiltration with comprehensive DLP solution.</li> </ul> <p><b>Size (Duration/Workload/Integrations):</b></p> <ul style="list-style-type: none"> <li>• 24*7*365 real-time security and response; Combination of near-shore &amp; off-Shore service delivery model (2 Project Manager onshore/offshore support, 15 security consultants).</li> <li>• Volumetrics: Events per second: 10,000; Incidents handled per month: 50; Endpoints: 10,000+; User request per month: 800+.</li> <li>• Tools used (TippingPoint, Trend Micro, RSA Security Analytics and GRC, Q Radar, Qualys Guard.</li> </ul>
Q44.	Security	<p>What do you consider to be the key challenges and tradeoffs for the</p> <p>The biggest challenge to implementing Managed Security Services in environments similar to the Commonwealth is conveying the importance of having Security viewed</p>

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		<p>implementation of Managed Security Services in an environment similar to the Commonwealth?</p>	<p>as a critical component across the entire IT and business landscape. The definition and implementation of Service Integration is a critical component for understanding and unlocking the benefits of a Managed Security Service deployment.</p> <p>Implementation of a Managed Security Service can reduce risk, drive cost savings, improve the quality of service provided to the end user, and increase the alignment and accountability of IT to the Agencies. Capgemini has the experience to define, design and deliver a Managed Service Security solution to include the required integrated systems, people, and processes to align appropriately with the security posture and vision of the Commonwealth.</p> <p>Another key challenge is an environment (unlike the Commonwealth) that uses a multi-security provider approach and a loose governance structure. Lack of control exists due to the many management and integration issues across several parties. This type of environment lends itself to an overlay of a strong MSI solution. Security required strong MSI governance from a provider because it exists in every technology tower and has such a cross-functional aspect to it.</p> <p>The tradeoff in the Commonwealth environment is that the Agency owns the applications and the overall security requirements, while VITA owns the infrastructure supporting them. This disconnect means it is more difficult to align on security on an end to end basis.</p> <p>We have described how security should be built into the end-to-end IT value chain in the introduction to this section. The approach the Commonwealth has in respect of the Agencies and VITA co-owning the end-to-end security means that each side needs to be more proactive and collaborative to make sure appropriate security controls are in place.</p>
Q45.	Security	<p>What do propose at a high level to be the key strategies and implementation elements of any typical security services solution migration?</p>	<p>We have described how security should be built into the end-to-end IT value chain in the introduction to this section and believe this describes the key strategies and implementation elements.</p>
Q46.	Security	<p>Can you recommend additional Managed Security Services that are not currently included or considered in the</p>	<p>We have described how security should be built into the end-to-end IT value chain in the introduction to this section and believe this describes the holistic approach of</p>

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		scope of described services?	how the managed security services should be scoped.
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?	<p>One of the key challenges we have seen lately is centered around IRS 1075 compliance due to 3 recent IRS audits of our customer's Agencies. This is an enormous issue for state Agencies, because if there are problems with IRS audits, the ability to access Federal tax data can be withheld.</p> <p>As part of the increased globalization in the private sector we have observed that many of the STS service delivery elements are sometimes provided from off-shore locations. We can provide services that assess and make recommendations to verify that state data is not accidentally transmitted, processed or stored outside of the USA. Additionally, we work closely with our current state customers in driving preparation initiatives for Federal Bureau of Investigations Criminal Justice Information Services audits.</p> <p>This has elevated the significance of imbedding GRC (Governance Risk and Compliance) team(s) in the MSI providing the necessary due diligence at the functioning state and Agency level.</p>
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?	While we firmly believe that the MSI should be able to integrate security services in either model, we believe that cloud security market has not matured sufficiently to procure integrated end-to-end security services. Therefore, we assert, the state should own and deploy the appropriate security technologies and controls but use a single provider to manage them end-to-end.
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?	Capgemini's strength is in its ability to provide an integrated Managed Security Service. While collaboratively we may choose to deploy a point security technology or control using a third party cloud service provider, Capgemini would still manage and lead the integration and end-to-end management. This provides the best of breed approach so that individual security controls and their governance are always contemporary.
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	We have described how security should be built into the end-to-end IT value chain in the introduction to this section and believe this describes the holistic approach of how the managed security services should be scoped.

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		<p>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.</p>
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"> <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</li> </ol>
		<p>With the possible exception of database RUs being added, the currently proposed RU structure allows for the Service Tower Supplier to tie cost drivers to RU charges in a sufficient manner as an initial approach. However as discussed in Q5, 6, 7 and 8 the balance between the number STS RUs vs the aggregated user service charges is a complex subject. We welcome the opportunity to share the experiences we have had with both state government and private sector organizations on how to manage this complexity.</p> <p>The five dimensions are understood with no additional comments.</p>

		<p>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.</p>	
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<p>Q52.</p>	<p>Inventory and Volume Collection</p>	<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</p>	<p>Every attempt would be made to validate the associated volumes during the due diligence/contracting phases. A true-up period (normally four months in duration) can also be agreed to by the parties, where the actual counts for an RU can be verified. If at the end of the true-up period there is a material variance in the baseline volumes, an adjustment to the baseline volumes and charges can be agreed to, with a more material variance allowing for a change to the ARC/RRC pricing. This allows both parties to be fairly protected from the results of an unknown volume.</p> <p>Further, by maintaining all service information in a single CMDB across all support towers there is a single source of the truth from which all parties can work. If associated volumes are correctly maintained via an integrated change process then the CMDB can drive accurate invoices between parties and associated billing out to the Agencies.</p>

		and verify the volumes to support this chargeable unit?	
Q53.	Asset Ownership	<p>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>	<p>While from an accounting/finance standpoint there should be no issue with the acquisition of assets from the current provider at book value, plus additional fees as allowed under the current contract, in the form of termination fees, issues with incomplete or inaccurate asset data may complicate the transfer. Data issues may drive the need for a physical inventory and reconciliation.</p> <p>The data reconciliation phase/project can be time consuming and costly. While an HSC can work in the context of the services agreement, a direct lease agreement by VITA, managed by the Service Tower Supplier, may provide additional control, flexibility, and savings. With an HSC a Service Tower Supplier will need to pass through the costs and have adequate termination fees to cover exposure, however additional costs may be added for margin or risk factors due to the leases needing to be shown on the provider's books.</p> <p>In either case a properly managed inventory (CMDB) will allow for the transfer of assets as needed upon termination, with direct leasing allowing for the transfer of service without the need for asset or lease transfer.</p>

### 3. FEEDBACK REGARDING RFI DOCUMENTS

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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.		