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Header 1

[List View](#)

General Information

Contact

Default Values

Discount

Document Information

Procurement Folder: 744476

Procurement Type: Central Master Agreement

Vendor ID: 000000117794

Legal Name: SHI INTERNATIONAL CORP

Alias/DBA:

Total Bid: \$30,138.90

Response Date: 07/23/2020

Response Time: 13:06

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Solicitation Description: Addendum
Cloud Infrastructure

Total of Header Attachments: 1

Total of All Attachments: 1



Purchasing Division
 2019 Washington Street East
 Post Office Box 50130
 Charleston, WV 25305-0130

**State of West Virginia
 Solicitation Response**

Proc Folder : 744476
Solicitation Description : Addendum
Proc Type : Central Master Agreement

Date issued	Solicitation Closes	Solicitation Response	Version
	2020-07-23 13:30:00	SR 0702 ESR07232000000000366	1

VENDOR
000000117794 SHI INTERNATIONAL CORP

Solicitation Number: CRFQ 0702 TAX2000000017

Total Bid : \$30,138.90 **Response Date:** 2020-07-23 **Response Time:** 13:06:14

Comments:

FOR INFORMATION CONTACT THE BUYER
 Joseph E Hager III
 (304) 558-2306
 joseph.e.hageriii@wv.gov

Signature on File	FEIN #	DATE
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All offers subject to all terms and conditions contained in this solicitation

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	Cloud Infrastructure	1.00000	LS	\$30,138.900000	\$30,138.90

Comm Code	Manufacturer	Specification	Model #
43212200			

Extended Description : Please see attached specifications
 Cloud Infrastructure per the attached Exhibit A Pricing Page
 Please note: Vendor must provide Exhibit A Pricing Page with their submitted bid response. Failure to do so will result in

Comments: See SHI's Pricing section (page 16) in our response for more detail around our pricing proposal.
 Delivery days = not to exceed.



SHI Response to West Virginia Purchasing Division

Cloud Infrastructure

July 23, 2020





July 23, 2020

Joseph Hager
2019 Washington Street, East
Charleston, WV 25305
joseph.e.hagerIII@wv.gov

Dear Mr. Hager:

SHI is pleased to provide the following proposal to West Virginia Purchasing Division for the Tax Board in response to your request for proposal for Cloud Infrastructure. The intent of our proposal is to illustrate why we are best qualified to meet the needs of Purchasing Division, providing evidence of our ability to deliver the highest quality solutions at the best possible cost.

Over the past 30 years, SHI has transformed from a \$1 million “software-only” regional reseller into a leading global provider of technology services and solutions. We have over 4,500 employees worldwide and we are the largest Minority and Woman Owned Business Enterprise (MWBE) in the U.S. In 2019, SHI reported earnings of \$10.7B. Our Public Sector business represents \$1.8B of that overall number.

We believe our growth stems from several key factors:

- Our commitment to the Public Sector, with over 180 dedicated Public Sector sales representatives based within their State or region.
- Our ability to help our customers streamline and improve the management of their technology procurement, deployment, and recovery.
- Our extensive catalog and the ease with which we can expand our offerings to include new and emerging technology or partners that have a traditional direct to customer sales model.
- Our commitment to putting our customers’ needs first, with a specific focus on cost savings for every eligible contract user and every purchase.

We are confident that we are uniquely positioned to help the Purchasing Division continue to focus on meeting their IT needs. Should you have any questions regarding our response, please contact me at aimee_cantrell@shi.com or 512-516-3280 or your SHI Account Executive, Summer Bailey at Summer_Bailey@shi.com or 304-541-4288. Thank you for your consideration, and we look forward to working with Purchasing Division Tax Board on this project!

Respectfully,

A handwritten signature in blue ink, appearing to read "Aimee Cantrell", is written over a light blue grid background.

Aimee Cantrell
Proposal Manager

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SHI RESPONSE TO REQUIREMENTS

3. GENERAL REQUIREMENTS:

3.1 Contract Items and Mandatory Requirements: Vendor shall provide Agency with the Contract Items listed below on an open-end and continuing basis. Contract Items must meet or exceed the mandatory requirements as shown below.

3.1.1 Cloud Infrastructure Service

3.1.1.1 All components must be hosted in a FedRAMP certified data center.

SHI Response:

The State of West Virginia Tax Board Oracle DR solution will be hosted on the Amazon Web Services Government Cloud US. AWS achieves FedRAMP JAB High and Moderate Provisional Authorization across 26 services in the AWS US East/West and AWS GovCloud (US) Regions.

SHI solution architects will develop AWS Service Control Policies (SCP) to ensure that only Amazon resources utilized in the Tax Board account will only allow verified AWS compliant services. The services that are listed in the proposed solution will meet this requirement.

3.1.1.2 All components must be isolated from other customers.

SHI Response:

All of the Tax Board workload components and AWS resources (infrastructure) are totally isolated from other Amazon GovCloud customers.

The Tax Board Amazon GovCloud US account is only granted access to valid users in the Tax Board organization via an unique user account provisioned in the Amazon GOV Cloud Identity and Access Management (Amazon IAM) service.

3.1.1.3 Must support secure VPN access to all components included on bid from the Agency network.

SHI Response:

The Amazon Virtual Private Cloud (Amazon VPC) service supports the industry standard IPSEC VPN and AES 256 encryption protocols to create VPN tunnels from the Tax Board on-premises data center to the Tax Board Amazon VPC residing on the Amazon GovCloud US platform.

All workload components and AWS services will be deployed into the Amazon VPC and have access to the VPN for data transfer, workload communications and IT organizational support.

3.1.1.4 Must include a minimum of ten (10) terabytes of outbound data transfer per month

SHI Response:

The Cost Model for the Tax Board Oracle workload will include the cost of 10 TB outbound data transfer.



3.1.1.5 Must include unlimited inbound data transfer

SHI Response:

Amazon Web Services does not charge data transfer fees for inbound data. Amazon fees incur when the data is stored in their data storage services (Amazon S3, Amazon EBS).

3.1.1.6 Must include a summary of potential charges for variable use items such as:

3.1.1.6.1 Outbound data transfer

3.1.1.6.2 Extra storage

3.1.1.6.3 Storage access

3.1.1.6.4 Additional virtual machines

SHI Response:

All SHI workload estimates will include the requested potential charges as estimate line items for the following Amazon infrastructure components:

Workload Compute (3.1.1.6.4)

AWS compute instance features (Memory, Storage, Compute Optimized) will be selected to match the hardware requirements for the required workload infrastructure. The compute instances will be priced as an upfront 1- year reserved pricing that will include the instance storage costs, (Amazon EC2 and Amazon RDS).The workload instance estimation will be then calculated using the reserved instance and instance storage costs together, then shown as per month pricing from this framework.

Amazon EC2 can rapidly provision additional virtual machine instances on demand in the Tax Board VPC

Workload Storage (3.1.1.6.2 & 3.1.1.3)

Amazon Elastic Block Storage (Amazon EBS) will be used to provide the Solid-State Drive (SSD) storage for the Tax Board Oracle web server and Oracle database instance. Amazon EBS storage service can rapidly provision additional storage for Tax Board compute instances.

Amazon EBS storage in the Tax Board AWS account is only accessed via a valid user AWS account assigned to an authorized Tax Board user. The Amazon GovCloud Identity and Access Management console allows access to only authorized Tax Board users.

Data Transfer (3.1.1.6.1)

The Cost Model for the Tax Board Oracle workload will include the cost of 10 TB outbound data transfer.



3.1.1.7 Service must include eight (8) cores of fully licensed Oracle Database Server Enterprise Edition 12c version 12.1 or Equal.

SHI Response:

The Amazon Relational Database Service (Amazon RDS) supports Oracle 12c, version 12.1.0.2

The Amazon RDS instance type will be selected to provide the necessary 8 CPU cores and a full Oracle Database Server Enterprise Edition license.

3.1.1.8 Must have a minimum of four (4) terabytes of disk space for storage of database objects, tablespaces, indexes, transaction logs, etc.

SHI Response:

Amazon EBS will be used to provide the necessary disk storage for the Data Drive, Index and Workspace 1 TB disks.

3.1.1.9 Must have a minimum of six (6) terabytes of disk space for other object storage.

SHI Response:

Amazon EBS can provision any additional storage on-demand for the Tax Board Oracle workload.

3.1.1.10 Must provide pricing for object storage requests if applicable.

SHI Response:

SHI will include PUT requests for the Amazon Simple Storage Service (Amazon S3) as a line item in if necessary, in workload cost models.

3.1.1.11 Must have Transparent Data Encryption and data encryption at rest.

SHI Response:

The Amazon VPC VPN allows for sending encrypted data in transit by using commonly used industry-standard protocols (IPSEC & AES 256) to Amazon resources in the Tax Board VPC.

The Amazon Key Management Service and Amazon CloudHSM will be used to produce Tax Board encryption keys for data storage at rest, and to provide centralized key management and rotation.



3.1.1.12 Must have vendor provided means for replicating between the cloud and on-premise database systems with the following features.

3.1.1.12.1 Ability to synchronize the on-premise production database with the cloud-based standby database without interrupting the production system. This function should include the initial replication, continuous synchronization, and recovery from communications outages.

SHI Response:

The Amazon Database Migration Service will be used to replicate and synchronize the Tax Board DR Oracle database instance. The Amazon DMS service will be scheduled to replicate the Tax Board database instance to achieve the 1-hour RPO objective. The Amazon DMS service replication jobs will be monitored using the Amazon CloudWatch service to ensure verified replication is validated and that the replication and synchronization schedules are met for the Tax Board Oracle database DR instance.

3.1.1.12.2 Ability to promote the cloud-hosted database to be the production system in case of failure of the on- premise system, i.e. fail-over.

SHI Response:

The Tax Board Oracle DR solution on the Amazon GovCloud US platform will provide the ability to seamlessly failover the Tax Board workload. In addition to the required AWS infrastructure the solution will include the necessary DR failover runbook (procedure document) and gameday exercise for validation of failover.

3.1.1.12.3 Ability to replicate the cloud-hosted database back to the on-premise system after a disaster recovery, i.e. fail-back.

SHI Response:

The Amazon DMS service (or native Oracle tools) will be used to replicate the Tax Board Oracle workload database back to an on-premises database target. The DR failover runbook will also include the procedure to fail the workload back to the on-premises environment.

3.1.1.12.4 Ability to run standard Oracle 12c tools such as RMAN, IMPDP, and EXPDP against the cloud- hosted database when it has been promoted to production.

SHI Response:

Amazon RDS supports the Oracle RMAN, Oracle SQL Developer and Oracle Data pump (IMPDP & EXPDP).



3.1.1.13 All patches and upgrades of database software must be included and to be completed by the Vendor.

SHI Response:

Amazon Relational Database Service (Amazon RDS) is a fully managed relational database service and AWS is responsible for maintaining the Oracle patches and upgrades of the software.

Amazon RDS automates common software patching and upgrades during the pre-defined Amazon RDS maintenance events windows.

3.1.1.14 Vendor must perform weekly full backups of the cloud-hosted database and a minimum of nightly incremental backups.

SHI Response:

Amazon Relational Database Service (Amazon RDS) storage snapshots will be configured as follows:

- 1 weekly full backup
- 1 Daily full backup

3.1.1.15 In addition to the database server, vendor must provide one (1) virtual machine.

SHI Response:

Amazon Elastic Cloud Compute (Amazon EC2) will be used to launch Oracle Enterprise Linux 7 instances into the Tax Board amazon Virtual Private Cloud (Amazon VPC). The Amazon EC2 instance type will be selected by the SHI solution architect. The EC2 instance type will meet the requirements for the Oracle web server instance, including optimization enhancements for instance hardware, (memory, CPU optimized), and for infrastructure performance, (Disk & Network) optimization.

3.1.1.15.1 Virtual machine must be industry standard 64-bit architecture (x64).

3.1.1.15.2 Must have a minimum of two (2) CPUs.

3.1.1.15.3 Must have a minimum of sixteen (16)GB of RAM.

3.1.1.15.4 Must have a minimum of one (1) TB of disk storage.

SHI Response:

Example Amazon EC2 Virtual Machine deployed from and Amazon Machine Image (Amazon AMI). The Amazon AMI is an industry standard 64-bit (x64) architecture.

Amazon Instance Type	vCPU	Memory (GiB)	EBS Storage
R4.large	2	15.25	1 TB SSD



3.1.1.15.5 Must support agency provided disk image for operating system install.

SHI Response:

The Amazon EC2 service supports the ability to develop and provision custom Amazon AMIs that are based on the Linux operating system. These AWS AMI images are used to deploy consistent Oracle workload instances based on the Tax Board operating system build standards.

3.1.1.16 Any tools required for the current on-premise system to participate in the required replication to and from the standby cloud system must be provided by the vendor as part of this bid.

SHI Response:

Amazon DMS will be used to replicate the Oracle data layer. The web server instance will in a stand-by-mode in this solution.

3.1.1.17 Must provide training and support to perform the following tasks:

SHI is not currently the LAR of record for the Oracle Database Application licensing or on prem environment. SHI will not be responsible for the database administration. SHI will be responsible for configuration, training and ongoing AWS support services of the AWS solution.

3.1.1.17.1 Perform any required software upgrade or additional software installation on the current Agency owned Oracle 12c version 12.1 Enterprise Edition Production server to participate in the synchronization and replication.

SHI Response:

No software upgrade or additional software installation is required. SHI is proposing all AWS native services which tie in seamlessly to the existing Oracle 12c version 12.1 Enterprise Edition Production server to participate in the synchronization and replication.

3.1.1.17.2 Maintaining the synchronization/replication connection between the two systems and performing required tasks such as startup, shutdown, fail-over, and fail-back.

SHI Response:

SHI will ensure the database synchronization and replication is verified.

3.1.1.17.3 Training materials should be electronic and openable using standard Microsoft Office 365 tools or Adobe Acrobat Reader.

SHI Response:

AWS Runbook documentation will be provided at the completion of our proposed AWS solution. SHI will also be providing AWS Certification training referenced in our RFP response.



3.1.1.17.4 Support may be provided via electronic means such as phone, email, screen-share, or web-chat.

SHI Response:

SHI will be delivering the AWS professional services via phone, email, screen-share and web-chat during 9 to 5 business hours. SHI will be delivering ongoing Support Services via phone, email and Support Service desk support 24/7.

Proposed Amazon Web Services Training

SHI proposes the following course titles to meet the Tax Board's requirements:

- **AWS Technical Essentials: Course AWS-T-ESS: 1-day Instructor Led**
 - AWS Technical Essentials introduces you to AWS products, services, and common solutions. It provides you with fundamentals to become more proficient in identifying AWS services so that you can make informed decisions about IT solutions based on your business requirements and get started working on AWS.



course_AWS-T-ESS_o
utline.pdf

- **SYSTEMS OPERATIONS ON AWS: Course AWS-SYS-OPS: 3 days Instructor Led**
 - System Operations on AWS is designed to teach those in a Systems Administrator or Developer Operations (DevOps) role how to create automatable and repeatable deployments of networks and systems on the AWS platform. The course covers the specific AWS features and tools related to configuration and deployment, as well as common techniques used throughout the industry for configuring and deploying systems.



course_AWS-SYS-OP
S_outline.pdf

3.1.1.18 Alternative 'Or Equal' Submission

3.1.1.18.1 Contract item if bidding an "or Equal" product will not require the purchase of any additional software or hardware for implementation. If Vendor is submitting an or Equal product this information must be provided at the time of submitting bid response. Any documentation supporting such should be submitted with bid response.

SHI Response:

SHI will not be providing an alternative solution.



3.1.1.19 Vendor must provide a copy of all applicable maintenance and support agreements prior to contract award for review and approval by the State of West Virginia.

SHI Response:

Please see attached AWS Onboarding Form for ongoing AWS Support Services. Document attached.



SHI AWS Customer
Onboarding Form - Pi

3.1.2.1 Cloud hosting solution proposed must have at least 1 interconnection agreement with another cloud hosting provider such that workloads can be distributed between the providers based on technologies used.

SHI Response:

SHI can support Microsoft Azure, Amazon Web Services or Google Cloud Platform use cases. SHI takes a vendor neutral approach to cloud adoption and can support any of the big 3.



4. CONTRACT AWARD:

4.1 Contract Award: The Contract is intended to provide Agencies with a purchase price on all Contract Items. The Contract shall be awarded to the Vendor that provides the Contract Items meeting the required specifications for the lowest overall total cost as shown on the Pricing Pages.

4.2 Pricing Pages: Vendor should complete the Pricing Pages by completing Exhibit

A. Vendor should complete the Pricing Pages in their entirety as failure to do so may result in Vendor's bids being disqualified.

The Pricing Pages contain a list of the Contract Items and estimated purchase volume. The estimated purchase volume for each item represents the approximate volume of anticipated purchases only. No future use of the Contract or any individual item is guaranteed or implied.

Vendor should type or electronically enter the information into the Pricing Page to prevent errors in the evaluation. If Vendor is submitting bid online Vendor must submit Pricing Page as attachment. TOTAL BID AMOUNT is the amount Vendor is to enter into wvOASIS commodity line when submitting. Notwithstanding the foregoing, the Purchasing Division may correct errors at its discretion.

SHI Response:

SHI acknowledges and complies.

5. ORDERING AND PAYMENT:

5.1 Ordering: Vendor shall accept orders through wvOASIS, regular mail, facsimile, e-mail, or any other written form of communication. Vendor may, but is not required to, accept on-line orders through a secure internet ordering portal/website. If Vendor has the ability to accept on-line orders, it should include in its response a brief description of how Agencies may utilize the on-line ordering system. Vendor shall ensure that its on-line ordering system is properly secured prior to processing Agency orders on-line.

SHI Response:

SHI acknowledges and complies.

5.2 Payment: Vendor shall accept payment in accordance with the payment procedures of the State of West Virginia.

SHI Response:

SHI acknowledges and complies.



6. DELIVERY AND RETURN:

6.1 Delivery Time: Vendor shall deliver standard orders within 7 calendar days after orders are received. Vendor shall deliver emergency orders within 1 calendar day(s) after orders are received. Vendor shall ship all orders in accordance with the above schedule and shall not hold orders until a minimum delivery quantity is met.

SHI Response:

Shipping, delivery and return terms are not applicable to scope. However, SHI will provide a Statement of Work along with a Project Management methodology to outline and manage standard milestones around delivery.

6.2 Late Delivery: The Agency placing the order under this Contract must be notified in writing if orders will be delayed for any reason. Any delay in delivery that could cause harm to an Agency will be grounds for cancellation of the delayed order, and/or obtaining the items ordered from a third party.

Any Agency seeking to obtain items from a third party under this provision must first obtain approval of the Purchasing Division.

SHI Response:

Shipping, delivery and return terms are not applicable to scope. However, SHI will provide a Statement of Work along with a Project Management methodology to outline and manage standard milestones around delivery.

6.3 Delivery Payment/Risk of Loss: Standard order delivery shall be F.O.B. destination to the Agency's location. Vendor shall include the cost of standard order delivery charges in its bid pricing/discount and is not permitted to charge the Agency separately for such delivery. The Agency will pay delivery charges on all emergency orders provided that Vendor invoices those delivery costs as a separate charge with the original freight bill attached to the invoice.

SHI Response:

Shipping, delivery and return terms are not applicable to scope. However, SHI will provide a Statement of Work along with a Project Management methodology to outline and manage standard milestones around delivery.

6.4 Return of Unacceptable Items: If the Agency deems the Contract Items to be unacceptable, the Contract Items shall be returned to Vendor at Vendor's expense and with no restocking charge. Vendor shall either make arrangements for the return within five (5) days of being notified that items are unacceptable, or permit the Agency to arrange for the return and reimburse Agency for delivery expenses. If the original packaging cannot be utilized for the return, Vendor will supply the Agency with appropriate return packaging upon request. All returns of unacceptable items shall be F.O.B. the Agency's location. The returned product shall either be replaced, or the Agency shall receive a full credit or refund for the purchase price, at the Agency's discretion.

SHI Response:



Shipping, delivery and return terms are not applicable to scope. However, SHI will provide a Statement of Work along with a Project Management methodology to outline and manage standard milestones around delivery.

6.5 Return Due to Agency Error: Items ordered in error by the Agency will be returned for credit within 30 days of receipt, F.O.B. Vendor's location. Vendor shall not charge a restocking fee if returned products are in a resalable condition. Items shall be deemed to be in a resalable condition if they are unused and in the original packaging. Any restocking fee for items not in a resalable condition shall be the lower of the Vendor's customary restocking fee or 5% of the total invoiced value of the returned items.

SHI Response:

Shipping, delivery and return terms are not applicable to scope. However, SHI will provide a Statement of Work along with a Project Management methodology to outline and manage standard milestones around delivery.

7. VENDOR DEFAULT:

7.1 The following shall be considered a vendor default under this Contract.

7.1.1 Failure to provide Contract Items in accordance with the requirements contained herein.

7.1.2 Failure to comply with other specifications and requirements contained herein.

7.1.3 Failure to comply with any laws, rules, and ordinances applicable to the Contract Services provided under this Contract.

7.1.4 Failure to remedy deficient performance upon request.

7.2 The following remedies shall be available to Agency upon default.

7.2.1 Immediate cancellation of the Contract.

7.2.2 Immediate cancellation of one or more release orders issued under this Contract.

7.2.3 Any other remedies available in law or equity.

SHI Response:

SHI acknowledges and complies.



8. MISCELLANEOUS:

8.1 No Substitutions: Vendor shall supply only Contract Items submitted in response to the Solicitation unless a contract modification is approved in accordance with the provisions contained in this Contract.

8.2 Vendor Supply: Vendor must carry sufficient inventory of the Contract Items being offered to fulfill its obligations under this Contract. By signing its bid, Vendor certifies that it can supply the Contract Items contained in its bid response.

8.3 Reports: Vendor shall provide quarterly reports and annual summaries to the Agency showing the Agency's items purchased, quantities of items purchased, and total dollar value of the items purchased. Vendor shall also provide reports, upon request, showing the items purchased during the term of this Contract, the quantity purchased for each of those items, and the total value of purchases for each of those items. Failure to supply such reports may be grounds for cancellation of this Contract.

8.4 Contract Manager: During its performance of this Contract, Vendor must designate and maintain a primary contract manager responsible for overseeing Vendor's responsibilities under this Contract. The Contract manager must be available during normal business hours to address any customer service or other issues related to this Contract. Vendor should list its Contract manager and his or her contact information below.

Contract Manager: **Summer Bailey**

Telephone Number: **304-541-4288**

Fax Number:

Email Address: Summer_Bailey@shi.com



PRICING PROPOSAL



Exhibit A Cloud
Infrastructure Pricing

Pricing Summary

SHI Overall Proposal:

- 12 Month AWS Consumption: \$30,138.90 (3% Discount included)
- 12 Month Basic Support Services: No Charge
- AWS Training(s): \$2,700 for both courses/1 person
- AWS Implementation Services: \$75,000.00



AWS VALUE ADDED SERVICES

AMAZON WEB SERVICES IMPLEMENTATION

SHI International Corp. has been asked to assist The State of West Virginia, Tax Board, with the planning, development, and integration of their initial implementation and organizational integration of the Amazon Web Services (AWS) platform. The State of West Virginia, Tax Board, will use AWS for a landing zone environment to provide a business continuity and disaster recovery solution for their Oracle Linux 12c based workload.

SHI solution architects working with the State of West Virginia Tax Board key IT stakeholders will develop an AWS solution to provide Tax Board the capability to set up and govern; a secure, compliant, multi-account, AWS landing zone environment based on well-architected, industry identified, AWS design principles to successfully integrate AWS into their IT organization.

SHI will deliver the AWS operating model by implementing a solid foundational approach to reference architectures, security frameworks, the State of West Virginia compliance requirements, and the Tax Board overall organizational effectiveness.

SHI will develop the required AWS infrastructure, and the necessary Standard Operating Procedures (SOP's) to build the AWS landing zone DR solution. The outcomes of the proposed solution will formally integrate AWS into the Tax Board organization to ensure AWS platform traceability, and end-to-end compliance reporting for the West Virginia Tax Board AWS account landing zones.

Landing Zone/Amazon Control Tower

SHI will advise in evaluating the current maturity of the Tax Department Amazon environment, identifying gaps and desired future state, and devising high level plan for continued iteration of cloud architecture.

SHI will:

- Advise the State of West Virginia on AWS well-architected best practices regarding use of AWS services with respect to account structure, networking, and infrastructure as code
- Advise in review current and planning future state cloud architecture
- Advise in gathering key requirements and on general recommendations for account management and governance
- Advise with the development of referenceable playbooks and runbooks, supported by relevant sample code and architectural diagrams, to automate the implementation of the landing zone, cloud native capabilities, and deployment processes
- Advise in implementing the agreed upon solution for the landing zone



Security and Compliance

SHI will advise and assist the State of West Virginia in evaluating their current maturity, identifying gaps and desired future state, and devising high level plan for continued iteration of cloud security baseline.

SHI will:

- Advise on AWS best practices regarding use of AWS services with respect to access management, security logging and monitoring, infrastructure and data security
- Advise on the AWS and customer shared responsibility model that utilizes the security capabilities framework to highlight enterprise security principles for a successful cloud transformation
- Advise in the development of an initial minimum-security baseline (MSB) based on customer compliance requirements and AWS general best practices to core topics of AWS and customer's security perspective (identify and access management (IAM), detection/logging and monitoring, infrastructure security, data protection and incident response)
- Advise in baselining each respective core security capability at the beginning of the project with associated training and development paths

Success Criteria

The Amazon solution will align with the overall West Virginia Tax Board AWS business objectives, compliance, and the overall West Virginia Tax Board AWS organizational goals.

- Security and Compliance – a SHI developed security baseline built to the State of West Virginia Tax Department standards that will accelerate cloud readiness and meet their foundational security, risk, and compliance needs.
- Oracle workload landing zone – a SHI platform-built Amazon account that is planned and built based on Amazon Web Services best practices and the necessary security baseline for the State of West Virginia Tax Department to run secure and scalable Oracle disaster recovery workloads.

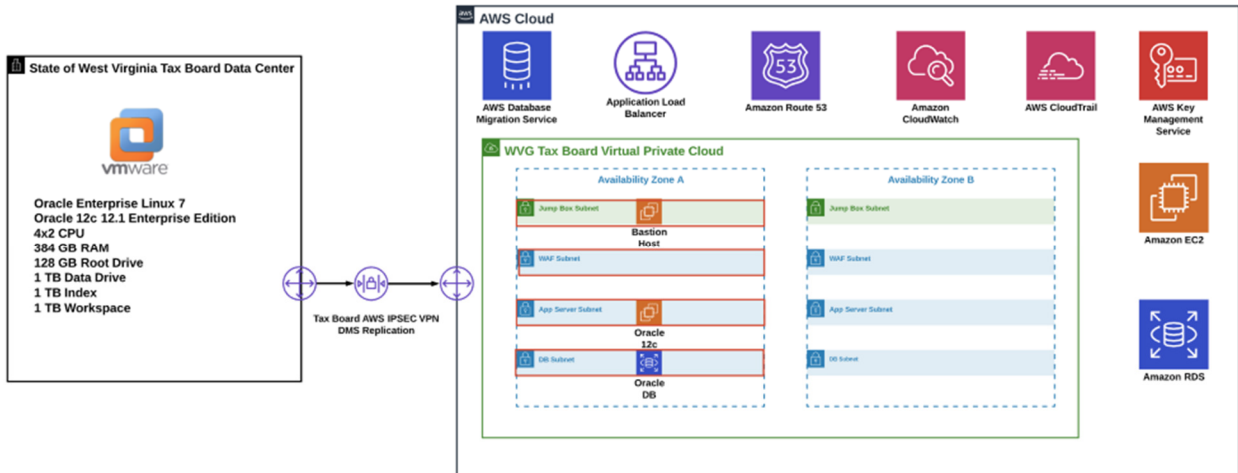
The reference architecture depicted below is a notational example of the Tax Board Oracle workload DR solution as further detailed below.

Tax Board Pilot-Light DR Solution

The term pilot light is often used to describe a DR scenario in which a minimal version of an environment is always running in the Amazon cloud. The idea of the pilot light is an analogy that comes from the gas heater. In a gas heater, a small flame that's always on can quickly ignite the entire furnace to heat up a house. In the SHI solution the Tax Board will maintain their workload "pilot light" by configuring and running the Oracle web server and database workload in their AWS DR VPC.

The Oracle Amazon EC2 and Amazon RDS instances in pilot light mode are undersized providing the required hardware to accept web server communication and continuous database replication from the AWS DMS service. When the time comes to failover and recover, the failover script will rapidly provision the Amazon EC2 and Amazon RDS instances into a full-scale production environment in the Amazon DR VPC.





AMAZON SERVICES

Amazon Virtual Private Cloud

SHI will implement an Amazon Virtual Private Cloud (Amazon VPC) for the Tax Board landing zone environment. The Amazon VPC is an Amazon “building block” service that provides a private software defined virtual network on the Amazon cloud that will be used to launch the Tax Board AWS resources into. The Amazon VPC will be connected to the State of Virginia Tax Board on-premises environment via an IPSEC VPN. This IPSEC VPN is administered as any traditional network VPN that is currently running in the Tax Board data center. This VPN to VPC connectivity creates the hybrid connection to Amazon providing the following necessary enterprise components:

- Secure private network connectivity to the Amazon VPC scalable infrastructure
- AES encryption for data in transit
- Encryption for data at rest
- The necessary network infrastructure for the Oracle web server and database

Amazon Elastic Compute Cloud

The Amazon Elastic Compute Cloud (Amazon EC2) provides scalable computing capacity in the AWS cloud. The Amazon EC2 service will be used to provide the Oracle Enterprise Linux 7 compute instance solution. SHI solution architects will identify and select the necessary Amazon EC2 instance type that will match the necessary hardware requirements for the Oracle workload. This Oracle DR solution will take advantage of the Amazon EC2 platform’s capability to scale up, or scale down, to handle changes in the Tax Board workload. Amazon EC2 will also be used to provide a bastion host instance in the Tax Board VPC. The AWS bastion will provide role-based access to the Tax Board VPC and will be used for administrative tasks in the Amazon VPC environment.

Amazon Relational Database Service

Amazon Relational Database Service (Amazon RDS) is a managed relational database web service that will be used operate and scale the Tax Board Oracle relational database instance in the AWS cloud. The Amazon RDS instance will be used as the DR instance replication target by utilizing the Amazon



Database Replication Service. In a similar fashion the SHI solution architect will size the Oracle RDS instance to meet the system requirements of the database workload. The SHI solution will plan to use the AWS RDS platform's capability to scale up at the time that the database must be brought into service in the production environment.

AWS Database Migration Service

AWS Database Migration Service (AWS DMS) is a cloud service that will be used to synchronize and schedule the replication of the Tax Board Oracle data from the on-premises instance to the Amazon RDS DR instance in the Tax Board VPC. AWS DMS replication metrics will be identified by SHI solution architects and Amazon CloudWatch alerts, alarms, and event driven orchestration will be developed to ensure the 1-hour recovery time objective (RPO) will be met.

Application Load Balancer

The Amazon Elastic Load Balancing (ALB) service will be used for the Oracle workload endpoint on the Amazon cloud and distribute the web traffic to the Oracle Amazon EC2 workload. The Amazon ALBs are natively configured to provide high availability, automatic scaling, and robust security that is necessary to make the Tax Board Oracle workload fault tolerant.

Amazon RT53

Amazon Route 53 is a highly available and scalable cloud Domain Name Service (DNS) web service that is designed to the Tax Board organization an extremely reliable and cost-effective way to provide DNS services and route their end users to the Tax Board DR solution. Amazon Route 53 will be used to provide the Tax Board AWS DNS services to effectively connect their user requests to the Tax Board infrastructure running in AWS.

Amazon KMS

AWS Key Management Service (KMS) is a secure and resilient service that uses hardware security modules that have been validated under FIPS 140-2 to protect the Tax Board encryption keys. AWS KMS will be used to provide the workload encryption keys and the key management platform that will provide the State of West Virginia, Tax Board the ability to encrypt their data at rest. AWS KMS is integrated with the Amazon CloudTrail service to provide the State of West Virginia Tax Board with end-to-end compliance with logs of all key usage allowing their organization to meet their state regulatory and compliance requirements.

Amazon CloudWatch

Amazon CloudWatch is a monitoring and observability service that will provide the Tax Board organization with data and actionable insights to monitor the Oracle DR workload solution. Amazon CloudWatch will be used to monitor the Tax Board Oracle DMS replication, the Oracle EC2 and RDS instances, and to provide baseline operational metrics to demonstrate the DR workload availability.

Amazon CloudTrail

Amazon CloudTrail is an AWS service that will provide compliance insights and operational risk auditing of the Tax Board DR solution. Amazon CloudTrail "trails" will be configured to record actions taken by each users, role, or Amazon service invoked by the Amazon Console, AWS CLI or API call. The CloudTrail logs will provide the necessary compliance visibility to the Tax Board workload.



AWS SUPPORT AND MANAGE SERVICES

Our Basic support package is the foundation of our Cloud service offers enabling customers to purchase their AWS infrastructure from SHI. Purchasing your AWS infrastructure through SHI has many benefits that are included in our Basic service level including:

- Access to our SHI One Cloud Management Platform for supported services
- Net payment terms provided (upon credit approval) through SHI so you're not running your entire business on a credit card (or keep it on a credit card through SHI)
- Access to AWS Partner funding programs
- SHI agrees to provide a 3% discount off MSRP pricing for the first 12 months. No discount will be provided beyond the first 12 months. The discount excludes services such as APN Fees, AWS Marketplace Items, AMS or AWS Support.
- Pricing agreements and volume discounts that customer qualifies for are passed-through directly, all the benefits from SHI at this tier are at no cost to you
- Cloud adoption support including access to self-service support, webinars, events and references to industry general best practice reference architectures
- Simplified billing enabling simple monthly invoicing with custom bill splitting and chargeback processing
- Access to a wide array of fee based public cloud professional and managed services
- Flexible support options (direct support from AWS or direct support from SHI available at higher tiers)

Global Availability

AWS Managed Services are available to SHI customers in all AWS public AWS regions and AWS GovCloud (US) region. AWS China is not supported. Note that all global support is provided in English.

Your SHI Support Team

Your account executive:

- Manages the overall relationship between you and SHI
- Ensures all business transactions are of mutual value and conducted according to sound governance practices
- Acts as an escalation point for any potential customer satisfaction opportunities
- Facilitates the procurement of any contracts required (upgrades, replacements, and remediation) that is outside of the scope of the service level of managed services

Your cloud adoption team:

- Provides proactive general guidance via standard documentation, white papers and reference architectures for AWS products and services for generalized use cases
- Provides awareness of SHI and partner led events and webinars to help enable your organization with your cloud transformation
- Assists with Reserved Instance purchases and conversions upon customer request



- Responsible for new customer walkthroughs and training related to SHI One Management Portal
- Responsible for new customer walkthroughs of the AWS Console
- Responsible for guiding Basic customers through the onboarding process

Service Desk

Supporting the service desk is a team of certified, highly trained, and experienced cloud engineers who perform remote diagnosis and provide level 1, 2 and 3 support for SHI services based upon the agreed service level.

The service desks, located in Somerset, New Jersey and Austin, Texas:

- Provides service interface between you and SHI for all aspects of your service, including receiving, recording, coordinating, and escalating incidents, changes, and requests
- Provide general guidance via standard documentation, white papers and reference architectures upon request
- Work closely with customers to resolve incidents and problems within the agreed service levels.
- Provides a world-class service experience
- Facilitates escalations to the level 2 and level 3 technical support resources as necessary
- Facilitates escalations to the billing and account management teams as necessary
- Acts as the initial point of contact for non-technical account management requests such as adding users, adding accounts, purchasing reserved instances

How to Request Support

Log an incident, change, or request with the service desk using one of the options below.

- Option 1: Log a request online

You may log in via the SHI One Management Portal by visiting <https://one.shi.com>.

- Option 2: Log a request by telephone

Call the service desk and refer to the customer instructions (also below).

- Option 3: Log a request by email

Email the service desk and refer to the customer instructions (also below). All tickets submitted via email are created as Low priority, please call the service desk to escalate if necessary or submit via the SHI One Management Portal.

Once a record has been created, you'll be provided with a reference ticket number for tracking progress and making further inquiries. The person contacting our service desk must have a suitable knowledge of the service and configuration items to enable us to provide efficient diagnosis, support, and resolution.

Customer Instructions

The service desk will prompt you for the following information. Please ensure you have all relevant details ready:

- Your Organization's Name
- Your Contact Name, Email and Phone Number



For cloud services as well as support and managed services you may be asked to provide the following information:

- Resource name, resource ID, IP address, or account number
- Details of the incident, change, or request
- Urgency and impact of the issue (determines request priority)
- Ticket number (if previously logged)

Contact information

Phone: 1-888-572-9712

Email: SupportServices@shi.com

Self-Service Portal: www.one.shi.com



CASE STUDIES

SHI would like to highlight the following case study demonstrating our experience with AWS cloud solutions.

Ross & Baruzzini Implements Custom AWS Landing Zone Solution

SHI devises a multi-partner strategy and empowers a global workforce of remote end users

<https://www.shi.com/CustomerServices/SHIMarketing.aspx?ContentID=95960>

Global Telecommunications Company Leverages SHI Open Source Project

SHI automates deployment of infrastructure for backend service in the cloud

<https://www.shi.com/CustomerServices/SHIMarketing.aspx?ContentID=95972>

Drybar Accelerates Data Analytics with AWS

SHI migrates data to scalable AWS solution to support customer growth and expansion

<https://www.shi.com/CustomerServices/SHIMarketing.aspx?ContentID=95968>

Court Reporting Services Provider Matures Cloud Practice with AWS Well-Architected Review

SHI performs Well-Architected Review and improves customer security posture

<https://www.shi.com/CustomerServices/SHIMarketing.aspx?ContentID=95959>



SHI AND AWS PARTNERSHIP

APN Premier Consulting Partner

Achieving APN Premier Consulting Partner status differentiates SHI as an APN Partner that demonstrates expertise and notable success in helping customers design, architect, build, migrate, and manage their workloads on AWS.

“Ever since organizations began moving data and applications to the cloud, SHI has been expanding our ability to support those efforts by training our people, refining our tools, and developing processes to assist customers on their journey,” said Thai Lee, President and CEO of SHI. “Being named an APN Premier Consulting Partner validates our breadth of expertise and offers SHI new tools and resources to help customers take advantage of the full spectrum of AWS services.”

To become APN Premier Consulting Partners, companies must complete a rigorous approval process through accreditations and certifications, must demonstrate a long-term investment in their relationship with AWS, and must have extensive expertise in deploying customer solutions on AWS. APN Premier Consulting Partners also have a strong team of AWS Trained & Certified technical consultants and have deep expertise in project management and professional services.

As an APN Premier Consulting Partner, SHI can extend to its customers more dedicated resources from AWS, allowing the company to further drive innovation and thought leadership in the market. Since 2017, SHI has been an AWS Managed Service Provider (MSP) Partner, establishing its ability to manage highly dynamic and automated workloads, scale up or down according to demand, and use new technologies that give visibility into a customer’s full environment, including application performance and monitoring tools that scale instantly to adjust to changes in workloads being monitored.



Premier
Consulting
Partner

Storage Competency

Public Sector Partner

MSP Partner

Solution Provider

AWS Validated Qualifications

AWS COMPETENCIES	PROGRAMS	CERTIFICATIONS
Storage	Managed Service Provider AWS Public Sector Partner: Government, Education, Non-Profit AWS Solution Provider Program AWS Public Sector Solution Provider Well Architected APN Immersion Days	AWS Certified Solutions Architect - Associate AWS Certified Cloud Practitioner AWS Certified Developer - Associate AWS Certified SysOps Administrator - Associate AWS Certified Solutions Architect - Professional Partner Reported Qualifications



SOLUTION AREAS	TARGET CLIENT BASE	PROFESSIONAL SERVICES
Database & Data Warehouse	Software & Internet	System Management
Dev & Test	Education	Cloud Migration Services
Disaster Recovery	Government	Managed Service Provider
Mobile	Small Business	Strategic / IT Consulting
Security & Compliance	Enterprise	Systems Integration
Storage (Backup, Recovery & Asset Storage)	Government - Local	Training
Value (Cost Savings/TCO)	Government - National	Assessments
Archiving	Mid-size Business	





Amazon Web Services, Inc. ▪ 410 Terry Avenue N. ▪ Seattle, WA 98109

July 14, 2020

State of West Virginia
2019 Washington Street East
Charleston, WV 25305

To Whom It May Concern:

Amazon Web Services, Inc. (AWS) is very pleased to support SHI in its efforts to assist the State of West Virginia with their Request for Quotation (RFQ) for Cloud Infrastructure using the AWS Cloud. This letter confirms that SHI is an AWS Partner Network (APN) Premier Consulting Partner in good standing.

AWS offers commercially available, web-scale computing services that help organizations avoid much of the heavy-lifting typically associated with launching and growing successful applications. These services are based on Amazon's own back-end technology infrastructure and incorporate over a decade and a half of experience building one of the world's most reliable, scalable, and cost-efficient web infrastructures. The use of AWS will provide you with access to expertise in large-scale distributed computing and operations and will enable your applications to be robust and scalable.

AWS values and appreciates the opportunity to support SHI and we look forward to a long and productive partnership. If you have any questions, or require additional information, please contact Jason Randall, Partner Manager at jl@amazon.com or 615-767-2706.

Sincerely,
Amazon Web Services, Inc.

A handwritten signature in black ink that reads "Jane Lacy". The signature is written in a cursive style and is positioned above a horizontal line.

Signature
Jane Lacy
AWS, Sr. Manager, Partners



TERMS & CONDITIONS

Please see SHI's proposed terms and conditions clarifications.









State of West Virginia
071320 (exceptions).p



wv96 (002).pdf



REQUIRED FORMS

<p>Complete page 1 of the Final CRFQ document</p>	 <p>Final_CRFQ_0702_TA X2000000017_2_CRF</p>
<p>Designated Contact Form (page 22)</p>	 <p>Designated Contact Form.pdf</p>
<p>Addendum Acknowledgement Form (page 23)</p>	 <p>Addendum 1 7-9-2020.pdf</p>
<p>Interested party disclosure</p>	 <p>State of WV Disclosure of Interest</p>
<p>Purchasing Affidavit</p>	 <p>State of WV Purchasing Affidavit (</p>
<p>M/WBE Certification</p>	 <p>WBENC_Certificate_E xp_02_28_2021 (1).pc</p>
<p>Letter of Authorization for Oracle or any brands included in price basket</p>	 <p>AWS LOS for SHI 07.14.2020.pdf</p>
<p>Copy of our current insurance certificate</p>	 <p>SHI_InsuranceLiabilit y (4).PDF</p>

