



The following documentation is an electronically-submitted vendor response to an advertised solicitation from the *West Virginia Purchasing Bulletin* within the Vendor Self-Service portal at *wvOASIS.gov*. As part of the State of West Virginia's procurement process, and to maintain the transparency of the bid-opening process, this documentation submitted online is publicly posted by the West Virginia Purchasing Division at *WVPurchasing.gov* with any other vendor responses to this solicitation submitted to the Purchasing Division in hard copy format.

## Header 3

[List View](#)**General Information** [Contact](#) [Default Values](#) [Discount](#) [Document Information](#) [Clarification Request](#)**Procurement Folder:** 840904**Procurement Type:** Central Master Agreement**Vendor ID:** VS0000020347 **Legal Name:** CAPITAL CONSULTING LLC**Alias/DBA:****Total Bid:** \$911,846.90**Response Date:** 05/27/2021 **Response Time:** 12:09**Responded By User ID:** TharseoIT1 **First Name:** Michael**Last Name:** Tenreiro**Email:** MTenreiro@TharseoIT.ci**Phone:** 6314134924**SO Doc Code:** CRFQ**SO Dept:** 0210**SO Doc ID:** ISC2100000018**Published Date:** 5/11/21**Close Date:** 5/27/21**Close Time:** 13:30**Status:** Closed**Solicitation Description:** Tax Infrastructure RFQ (OT21093) **Total of Header Attachments:** 3**Total of All Attachments:** 3



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

**State of West Virginia  
 Solicitation Response**

**Proc Folder:** 840904  
**Solicitation Description:** Tax Infrastructure RFQ (OT21093)  
**Proc Type:** Central Master Agreement

Solicitation Closes	Solicitation Response	Version
2021-05-27 13:30	SR 0210 ESR05172100000007649	1

**VENDOR**  
 VS0000020347  
 CAPITAL CONSULTING LLC

**Solicitation Number:** CRFQ 0210 ISC2100000018  
**Total Bid:** 911846.9000000000232830643653 **Response Date:** 2021-05-27 **Response Time:** 12:09:41  
**Comments:**

**FOR INFORMATION CONTACT THE BUYER**  
 Jessica S Chambers  
 (304) 558-0246  
 jessica.s.chambers@wv.gov

**Vendor Signature X** **FEIN#** **DATE**

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	3.1.1 Production Environment	12.00000	MO	35983.980000	431807.76

Comm Code	Manufacturer	Specification	Model #
71151106			

**Commodity Line Comments:** Total cost for the Production Environment. This includes a discount of 25%.

**Extended Description:**

3.1.1 Production Environment

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
2	3.1.2 Testing Environment	12.00000	MO	37303.970000	447647.64

Comm Code	Manufacturer	Specification	Model #
71151106			

**Commodity Line Comments:** Total cost for the Testing/DR Environment. This includes a discount of 25%.

**Extended Description:**

3.1.2 Testing Environment

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
3	3.1.3 Backup Environment	12.00000	MO	0.000000	0.00

Comm Code	Manufacturer	Specification	Model #
71151106			

**Commodity Line Comments:** The backup costs are included as part of the Testing and Production Cloud Environment(s). Our solution and pricing for the Production and Testing Cloud Environments includes a full-site backup of everything required to restore the site including virtual machines, configuration data, application data, and database backups.

**Extended Description:**

3.1.3 Backup Environment

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
4	3.3 Professional Services	100.00000	HOUR	135.000000	13500.00

Comm Code	Manufacturer	Specification	Model #
71151106			

**Commodity Line Comments:** Please see comment in 'Detailed Pricing' sheet for '3.3 Professional Services'.

**Extended Description:**

3.3 Professional Services

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
5	3.5.1 Scalability per 50GB	100.00000	EA	11.475000	1147.50

Comm Code	Manufacturer	Specification	Model #
71151106			

**Commodity Line Comments:** The cost to scale Object Storage or Block Storage is included in this cost. This includes a discount of 25%

**Extended Description:**

3.5.1 Scalability per 50GB

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
6	3.5.2 Scalability per 1 CPU	100.00000	EA	167.400000	16740.00

Comm Code	Manufacturer	Specification	Model #
71151106			

**Commodity Line Comments:** The cost to scale 1 CPU of OCI Compute using the VM Standard E4 Flex image shape running 24x7x365 - with the FAM Model Pricing, this is the ceiling. This includes a discount of 25%.

**Extended Description:**

3.5.2 Scalability per 1 CPU

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
7	3.5.3 Scalability per 1GB	100.00000	EA	10.040000	1004.00

Comm Code	Manufacturer	Specification	Model #
71151106			

**Commodity Line Comments:** The cost to scale 1 GB unit of additional RAM to support the above VM Standard E4 Flex image shape. This includes a discount of 25%.

**Extended Description:**

3.5.3 Scalability per 1GB



**State of West Virginia Department of Administration  
Purchasing Division**

**Doc Description: Tax Infrastructure RFQ (OT21093)**

**Request for Quote (RFQ)**

**Solicitation number: CRFQ 0210 ISC210000018**

**Solicitation Submission: 05/27/2021**

**Compliance**

**Tharseo IT**

1231B Good Hope Rd. SE

Washington, DC 20020-6907

TharseoIT.com. | 855.815.7474

**Contact Information**

Eric Wimer 703.930.9509 | [ewimer@tharseoit.com](mailto:ewimer@tharseoit.com)

This proposal includes data that shall not be disclosed outside the State of WV Department of Administration, WV Office of Technology, and WV State Tax Department, and shall not be duplicated, used, or disclosed in whole or in part for any purpose except for use in the procurement process. If, however, a contract is awarded to this offeror as a result of or in connection with the submission of this data, the WV agencies listed earlier, will have the right to duplicate, use, or disclose the data to the extent consistent with their needs in the procurement process. This restriction does not limit the rights to use, without restriction, information contained in this proposal if it is obtained from another source. The data subject to this restriction as contained in page 1 through the end of document.



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

State of West Virginia  
 Centralized Request for Quote  
 Info Technology

<b>Proc Folder:</b> 840904			<b>Reason for Modification:</b>
<b>Doc Description:</b> Tax Infrastructure RFQ (OT21093)			
<b>Proc Type:</b> Central Master Agreement			
<b>Date Issued</b>	<b>Solicitation Closes</b>	<b>Solicitation No</b>	<b>Version</b>
2021-02-26	2021-03-16 13:30	CRFQ 0210 ISC2100000018	1

**BID RECEIVING LOCATION**

BID CLERK  
 DEPARTMENT OF ADMINISTRATION  
 PURCHASING DIVISION  
 2019 WASHINGTON ST E  
 CHARLESTON WV 25305  
 US

**VENDOR**

**Vendor Customer Code:**  
**Vendor Name :** Capital Consulting LLC D/B/A Tharseo IT  
**Address : Main Office**  
**Street :** 1231B Good Hope Rd SE.  
**City :** Washington  
**State :** DC **Country :** United States **Zip :** 20020  
**Principal Contact :** Eric Wimer, CEO  
**Vendor Contact Phone:** 703-930-9509 **Extension:** N/A

**FOR INFORMATION CONTACT THE BUYER**

Jessica S Chambers  
 (304) 558-0246  
 jessica.s.chambers@wv.gov

**Vendor Signature X**  **FEIN#** 47-1729825 **DATE** 3/16/2021

All offers subject to all terms and conditions contained in this solicitation



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

State of West Virginia  
 Centralized Request for Quote  
 Info Technology

<b>Proc Folder:</b> 840904			<b>Reason for Modification:</b> Addendum No. 01 is being issued to extend the bid opening date one week and the bid opening date two..... See Page 2 for complete info
<b>Doc Description:</b> Tax Infrastructure RFQ (OT21093)			
<b>Proc Type:</b> Central Master Agreement			
<b>Date Issued</b>	<b>Solicitation Closes</b>	<b>Solicitation No</b>	<b>Version</b>
2021-03-04	2021-03-30 13:30	CRFQ 0210 ISC2100000018	2

**BID RECEIVING LOCATION**

BID CLERK  
 DEPARTMENT OF ADMINISTRATION  
 PURCHASING DIVISION  
 2019 WASHINGTON ST E  
 CHARLESTON WV 25305  
 US

**VENDOR**

**Vendor Customer Code:** VS0000020347  
**Vendor Name :** Capital Consulting LLC D/B/A Tharseo IT  
**Address : Main Office**  
**Street :** 1231B Good Hope Rd SE  
**City :** Washington  
**State :** DC **Country :** United States **Zip :** 20020  
**Principal Contact :** Eric Wimer  
**Vendor Contact Phone:** 703-930-9509 **Extension:**

**FOR INFORMATION CONTACT THE BUYER**

Jessica S Chambers  
 (304) 558-0246  
 jessica.s.chambers@wv.gov

Vendor  
 Signature X

FEIN# 47-1729825

DATE 5/6/2021

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

State of West Virginia  
 Centralized Request for Quote  
 Info Technology

<b>Proc Folder:</b> 840904		<b>Reason for Modification:</b>	
<b>Doc Description:</b> Tax Infrastructure RFQ (OT21093)		Addendum No. 02 is being issued to extend the bid opening date two weeks to give the agency time to ..... See Page 2 for complete info	
<b>Proc Type:</b> Central Master Agreement			
<b>Date Issued</b>	<b>Solicitation Closes</b>	<b>Solicitation No</b>	<b>Version</b>
2021-03-22	2021-04-13 13:30	CRFQ 0210 ISC2100000018	3

**BID RECEIVING LOCATION**

BID CLERK  
 DEPARTMENT OF ADMINISTRATION  
 PURCHASING DIVISION  
 2019 WASHINGTON ST E  
 CHARLESTON WV 25305  
 US

**VENDOR**

**Vendor Customer Code: # VS0000020347**

**Vendor Name : Capital Consulting LLC DBA Tharseo IT**

**Address : Main Office**

**Street : 1231B Good Hope Rd SE**

**City : Washington**

**State : DC** **Country : United States** **Zip : 20020**

**Principal Contact : Eric Wimer**

**Vendor Contact Phone: 703-930-9509** **Extension:**

**FOR INFORMATION CONTACT THE BUYER**

Jessica S Chambers  
 (304) 558-0246  
 jessica.s.chambers@wv.gov

Vendor  
 Signature X

FEIN# 47-1729825

DATE 5/6/2021

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 Purchasing Division  
 2019 Washington Street East  
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State of West Virginia  
 Centralized Request for Quote  
 Info Technology

<b>Proc Folder:</b> 840904		<b>Reason for Modification:</b>	
<b>Doc Description:</b> Tax Infrastructure RFQ (OT21093)		Addendum No. 03 is being issued to extend the bid opening date and time.	
<b>Proc Type:</b> Central Master Agreement		No other changes.	
<b>Date Issued</b>	<b>Solicitation Closes</b>	<b>Solicitation No</b>	<b>Version</b>
2021-04-06	2021-04-22 13:30	CRFQ 0210 ISC2100000018	4

**BID RECEIVING LOCATION**

BID CLERK  
 DEPARTMENT OF ADMINISTRATION  
 PURCHASING DIVISION  
 2019 WASHINGTON ST E  
 CHARLESTON WV 25305  
 US

**VENDOR**

**Vendor Customer Code: # VS0000020347**

**Vendor Name : Capital Consulting LLC D/B/A Tharseo IT**

**Address : Main Office**

**Street : 1231B Good Hope Rd SE**

**City : Washington**

**State : District of Columbia**                      **Country : United States**                      **Zip : 20020**

**Principal Contact : Eric Wimer**

**Vendor Contact Phone: 703-930-9509**                      **Extension:**

**FOR INFORMATION CONTACT THE BUYER**

Jessica S Chambers  
 (304) 558-0246  
 jessica.s.chambers@wv.gov

Vendor  
 Signature X

FEIN# 47-1729825

DATE 5/6/2021

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

State of West Virginia  
 Centralized Request for Quote  
 Info Technology

<b>Proc Folder:</b> 840904		<b>Reason for Modification:</b>	
<b>Doc Description:</b> Tax Infrastructure RFQ (OT21093)		Addendum No. 04 is being issued to extend the bid opening date and time.	
<b>Proc Type:</b> Central Master Agreement		No other changes.	
<b>Date Issued</b>	<b>Solicitation Closes</b>	<b>Solicitation No</b>	<b>Version</b>
2021-04-14	2021-05-06 13:30	CRFQ 0210 ISC2100000018	5

**BID RECEIVING LOCATION**

BID CLERK  
 DEPARTMENT OF ADMINISTRATION  
 PURCHASING DIVISION  
 2019 WASHINGTON ST E  
 CHARLESTON WV 25305  
 US

**VENDOR**

**Vendor Customer Code: # VS0000020347**

**Vendor Name : Capital Consulting LLC D/B/A Tharseo IT**

**Address : Main Office**

**Street : 1231B Good Hope Rd SE**

**City : Washington**

**State : District of Columbia**                      **Country : United States**                      **Zip : 20020**

**Principal Contact : Eric Wimer**

**Vendor Contact Phone: 703-930-9509**                      **Extension:**

**FOR INFORMATION CONTACT THE BUYER**

Jessica S Chambers  
 (304) 558-0246  
 jessica.s.chambers@wv.gov

Vendor  
 Signature X

FEIN# 47-1729825

DATE 5/6/2021

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 Purchasing Division  
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 Post Office Box 50130  
 Charleston, WV 25305-0130

State of West Virginia  
 Centralized Request for Quote  
 Info Technology

<b>Proc Folder:</b> 840904		<b>Reason for Modification:</b>	
<b>Doc Description:</b> Tax Infrastructure RFQ (OT21093)		Addendum No. 06 is being issued to address all technical questions received and extend the bid openi..... See Page 2 for complete info	
<b>Proc Type:</b> Central Master Agreement			
<b>Date Issued</b>	<b>Solicitation Closes</b>	<b>Solicitation No</b>	<b>Version</b>
2021-05-11	2021-05-27 13:30	CRFQ 0210 ISC2100000018	7

**BID RECEIVING LOCATION**

BID CLERK  
 DEPARTMENT OF ADMINISTRATION  
 PURCHASING DIVISION  
 2019 WASHINGTON ST E  
 CHARLESTON WV 25305  
 US

**VENDOR**

**Vendor Customer Code:** #VS0000020347  
**Vendor Name :** Capital Consulting LLC D/B/A Tharseo IT  
**Address :** Main Office  
**Street :** 1231B Good Hope Rd SE  
**City :** Washington  
**State :** DC **Country :** United States **Zip :** 20020  
**Principal Contact :** Eric Wimer  
**Vendor Contact Phone:** 703-930-9509 **Extension:**

**FOR INFORMATION CONTACT THE BUYER**

Jessica S Chambers  
 (304) 558-0246  
 jessica.s.chambers@wv.gov

Vendor  
 Signature X

FEIN# 47-1729825

DATE 5/14/2021

All offers subject to all terms and conditions contained in this solicitation

**ADDENDUM ACKNOWLEDGEMENT FORM**  
**SOLICITATION NO.: CRFQ 0210 ISC2100000018**

**Instructions:** Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

**Acknowledgment:** I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

**Addendum Numbers Received:**

(Check the box next to each addendum received)

<input checked="" type="checkbox"/> Addendum No. 1	<input checked="" type="checkbox"/> Addendum No. 6
<input checked="" type="checkbox"/> Addendum No. 2	<input type="checkbox"/> Addendum No. 7
<input checked="" type="checkbox"/> Addendum No. 3	<input type="checkbox"/> Addendum No. 8
<input checked="" type="checkbox"/> Addendum No. 4	<input type="checkbox"/> Addendum No. 9
<input checked="" type="checkbox"/> Addendum No. 5	<input type="checkbox"/> Addendum No. 10

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

Capital Consulting LLC D/B/A Tharseo IT

Company



Authorized Signature

May 20, 2021

Date

**NOTE:** This addendum acknowledgment should be submitted with the bid to expedite document processing.

Revised 6/8/2012

**DESIGNATED CONTACT:** Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.

Eric Wimer ; CEO

(Name, Title)

Eric Wimer ; CEO

(Printed Name and Title)

1231B Good Hope Rd SE, Washington, DC 20020

(Address)

703-930-9509

(Phone Number) / (Fax Number)

ewimer@tharseoit.com

(email address)

**CERTIFICATION AND SIGNATURE:** By signing below, or submitting documentation through wvOASIS, I certify that I have reviewed this Solicitation in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that I am authorized by the vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

Capital Consulting LLC D/B/A Tharseo IT

(Company)



Eric Wimer, CEO

(Authorized Signature) (Representative Name, Title)

Eric Wimer ; CEO

(Printed Name and Title of Authorized Representative)

04/29/2021

(Date)

703-930-9509

(Phone Number) (Fax Number)

REQUEST FOR QUOTATION  
WV State Tax Department Assessment System Cloud Hosting

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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.

**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:** Michael Tenreiro  
**Telephone Number:** 631-413-4924  
**Fax Number:** 855-815-7474  
**Email Address:** mtenreiro@tharseoit.com

**AGREED:**

Name of Agency: \_\_\_\_\_

Signature: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Name of Vendor: Capital Consulting LLC D/B/A Tharseo IT

Signature:  \_\_\_\_\_

Title: CEO

Date: 04/29/2021

## Appendix A

(To be completed by the Agency's Procurement Officer prior to the execution of the Addendum, and shall be made a part of the Addendum. Required information not identified prior to execution of the Addendum may only be added by amending Appendix A and the Addendum, via Change Order.)

Name of Service Provider/Vendor: Capital Consulting LLC D/B/A Tharseo IT

Name of Agency: West Virginia Office of Technology

Agency/public jurisdiction's required information:

1. Will restricted information be processed by the service provider?  
Yes   
No
2. If yes to #1, does the restricted information include personal data?  
Yes   
No
3. If yes to #1, does the restricted information include non-public data?  
Yes   
No
4. If yes to #1, may the service provider store public jurisdiction data in a data center in an acceptable alternative data center location, which is a country that is not the U.S.?  
Yes   
No
5. Provide name and email address for the Department privacy officer:  
Name: Jennelle Jones  
Email address: Jennelle.H.Jones@wv.gov

Vendor/Service Provider's required information:

6. Provide name and contact information for vendor's employee who shall serve as the public jurisdiction's primary security contact:  
Name: Eric Wimer  
Email address: ewimer@tharseoit.com  
Phone Number: 703-930-9509

Please note: Tharseo IT will furnish requisite insurance policies to be fully compliant with specified amounts upon award of contract.

DocuSign Envelope ID: 09B3FE02-E221-4084-A1A2-C0B43D8272BD



March 24, 2021

Michele Story  
CyberPolicy, Inc. dba CyberPolicy Insurance Solutions  
1 California St Fl 11  
San Francisco, CA 94111-5412  
Certificate No.: MPL4435352.21

Re: Capital Consulting LLC  
Coverage Parts: Claims-Made and Reported Technology Professional Liability, Cyber Coverage Part, Digital Media Liability, TRIA

Dear Michele,

In accordance with your request, we are pleased to bind coverage as follows:

**Bind Premium Summary:**

<b>Technology Professional Liability Coverage Part</b>	<b>\$ 2,554</b>
<b>Cyber Coverage Part</b>	<b>\$ 1,340</b>
<b>Digital Media Liability Coverage Part</b>	<b>\$ 140</b>
<b>TRIA Coverage Part</b>	<b>\$ 13</b>
<b>Total Premium</b>	<b>\$ 4,047</b>

**Bind Details:**

**General Terms & Conditions WCL P0001 CW (07-19)**

1. Policy Period: 04/23/2021 to 04/23/2022
2. 100% Lloyds syndicate paper which is rated A by A.M. Best. Financial Size Category is Class XV
3. Hiscox makes available free risk management and loss prevention services to its policyholders, consisting of an initial consultation and up to 1 hour of legal services, to assist our policyholders in better understanding and minimizing risks that commonly lead to the types of claims covered under our policy.
4. Attached endorsements apply: E6017.3 - Nuclear Incident Exclusion Clause-Liability-Direct (Broad) Endorsement, E6015.9 - Lloyd's Syndicate (3624) Endorsement, E6016.1 - Service of Suit, E6018.2 - Applicable Law Endorsement, E8915.1 - War and Civil War Exclusion Endorsement (Cyber Terrorism Carveback), E6318.2 - Amend Cancellation Provision Endorsement (Pro-Rata), E9997.4 - Policyholder Disclosure Notice of Terrorism Insurance Coverage, E9999.2 - Cap on Losses from Certified Acts of Terrorism Endorsement, and E8672.1 - Cyber Incidents Endorsement (Tech)

**Technology Professional Liability Terms & Conditions WCLTCH P0001 CW (07/19)**

1. Claims-made and reported coverage
2. Covered Professional Services: refer to definition of Technology Services



3. Retroactive date: 04/23/2020
4. Attached endorsements apply: NONE

### Cyber Coverage Terms & Conditions CYBCL-CYB P0001S CW (10-19)

1. Claims-made/Event Occurring & Discovered form
2. **Your CyberClear policy includes complimentary access to our risk management and breach response services, including:**
  - **Hiscox CyberClear Academy**, an online interactive suite of training modules designed to reduce the risk that your company will become victim of a cyber event. Training is tailored to each employee's experience and role, and covers existing and emerging threats. This government-certified training program is unique to Hiscox, and will help you meet the requirements of regulators and train your employees to be prepared to better understand cyber-related threats.

To access Hiscox CyberClear Academy: [www.hiscoxclearacademy.com](http://www.hiscoxclearacademy.com).

- **Access to breach prevention services through eRisk Hub®** powered by NetDiligence®, a full suite of educational and technical resources that can assist in the prevention of cyber losses to your organization. Register at Hiscox eRisk Hub®: [www.eriskhub.com/hiscox.php](http://www.eriskhub.com/hiscox.php) Use access code: 08663. Questions? [Hiscox@eriskhub.com](mailto:Hiscox@eriskhub.com)
- **A comprehensive panel of breach response resources**, featuring eRisk Hub® Breach Response Resource and Information Web Portal, powered by NetDiligence®, the industry standard of response and protection. Plus, public relations support, legal services, credit monitoring, extortion protection and more. These resources will help your clients comply with regulations and protect their reputation, should a breach occur.

For more information, visit <https://www.hiscox.com/risk-management-cyber>.

3. Retroactive date: 04/23/2020
4. Worldwide coverage territory for data breaches or other events that take place anywhere in the world.
5. Attached endorsements apply: E8916.1 - Amend Insured vs. Insured Exclusion Endorsement (Additional Insureds Carveback), and E8856.1 - Blanket Additional Insured Endorsement (Written Contract)

### Digital Media Liability Terms & Conditions CYBCL-MED P0001S CW (04-19)

1. Claims-made and reported coverage
2. Retroactive date: 04/23/2020
3. Attached endorsements apply: NONE

### Technology Professional Liability Coverage Part: Claims-Made and Reported Form

Technology Professional Liability (TL) Aggregate Limit \$ 2,000,000  
 Shared limit with Cyber Limit of Liability (CYE) and Digital Media Limit of Liability (ML)

**The Cyber Coverage Part Limit of Liability, Technology Professional Liability Coverage Part Limit of Liability, and the Digital Media Coverage Part Limit of Liability will be shared, and any payments made under any Coverage part will reduce the coverage part limits for all Coverage Parts.**




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Each Claim Limit	\$ 2,000,000
Retention	\$ 5,000
Term Premium	\$ 2,554

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### Cyber Coverage Part: Claims-Made/Event Occurring & Discovered Form

Cyber (CYE) Aggregate Limit	\$ 2,000,000
Shared limit with Technology Limit of Liability (TL) and Digital Media Limit of Liability (ML)	

**The Cyber Coverage Part Limit of Liability, Technology Professional Liability Coverage Part Limit of Liability, and the Digital Media Coverage Part Limit of Liability will be shared, and any payments made under any Coverage part will reduce the coverage part limits for all Coverage Parts.**

The Cyber Coverage Part includes Damages, Claim Expenses, and the following Loss Amounts:

- Breach Costs (includes Computer Forensics, Notification, Call Center, Identity Protection Services, and Crisis Management and Public Relations)
- Penalties (includes all amounts awarded in a Regulatory Proceeding)
- PCI Fines and Assessments
- Cyber Extortion Costs
- Business Interruption Costs
- Data Recovery Costs

CYE Each Claim and/or Event Limit	\$ 2,000,000
Waiting Period	10 hours
Period of Restoration	120 days
Bricking Costs (Shared Limit with CYE)	\$ 1,000,000
Bricking Costs Retention	\$ 5,000
Cyber Crime Coverage (Shared Limit with CYE)	\$ 100,000
(Funds Transfer Fraud, Social Engineering, and Reverse Social Engineering)	
Cyber Crime Coverage Retention	\$ 5,000
Dependent Business Interruption (Shared Limit with CYE)	\$ 1,000,000
Dependent Business Interruption Retention	\$ 5,000
Dependent System Failure (Shared Limit with CYE)	\$ 1,000,000
Dependent System Failure Retention	\$ 5,000
Enhanced Privacy Regulation Coverage (Shared Limit with CYE)	\$ 1,000,000
Enhanced Privacy Regulation Coverage Retention	\$ 5,000
Reputational Harm (Shared Limit with CYE)	\$ 1,000,000
Reputational Harm Retention	\$ 5,000
System Failure (Shared Limit with CYE)	\$ 1,000,000
System Failure Retention	\$ 5,000
Utility Fraud (Shared Limit with CYE)	\$ 250,000




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Utility Fraud Retention	\$ 5,000
CYE Retention	\$ 5,000
Term Premium	\$ 1,340

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**Digital Media Liability Coverage Part: Claims-Made and Reported Form**

Digital Media Liability (ML) Aggregate Limit	\$ 2,000,000
Shared limit with Cyber Limit of Liability (CYE) and Technology Limit of Liability (TL)	

**The Cyber Coverage Part Limit of Liability, Technology Professional Liability Coverage Part Limit of Liability, and the Digital Media Coverage Part Limit of Liability will be shared, and any payments made under any Coverage Part will reduce the coverage part limits for all Coverage Parts.**

Each Claim Limit	\$ 2,000,000
Retention	\$ 5,000
Term Premium	\$ 140

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**TRIA Coverage**

Term Premium	\$ 13
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<b>Total Premium</b>	<b>\$ 4,047</b>
----------------------	-----------------

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The commission payable is 20.00%.

Thank you for the Bind Order. It is your responsibility to handle all E&S filings as well as collect and pay the E&S taxes. Please give me a call if you have any questions or require anything further.

Sincerely,

Authorized Representative  
Kevin Kerridge



THE HARTFORD  
BUSINESS SERVICE CENTER  
3600 WISEMAN BLVD  
SAN ANTONIO TX 78251

January 9, 2021

The District of Columbia Govt.  
Office of Contract and Procurement  
441 4TH ST NW STE 700S  
WASHINGTON DC 20001-2714

#### Account Information:

<b>Policy Holder Details :</b>	CAPITAL CONSULTING LLC
--------------------------------	------------------------



#### Contact Us

---

Business Service Center

**Business Hours:** Monday - Friday  
(7AM - 7PM Central Standard Time)

**Phone:** (888) 925-3137

**Fax:** (888) 443-6112

**Email:** [agency.services@thehartford.com](mailto:agency.services@thehartford.com)

**Website:** <https://business.thehartford.com>

Enclosed please find a Certificate Of Insurance for the above referenced Policyholder. Please contact us if you have any questions or concerns.

Sincerely,

Your Hartford Service Team



# CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)  
01/09/2021

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

**IMPORTANT:** If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

<b>PRODUCER</b> NUTMEG INS AGENCY INC/PHS 76210775 The Hartford Business Service Center 3600 Wiseman Blvd San Antonio, TX 78251	<b>CONTACT NAME:</b> PHONE (888) 925-3137 FAX (888) 443-6112 (A/C, No, Ext):	
	<b>E-MAIL ADDRESS:</b>	
<b>INSURED</b> CAPITAL CONSULTING LLC 1231B GOOD HOPE RD SE WASHINGTON DC 20020-6907	<b>INSURER(S) AFFORDING COVERAGE</b>	
	<b>INSURER A :</b> Twin City Fire Insurance Company	29459
	<b>INSURER B :</b> Sentinel Insurance Company Ltd.	11000
	<b>INSURER C :</b>	
	<b>INSURER D :</b>	
	<b>INSURER E :</b>	
<b>INSURER F :</b>		

**COVERAGES****CERTIFICATE NUMBER:****REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/Y YYYY)	LIMITS	
A	COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> General Liability	X	X	76 SBU BB1300	02/07/2021	02/07/2022	EACH OCCURRENCE \$1,000,000	
	<input type="checkbox"/> General Aggregate Limit Applies Per: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input checked="" type="checkbox"/> LOC OTHER:						DAMAGE TO RENTED PREMISES (Ea occurrence) \$1,000,000	
							MED EXP (Any one person) \$10,000	
							PERSONAL & ADV INJURY \$1,000,000	
A	<b>AUTOMOBILE LIABILITY</b> <input type="checkbox"/> ANY AUTO <input checked="" type="checkbox"/> ALL OWNED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS			76 SBU BB1300	02/07/2021	02/07/2022	<input checked="" type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> NON-OWNED AUTOS	
							COMBINED SINGLE LIMIT (Ea accident) \$1,000,000	
							BODILY INJURY (Per person)	
							BODILY INJURY (Per accident)	
A	<input checked="" type="checkbox"/> UMBRELLA LIAB EXCESS LIAB <input checked="" type="checkbox"/> OCCUR CLAIMS-MADE <input type="checkbox"/> DED <input checked="" type="checkbox"/> RETENTION \$ 10,000			76 SBU BB1300	02/07/2021	02/07/2022	EACH OCCURRENCE \$2,000,000	
							AGGREGATE \$2,000,000	
B	<b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N	N/A	X	76 WEG AB1WK9	02/07/2021	02/07/2022	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTHER
								E.L. EACH ACCIDENT \$1,000,000
								E.L. DISEASE -EA EMPLOYEE \$1,000,000
								E.L. DISEASE - POLICY LIMIT \$1,000,000
A	EMPLOYMENT PRACTICES LIABILITY			76 SBU BB1300	02/07/2021	02/07/2022	Each Claim Limit \$10,000 Aggregate Limit \$10,000	

**DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)**

Those usual to the Insured's Operations. Blanket Waiver of Subrogation applies in favor of the Certificate Holder per the Waiver of Our Right to Recover from Others Endorsement WC000313, attached to this policy. Certificate holder is an additional insured and Waiver of Subrogation per the Business Liability Coverage Form SS0008 attached to this policy.

**CERTIFICATE HOLDER**

The District of Columbia Govt.  
 Office of Contract and Procurement  
 441 4TH ST NW STE 700S  
 WASHINGTON DC 20001-2714

**CANCELLATION**

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

*Susan S. Castaneda*

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# CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

01/17/2021

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

**IMPORTANT:** If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

<b>PRODUCER</b> Hiscox Inc. 520 Madison Avenue 32nd Floor New York, NY 10022	<b>CONTACT NAME:</b> <b>PHONE (A/C. No. Ext):</b> (888) 202-3007	<b>FAX (A/C. No):</b>
	<b>E-MAIL ADDRESS:</b> contact@hiscox.com	
<b>INSURER(S) AFFORDING COVERAGE</b>		<b>NAIC #</b>
<b>INSURER A:</b> Hiscox Insurance Company Inc	10200	
<b>INSURED</b> Capital Consulting LLC DBA Tharseo IT 1231B Good Hope Rd SE Washington DC 20020	<b>INSURER B:</b>	
	<b>INSURER C:</b>	
	<b>INSURER D:</b>	
	<b>INSURER E:</b>	
	<b>INSURER F:</b>	

**COVERAGES****CERTIFICATE NUMBER:****REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
	<b>COMMERCIAL GENERAL LIABILITY</b> <input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER:						EACH OCCURRENCE \$ DAMAGE TO RENTED PREMISES (Ea occurrence) \$ MED EXP (Any one person) \$ PERSONAL & ADV INJURY \$ GENERAL AGGREGATE \$ PRODUCTS - COMP/OP AGG \$ \$
	<b>AUTOMOBILE LIABILITY</b> <input type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> NON-OWNED AUTOS ONLY						COMBINED SINGLE LIMIT (Ea accident) \$ BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
	<b>UMBRELLA LIAB</b> <input type="checkbox"/> OCCUR <b>EXCESS LIAB</b> <input type="checkbox"/> CLAIMS-MADE DED <input type="checkbox"/> RETENTION \$						EACH OCCURRENCE \$ AGGREGATE \$ \$
	<b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A					<input type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$ E.L. DISEASE - EA EMPLOYEE \$ E.L. DISEASE - POLICY LIMIT \$
A	Professional Liability	Y		UDC-1922508-EO-21	03/03/2021	03/03/2022	Each Claim: \$ 1,000,000 Aggregate: \$ 2,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

**CERTIFICATE HOLDER**

The District of Columbia Office of Contracting and Procurement  
 441 4th St NW Ste 700 S  
 Washington, DC 20001

**CANCELLATION**

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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STATE OF WEST VIRGINIA  
Purchasing Division

# PURCHASING AFFIDAVIT

**CONSTRUCTION CONTRACTS:** Under W. Va. Code § 5-22-1(i), the contracting public entity shall not award a construction contract to any bidder that is known to be in default on any monetary obligation owed to the state or a political subdivision of the state, including, but not limited to, obligations related to payroll taxes, property taxes, sales and use taxes, fire service fees, or other fines or fees.

**ALL CONTRACTS:** Under W. Va. Code §5A-3-10a, no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

**EXCEPTION:** The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va. Code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

**DEFINITIONS:**

**"Debt"** means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

**"Employer default"** means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

**"Related party"** means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceeds five percent of the total contract amount.

**AFFIRMATION:** By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (W. Va. Code §61-5-3) that: (1) for construction contracts, the vendor is not in default on any monetary obligation owed to the state or a political subdivision of the state, and (2) for all other contracts, that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

**WITNESS THE FOLLOWING SIGNATURE:**

Vendor's Name: CAPITAL CONSULTING LLC DBA THARSEO IT

Authorized Signature: *Amel Bahi* Date: 5/26/2021

State of Virginia

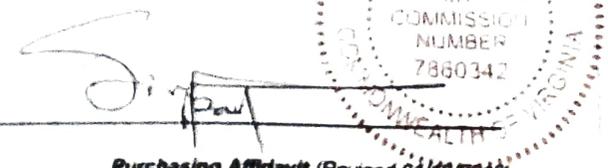
County of Fairfax to-wit:

Taken, subscribed, and sworn to before me this 26 day of May, 2021.

My Commission expires 31 August, 2024.

AFFIX SEAL HERE

NOTARY PUBLIC



West Virginia Ethics Commission  
**Disclosure of Interested Parties to Contracts**

(Required by W. Va. Code § 6D-1-2)

Name of Contracting Business Entity: \_\_\_\_\_ Address: 1231B GOOD HOPE RD SE  
CAPITAL CONSULTING LLC DBA THARSEO IT WASHINGTON DC 20020

Name of Authorized Agent: Amit Bahadur, President & COO Address: 1231B GOOD HOPE RD SE, Washington DC 20020

Contract Number: 804.405.5347 Contract Description: CRFQ 0210 ISC2100000018

Governmental agency awarding contract: State of West Virginia Department of Administration, Purchasing Division

Check here if this is a Supplemental Disclosure

List the Names of Interested Parties to the contract which are known or reasonably anticipated by the contracting business entity for each category below (attach additional pages if necessary):

1. Subcontractors or other entities performing work or service under the Contract

Check here if none, otherwise list entity/individual names below.

NEW LIGHT TECHNOLOGIES

2. Any person or entity who owns 25% or more of contracting entity (not applicable to publicly traded entities)

Check here if none, otherwise list entity/individual names below.

AMIT BAHADUR - 51%  
ERIC WIMER - 49%

3. Any person or entity that facilitated, or negotiated the terms of, the applicable contract (excluding legal services related to the negotiation or drafting of the applicable contract)

Check here if none, otherwise list entity/individual names below.

Signature: Amit Bahadur Date Signed: 5/26/2021

**Notary Verification**

State of Virginia, County of Fairfax:

I, Sirelkhatim Ali, the authorized agent of the contracting business entity listed above, being duly sworn, acknowledge that the Disclosure herein is being made under oath and under the penalty of perjury.

Taken, sworn to and subscribed before me this 26 day of May  
[Signature]  
Notary Public's Signature



**To be completed by State Agency:**  
Date Received by State Agency: \_\_\_\_\_  
Date submitted to Ethics Commission: \_\_\_\_\_  
Governmental agency submitting Disclosure: \_\_\_\_\_

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price	Comments
1	3.1.1 Production Environment	12	MO	\$ 35,983.98	\$ 431,807.76	Total cost for the Production Environment. This includes a discount of 25%.
2	3.1.2 Testing Environment	12	MO	\$ 37,303.97	\$ 447,647.64	Total cost for the Testing/DR Environment. This includes a discount of 25%.
3	3.1.3 Backup Environment	12	MO	\$ -	\$ -	The backup costs are included as part of the Testing and Production Cloud Environment(s). Our solution and pricing for the Production and Testing Cloud Environments includes a full-site backup of everything required to restore the site including virtual machines, configuration data, application data, and database backups.
4	3.3 Professional Services	100	HOUR	\$ 135.00	\$ 13,500.00	Please see comment in 'Detailed Pricing' sheet for '3.3 Professional Services'.
5	3.5.1 Scalability per 50GB	100	EA	\$ 11.4750	\$ 1,147.50	The cost to scale Object Storage or Block Storage is included in this cost. This includes a discount of 25%
6	3.5.2 Scalability per 1 CPU	100	EA	\$ 167.40	\$ 16,740.00	The cost to scale 1 CPU of OCI Compute using the VM Standard E4 Flex image shape running 24x7x365 - with the FAM Model Pricing, this is the ceiling. This includes a discount of 25%.
7	3.5.3 Scalability per 1GB	100	EA	\$ 10.04	\$ 1,004.40	The cost to scale 1 GB unit of additional RAM to support the above VM Standard E4 Flex image shape. This includes a discount of 25%.
<b>Total Price</b>					<b>\$ 911,847.31</b>	



**State of West Virginia Department of Administration  
Purchasing Division**

**Doc Description: Tax Infrastructure RFQ (OT21093)**

**Request for Quote (RFQ)**

**Solicitation number: CRFQ 0210 ISC210000018**

**Solicitation Submission: 05/27/2021**

**Tharseo IT**

1231B Good Hope Rd. SE

Washington, DC 20020-6907

TharseoIT.com. | 855.815.7474

**Contact Information**

Eric Wimer 703.930.9509 | [ewimer@tharseoit.com](mailto:ewimer@tharseoit.com)

This proposal includes data that shall not be disclosed outside the State of WV Department of Administration, WV Office of Technology, and WV State Tax Department, and shall not be duplicated, used, or disclosed in whole or in part for any purpose except for use in the procurement process. If, however, a contract is awarded to this offeror as a result of or in connection with the submission of this data, the WV agencies listed earlier, will have the right to duplicate, use, or disclose the data to the extent consistent with their needs in the procurement process. This restriction does not limit the rights to use, without restriction, information contained in this proposal if it is obtained from another source. The data subject to this restriction as contained in page 1 through the end of document.

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## Statement of Confidentiality

All information submitted within this response to State of West Virginia’s Department of Administration is to be treated as confidential and to be used only within the context of the evaluation criteria as outlined in the CRFQ 0210 ISC2100000018.

## Certification of Compliance

Capital Consulting L.L.C. D/B/A Tharseo IT certifies it has read and understood the solicitation and all amendments and is following proper compliance with all articles, clauses, terms, and conditions contained or referenced within the CRFQ 0210 ISC2100000018.

## Validity of Proposal

Capital Consulting L.L.C. D/B/A Tharseo IT understands the terms set out in this response will remain valid for a period of not less than 120 days from the closing date of this solicitation, being 05/27/2021.

## Inquiries and Corporate Contact Information

Should any enquiries arise during the review or evaluation of the contents of this submission, please contact Eric Wimer at Cell – 703.930.9509 or email [ewimer@tharseoit.com](mailto:ewimer@tharseoit.com) The mailing address of Capital Consulting L.L.C. D/B/A Tharseo IT is 1231B Good Hope Rd. SE, Washington, DC 20020.



---

Eric Wimer  
CEO

05/27/2021

---

Date

## A. Cover Letter

---

27<sup>th</sup> May 2021

Ms. Jessica Chambers,  
WV Purchasing Division,  
Department of Administration,  
2019 Washington Street E.,  
Charleston, WV 25305.  
Email: [jessica.s.chambers@wv.gov](mailto:jessica.s.chambers@wv.gov)

**Subject:** Solicitation CRFQ 0210 ISC2100000018

On behalf of Tharseo IT, I'd like to thank you for the opportunity to submit our Proposal for Solicitation CRFQ 0210 ISC2100000018 to establish an open-end contract for a hosted cloud services environment and the required professional services for a new Integrated Tax Assessment System for the West Virginia State Tax Department. Tharseo IT is an Oracle Gold Partner, Oracle certified Cloud Excellence Implementer and authorized reseller of Oracle Services. We have an excellent track record of success helping Public Sector agencies design and deploy Oracle software, scaled agile design, development, integration, migration delivery and 24/7 operational support of open source and cloud solutions.

Our proposal response includes the technical response, pricing schedule and all other requested documents as per the solicitation.

Thank you for your consideration. We look forward to the possibility of working with you to fulfill all the West Virginia State Tax Department's needs. Should you have any questions, please feel free to reach out to me directly.

Sincerely,



Eric Wimer  
CEO, Tharseo IT.

## B. Proposal Response

---

Tharseo IT is pleased to submit our proposal to the West Virginia Purchasing Division for CRFQ 0210 ISC2100000018 to establish an open-end contract for a hosted cloud services environment and the required professional services for a new Integrated Tax Assessment System for the West Virginia State Tax Department. Given our strong partnership with Oracle, our expertise on Oracle Cloud Infrastructure and our ability to provide certified experienced technical resources, we believe we are uniquely positioned to partner with West Virginia State Tax Department on this project.

### 1. Company Overview – Tharseo IT

Our company, Capital Consulting LLC Doing Business As (DBA) **Tharseo IT**, is a minority-owned, small-disadvantaged business. The company was founded in 2014 and headquartered in Washington, DC. We pride ourselves on being unique in the cloud-computing ecosystem and are one of few professional IT service companies registered as a Small Disadvantaged Business (SDB) and a HUBZone at both the Federal and State level in multiple states. Tharseo IT also holds a GSA Multiple Award Schedule (MAS) contract with various labor categories under SIN 518210C (Related IT Professional Services) and 54151S (Information Technology Professional Services). We are registered in State of West Virginia on **wvOASIS VSS** portal with Vendor code VS0000020347. We are registered as Small business and Minority-owned business on wvOASIS with valid certifications till 10/21/2021.

We specialize in assisting Federal, State, and Local Government agencies develop, design, deploy, and maintain Oracle enterprise SaaS, PaaS, and IaaS systems on Oracle-based infrastructure. Thanks to intensive work on Oracle systems, Tharseo has received multiple cloud competency certifications, including Oracle Cloud Platform Sell Expertise and Oracle Cloud Platform Data Management Service Expertise, demonstrating combined years of value and experience. Tharseo IT has successfully designed, built, deployed, operated, and maintained large IT systems for multiple government agencies in DC including - DC Water & Sewer Authority, DC Health Benefits Exchange (HBX), Department of Health Care Finance (DHCF), DC Health (DOH), DC Child and Family Services (CFSA), DC Office of Financial Officer (OCFO), Office of Attorney General (OAG) and the Office of Chief Technology Officer (OCTO) along with State of Maryland and federal agencies.

#### A. Our partnership with Oracle to resell Oracle Products, including Oracle Cloud Infrastructure (OCI), Fortinet and ArcGIS:

Since 2018, Tharseo IT has been a certified Oracle Partner Network (OPN) Gold member in good standing, with Resale rights in Database, Middleware, Applications, Oracle Cloud and Engineered Systems, and specializations in Oracle Database, Oracle Cloud Services and Engineered Systems. We have strong relationships with Oracle's product strategy, technical development, and management teams. Indeed, driving business value for clients is at the core of Tharseo IT's and Oracle's strategic relationship. We help companies transform their business operations to become more efficient and competitive by leveraging Oracle's innovative products. These relationships foster advanced awareness and a deep understanding of Oracle product roadmaps and functionality, helping Tharseo IT to shape solutions that fit our clients' unique business needs. Tharseo IT has access to a dedicated Oracle Cloud Infrastructure (OCI) environment with the

latest OCI features and software releases, so we can evaluate product enhancements in support of our clients' implementations.

We help our customers acquire the full stack of Oracle technologies because we:

- Possess the rights to represent, sell, and service Oracle's entire technology stack.
- Have in place the required Master Distribution Agreement (MDA) and Public Sector Addendum (PSA), as well as Cloud Services Distribution Addendum to MDA to sell Oracle Cloud Infrastructure, Oracle Platform-as-a-Service (PaaS) and Oracle Software-as-a-Service (SaaS) products.
- Deliver service across the entire Oracle technology stack— from initial software and hardware acquisitions to consulting and ongoing support and managed services.
- Deliver end-to-end Project Management for each Oracle project by adopting the Project Management Institute's (PMI) Project Management Body of Knowledge (PMBOK) best practices.
- Have met Oracle's rigorous criteria, and received written confirmation to resell, 46 product categories across broad range of Oracle technology.

Tharseo IT's resell and service rights for Oracle products are summarized in the table below:

Expertise	Tharseo IT Resell & Service Rights			
<b>Database</b>	1. Data Warehousing	3. MySQL	5. Oracle Database Appliance	
	2. Enterprise Manager	4. Oracle Database		
<b>Middleware</b>	6. Application Grid	11. Oracle Application Integration Architecture	14. Oracle SOA	
	7. Data Integration		15. Oracle Unified BPM	
	8. Developer Tools		16. Oracle WebCenter Content	
	9. IT Architecture	12. Oracle BI Applications	17. Oracle WebCenter Portal	
	10. Identity Management	13. Oracle BI Foundation	18. Oracle WebCenter Sites	
<b>Applications</b>	19. Oracle E-Business Suite	22. Oracle Policy Automation		
	20. Oracle Hyperion	23. Oracle Primavera		
	21. Oracle Master Data Management Solutions	24. Primavera Unifier		
<b>Cloud Services</b>	25. Oracle Financials Cloud	29. Oracle Planning and Budgeting Cloud Service		
	26. Oracle HCM Cloud			
	27. Oracle HCM Midsize Cloud	30. Primavera Cloud Service		
	28. Cloud Infrastructure and Platform	31. Oracle RightNow Cloud Service RR		
		32. Primavera Unifier Cloud Service		

<b>Engineered Systems</b>	33. Exadata Database Machine 34. Exalytics In-Memory Machine	35. Exalogic Elastic Cloud 36. Oracle Big Data Appliance 37. Oracle Database Appliance	38. Oracle Private Cloud Appliance
<b>Hardware</b>	39. StorageTek Tape Storage	40. SAN Storage 41. Oracle Zero Data Loss Recovery Appliance	
<b>Server and Storage Systems</b>	42. Digital Media Solutions 43. Oracle Database Appliance	45. Oracle Linux	46. Oracle Virtual Networking

Tharseo IT is also a registered partner with **Fortinet** and authorized to resell Fortinet products for on-premises and Cloud.

**Tharseo IT's Engage Partner Program Details**

We have recently updated our partner program to be more flexible and profitable for partners. Within the new program **Tharseo IT's** account details are as follows:

**Line of Business:** Reseller  
**Level of Engagement:** Advocate  
**Business Model(s):** Integrator  
**Fortinet Channel Account Manager:** Brian Haken  
**Fortinet POS ID:** FT-1240928

[Visit the Engage Hub to explore the new program.](#)

**Figure 1:** Tharseo IT's Partner details with Fortinet

We have partnered with **New Light Technologies**, a District of Columbia-based company authorized to resell **ArcGIS software** and a leader in supplying GIS software, Web GIS, and geodatabase management applications to government agencies. New Light Technologies offers significant experience leading and supporting a range of geospatial (GIS) projects for government clients including current contracts with FEMA, the U.S. Census Bureau, the U.S Department of Agriculture, the State of Maryland, and the District of Columbia, among others.

**B. Our Managed Services solution for Infrastructure Management:**

Tharseo employs a predictable and cost effective managed-services model for Infrastructure Management to help our customers keep pace with their infrastructure. Our managed services have been helping customers throughout the various stages of their applications' lifecycles – from design and implementation through stabilization, steady-state support, ongoing performance optimization, custom enhancement, and upgrade. Our Managed Services solution is designed to address the breadth and depth of your requirements for managed services, providing:

- High-availability for mission-critical applications, with SLAs.
- Reduced cost through increased utilization of production infrastructure and movement to OPEX model.
- Security-rich environment, with tiered security zones separated by firewalls and virtual local-area networks (VLANs).
- Skilled Oracle, ArcGIS, and SQL Server resources with industry certifications.
- Managed scalability and use of cloud resources with service limits using OCI cloud management portal.
- Compliant with latest cloud standards like IT Infrastructure Library (ITIL), HIPAA, PCI, etc.

The table below provides a summary of our managed services, including consulting and delivery services:

Service	Infrastructure Management Services	Application Services
<b>Consult and Implement</b>	A) Optimization Services <ul style="list-style-type: none"> <li>• OS Upgrades</li> <li>• Platform Migrations</li> <li>• Consolidate and Virtualize</li> <li>• Access and Identity Management</li> </ul> B) Transformation Services <ul style="list-style-type: none"> <li>• Cloud Services and Infrastructure-as-a-Service</li> <li>• Big Data and Data Lake Management</li> <li>• Disaster Recovery &amp; Business Continuity</li> </ul>	A) Optimization Services <ul style="list-style-type: none"> <li>• Database Optimization</li> <li>• Database Upgrade and Migrations</li> <li>• Release Management</li> </ul> B) Transformation Services <ul style="list-style-type: none"> <li>• Agile and DevOps</li> <li>• Terraform Kubernetes</li> </ul>
<b>Operate</b>	A) Production Support B) Converged Network C) Server and Storage Management D) Security Information and Event Management	A) Web Applications and Portals B) Middleware & Database C) Packaged and SaaS Applications D) Application Security and Performance

### C. Our expertise in Technical delivery and providing qualified resources:

Tharseo IT continues to develop, enhance, operate, and maintain critical systems for government agencies to take advantage of the fast, secure, and stable Oracle Cloud Infrastructure to achieve their mission of improved financial decision making and enhanced business outcomes. We are privileged to have tackled some of the toughest and most intractable technology and innovation problems for our government clients, including:

- a) **DC Department of Healthcare Finance (DHCF) District Access System (DCAS)** – Provide Washington, DC agencies with an integrated eligibility system for Medicaid, Supplemental Nutrition Assistance Program (SNAP), Temporary Assistance to Needy Families (TANF), and other benefits programs, with case

management capabilities. At DCAS, we implemented solutions for secure data transmission, data encryption and data storage of federal tax information (FTI) in Oracle database and web application as per IRS 1075 publication guidelines.

- b) DC Health District of Columbia Immunization Information System (DOCIIS)** – Migrate to the cloud the critical public health system that collects, stores, tracks and monitors immunization event information across the lifespan for residents and visitors to DC and integrate with the Special Supplemental Nutrition Program for Women, Infants and Children (WIC) information system to aid in immunization assessments for pregnant women and children. *Moving to the Oracle GovCloud saved DC Health roughly 40% in infrastructure costs and 50% in development costs.*
- c) Maryland 529 Program Operations & Maintenance and Modernization projects** – Provide operations and maintenance services for Maryland’s existing MD529 Banner ERP application and provide data conversion and cleansing support to assist the State of Maryland in its IT infrastructure modernization efforts.
- d) DC Water ERP Modernization project** – Provide functional SME and technical lead to implement Oracle HCM Cloud modules at DC Water as part of agency’s ERP modernization effort.
- e) U.S. Department of Agriculture (USDA) Food and Nutrition Service (FNS) Supplemental Nutrition Assistance Program (SNAP) Electronic Benefits Transfer (EBT) Portal** – Provide the means for SNAP recipients to authorize transfer of their government benefits from a Federal account to a SNAP retailer account to pay for products received from Farmers’ Markets and Direct Marketing Farmers, promoting healthy lifestyles for low-income families. The SNAP EBT Portal is used in all 50 States, the District of Columbia, Puerto Rico, the U.S. Virgin Islands, and Guam.

## 2. Oracle Cloud Infrastructure (OCI) – Overview, Benefits, Key Features and Compliance

Oracle is a long-standing strategic technology partner of the U.S. Government. Many state, local, and federal government customers are using Oracle to modernize their technology and meet increasing productivity goals and standards requirements. Oracle’s cloud services are used by 8 of the top 10 federal agencies by budget, all 4 branches of the U.S. military, and 36 states. More than 1,000 global public sector organizations take advantage of Oracle’s industry-leading technologies and superior performance.

Oracle Cloud is a Generation 2 government cloud that delivers powerful compute and networking performance and includes a comprehensive portfolio of infrastructure and platform cloud services. Built from the ground up to meet the needs of mission-critical applications, Oracle Cloud supports all legacy workloads while delivering modern cloud development tools, enabling government agencies to bring their past forward as they build their future. Our Generation 2 Cloud is the only one built to run Oracle Autonomous Database, the industry’s first and only self-driving database. Oracle Cloud offers a

### Why Oracle?

- With the highest level of FedRAMP Authorization and DISA Impact Level 5 provisional (IL5 PATO) authorizations, Oracle Cloud can provide government customers with the stringent standards of security necessary to protect the federal government’s data.
- Along with FedRAMP High and IL5 PATO authorizations, Oracle Cloud Infrastructure-Government Cloud has achieved dozens of certifications and attestations for key security standards around the globe, including SOC, ISO, PCI, and HIPAA. These independent third-party assurance programs demonstrate Oracle’s commitment to security and to meeting the needs of public sector customers.

comprehensive cloud computing portfolio, from application development and business analytics to data management, integration, security, artificial intelligence (AI), and blockchain.

**A. Benefits of using Oracle Cloud Infrastructure: Oracle's deep public-sector expertise is built on decades of experience:**

1. Unlike most other cloud vendors (including AWS), Oracle does not charge more for FedRAMP authorized government cloud. Pricing is identical to the commercial cloud.
2. Industry-leading security features, including data encryption at rest and in transit, complete cloud network isolation, and granular security controls.
3. Enterprise workload-ready with the strongest SLA in cloud computing, with performance, management, and availability guarantees.
4. Flexible cloud infrastructure buying and usage models.
5. Powerful cost savings across operations and maintenance.
6. Superior and consistent performance.
7. Security-first architecture.
8. Industry-leading total cost of ownership (TCO).

**B. Key Features of Oracle Cloud Infrastructure:**

1. **Off-Box Network and IO Virtualization:** Oracle Cloud Infrastructure is the first cloud platform to implement off-box network virtualization. This innovative process takes network and IO virtualization out of the software stack and instead places it within the network itself. As a result, customers can provision truly elastic, self-service, pay-as-you-go, dedicated physical servers with a full software-defined layer 3 network topology. In addition, off-box network virtualization enables customers to run bare metal hosts side-by-side with any class of systems—from Virtual Machines (VMs) to engineered systems like Exadata all using the same set of APIs. This feature will enable the customer to extend their IT infrastructure with highly customizable VCNs and secure connectivity services that offer predictable and consistent performance, isolation, and high availability.
2. **Fast and Scalable Compute Resources:** From single-core virtual machines to fully dedicated bare metal compute instances, Oracle Cloud Infrastructure compute instances support efficiency and massive scale for all traditional and cloud-native applications, coupled with our Kubernetes engine, the customer will have no problem deploying applications using OCI.
3. **Dependable Cloud Storage Options:** From blazingly fast local NVMe SSD to highly durable and cost-effective archive storage, Oracle offers scalable and secure cloud storage for all types of mission-critical data housed within the customer's infrastructure.
4. **Enterprise Class Cloud SLAs:** Oracle is the only Cloud Service Provider offering service level agreements that not only included availability but also manageability and performance.
  - a. **Availability:** Rest easy knowing that your cloud workloads are in continual operation with Oracle's unparalleled commitments to uptime and connectivity.
  - b. **Manageability:** The elasticity and configurability of infrastructure is a major reason why organizations move applications to the cloud. As a result, customer services need to be

manageable at all times to deliver this crucial benefit. Oracle provides manageability SLAs to ensure your ability to manage, monitor, and modify resources.

- c. **Performance:** It is not enough for your IaaS resources to be merely accessible: they should consistently perform the way you expect them to. Oracle is the first cloud vendor to guarantee constant performance, so you can safely rely on your infrastructure for enterprise applications.



**Figure 2:** Oracle Cloud Infrastructure: Compliance and Current Audit Status

### 3. Architecture Diagrams for Production & Test Environments in Oracle Cloud Infrastructure

Based on the requested general requirements specified in ‘Section 3.0 – General Requirements’ in the solicitation, please find below the preliminary architecture diagrams for hosting Production and Test environments in Oracle Cloud for WV State Tax Department Assessment System. The diagrams demonstrate the overall OCI setup for Test and Production environments, including Virtual Cloud Network (VCN), Virtual Machines (VMs) for various application and database servers, Object and Block storage in OCI, and Database tier including Oracle Real Application Cluster (RAC) setup. As mentioned, these diagrams are draft versions based on the details provided in the solicitation and will be updated once our team is engaged on the project.

#### 3.1 Production Environment:

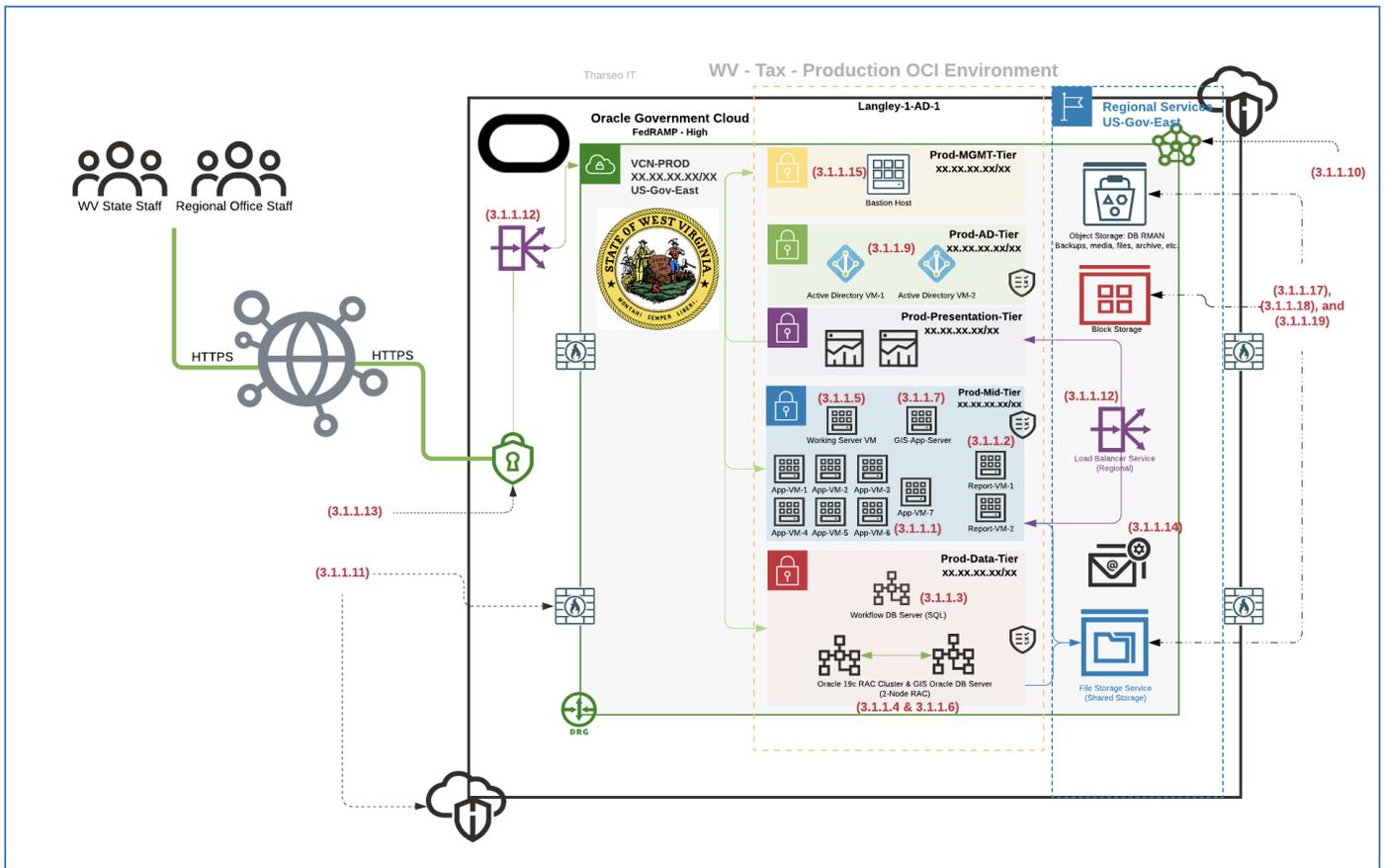
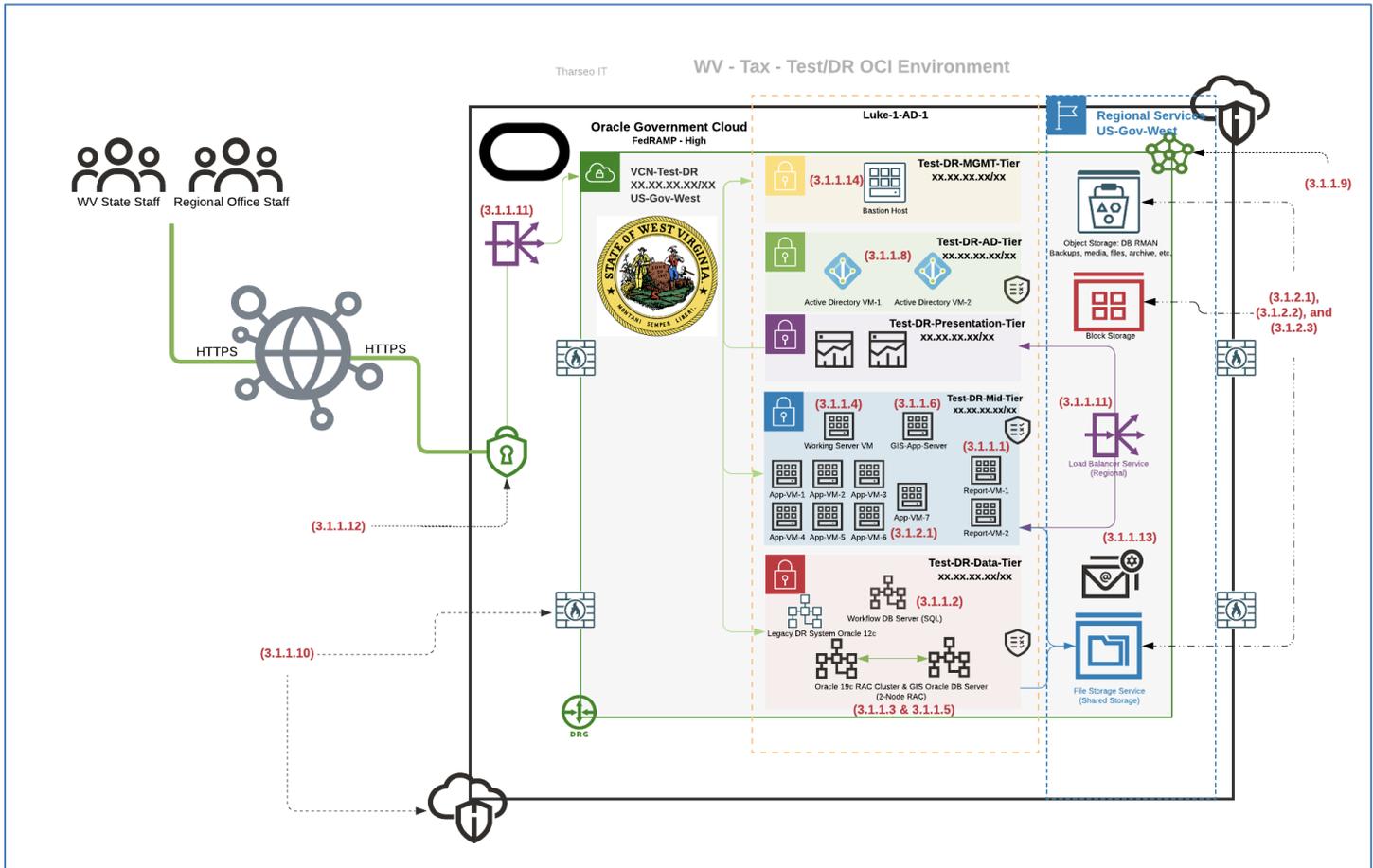


Figure 3: WV Tax – Production Environment on OCI

In the ‘Figure 3: WV Tax – Production Environment on OCI’ diagram above, all services are numbered in the color ‘Red’ with their corresponding section in the solicitation. For example, services labeled ‘3.1.1.1’ correspond to section ‘3.1.1.1 Application Servers under the Section ‘3.1.1 Production System’ header. We used the *exact* corresponding numbering pattern that was used in the solicitation titled ‘Complete Solicitation Documents’.

Please note that just because something is not labeled or does not specifically have a reference label to a corresponding section in the solicitation does not mean that we have not included it in the pricing and or as part of our bid. We have taken every section and necessary cloud component, software license, and any other cost(s) included in the original 'Complete Solicitation', the 'Addendum No. 6 Q & A', and all other relative document(s) into consideration as part of this bid. These diagrams are meant to be used as an example of what your environment(s) may look like with the information gathered thus far.

### 3.2 Test/DR OCI Environment



**Figure 4: WV Tax – Test Environment on OCI**

In the 'Figure: WV Tax – Test Environment on OCI' diagram above, all services are numbered in the color 'Red' with their corresponding section in the solicitation. For example, services labeled '3.1.1.1' correspond to section '3.1.2.1 Application Servers under the Section '3.1.2 Testing System' header. We used the *exact* corresponding numbering pattern that was used in the solicitation titled 'Complete Solicitation Documents'. Please note that just because something is not labeled or does not specifically have a reference label to a corresponding section in the solicitation does not mean that we have not included it in the pricing and or as part of our bid. We have taken every section and necessary cloud component, software license, and any other cost(s) included in the original 'Complete Solicitation', the 'Addendum No. 6 Q & A', and all other relative document(s) into

consideration as part of this bid. These diagrams are meant to be used as an example of what your environment(s) may look like with the information gathered thus far.

#### 4. Response to '3.0 General Requirements' section of the solicitation

**4.1 Acknowledgement of Definitions in the Solicitation:** Tharseo IT recognizes that the following definitions provided in the solicitation ("2.0 Definitions" in Section "Specifications") shall have the meanings assigned to them listed below and has answered this solicitation based on these meanings as well as the additional definitions which can be found in section 2 of the 'General Terms and Conditions' section of the solicitation document provided by The State of West Virginia, Department of Administration Purchasing Division on behalf of the West Virginia Office of Technology and West Virginia State Tax Department.

**2.1 "Contract Item" or "Contract Items"** means the list of items identified in Section 3.1 below and on the Pricing Pages.

**2.2 "Pricing Pages"** means the schedule of prices, estimated order quantity, and totals contained in wvOASIS or attached hereto as Exhibit A, and used to evaluate the Solicitation responses.

**2.3 "Solicitation"** means the official notice of an opportunity to supply the State with goods or services that is published by the Purchasing Division.

**2.4 "Bastion Host"** means a server whose purpose is to provide access to a private network and to which extra security and auditing are applied.

**2.5 "GHz"** is an abbreviation for gigahertz. One GHz represents 1 billion cycles per second.

**2.6 "CPU"** means Central Processing Unit.

**2.7 "SSH"** means Secure Shell.

**2.8 "RAM"** means Random Access Memory.

**2.9 "RDP"** means Remote Desktop Protocol.

**2.10 "RAID"** means Redundant Array of Inexpensive Disks; RAID0 is striping, RAID1 is mirroring, and RAID10 is a striped mirror.

**2.11 "SSD"** means Solid State Drive.

**2.12 "DMZ"** means network demilitarized zone on the perimeter of the network.

**2.13 "VPN"** means virtual private network and is used to extend a private network across a public network.

**2.14 "VLAN"** means a Virtual Local Area Network and is used to isolate broadcast traffic within a network.

**2.15 Cloud Specific Definitions:**

**2.15.1 "Region"** means a geographic region that contains multiple availability domains.

**2.15.2 "Availability Domain"** means an isolated, fault-tolerant zone within a region.

**2.15.3 "Fault Domain"** means a grouping of hardware and systems within an availability domain.

**2.15.4 "IaaS"** means Infrastructure-as-a-Service.

**2.15.5 "PaaS"** means Platform-as-a-Service.

**2.15.6 "SaaS"** means Software-as-a-Service.

#### 4.2 Our response to '3.1 Contract Items and Mandatory Requirements':

Tharseo IT recognizes that that we shall provide The State of West Virginia, Department of Administration Purchasing Division on behalf of the West Virginia Office of Technology with the contract items listed below on an open-end and continuing basis. Contract Items will meet and or exceed ALL of the mandatory requirements shown below in Section 3, as well as every respective sub-section below. In addition, they are included in our **pricing sheet 'Attachment A'** as part of our response submission.

**3.1.1 Production System:** Vendor must provide an IaaS, PaaS, SaaS, or hybrid solution – including any required licenses, maintenance, and support for the term of the contract – as follows:

3.1.1.1 Application Servers: 7 virtual machines with the following minimum specifications:

Yes, we have provided all line items priced out to minimum specifications or greater listed for all section(s) and subsection(s) titled Application Servers 3.1.1.1, this includes 3.1.1.1.1 - 3.1.1.1.4. Please see the attached pricing as well as the 'sample' architecture diagram we have provided as part of this response.

Yes, we have provided the ability to provision 7 virtual machines with the minimum (or better) specifications.

3.1.1.1.1 Minimum of 10 CPU Cores of Intel/AMD x64 processor(s). Minimum clock speed of 2.5 GHz.

Yes, we have included this in our pricing. There are 10 CPU cores per VM shape (using the VM Standard E4 Flex Shape) with AMD x64 processor(s). The minimum clock speed is provided is 2.55 GHz with the flexibility to boost up to 3.5 GHz.

3.1.1.1.2 Minimum of 32 Gigabytes of RAM

Yes, we have provided the ability to provision 32 Gigabytes of RAM (or better) on all Application Server Virtual Machines.

3.1.1.1.3 Minimum of 146 Gigabytes of SSD RAID 1 storage or better.

Yes, we have provided the ability to provision 146 Gigabytes of SSD Raid 1 Storage (or better) on all Application Server Virtual Machines.

3.1.1.1.4 Microsoft Windows Server 2019 operating system.

Yes, we have provided the ability to provision all Application Servers Virtual Machines with Microsoft Windows Server 2019 operating system.

**3.1.1.2 Report Servers:** 2 virtual machines with the following minimum specifications:

Yes, we have provided all line items priced out to minimum specifications or greater listed for all section(s) and subsection(s) titled **3.1.1.2 Report Servers**, including 3.1.1.2.1 - 3.1.1.2.4. Please see the attached pricing as well as the 'sample' architecture diagram we have provided as part of this response.

Yes, We have provided the ability to provision 2 virtual machines with the minimum (or better) specifications.

**3.1.1.2.1** Minimum of 10 CPU Cores of Intel/AMD x64 processor(s). Minimum clock speed of 2.5 GHz.

Yes, we have included this in our pricing. There are 10 CPU cores per VM shape (using the VM Standard E4 Flex Shape) with AMD x64 processor(s). The minimum clock speed is provided is 2.55 GHz with the flexibility to boost up to 3.5 GHz.

**3.1.1.2.2** Minimum of 32 Gigabytes of RAM.

Yes, have provided the ability to provision 32 Gigabytes of RAM (or better) on all Report Server Virtual Machines.

**3.1.1.2.3** Minimum of 600 Gigabytes of SSD RAID 1 storage or better.

Yes, we have provided the ability to provision 600 Gigabytes of SSD RAID 1 Storage (or better) on all Report Server Virtual Machines.

**3.1.1.2.4** Microsoft Windows Server 2019 operating system.

Yes, we have provided the ability to provision all Report Server Virtual Machines with Microsoft Windows Server 2019 operating system.

**3.1.1.3 Workflow Database Server:** 1 virtual machine with the following minimum specifications:

Yes, we have provided all line items priced out to minimum specifications or greater listed for all section(s) and subsection(s) titled 3.1.1.3 Workflow Database Server: this includes 3.1.1.3.1 - 3.1.1.3.5. Please see the attached pricing as well as the 'sample' architecture diagram we have provided as part of this response.

**3.1.1.3.1** Minimum of 10 CPU Cores of Intel/AMD x64 processor(s). Minimum clock speed of 2.5 GHz.

Yes, we have included this in our pricing. There are 10 CPU cores per VM shape (using the VM Standard E4 Flex Shape) The minimum clock speed is provided is 2.55 GHz with the flexibility to boost up to 3.5 GHz.

**3.1.1.3.2 Minimum of 32 Gigabytes of RAM.**

Yes, we have provided the ability to provision 32 Gigabytes of RAM (or better) on all Workflow Database Server Virtual Machines.

**3.1.1.3.3 Minimum of 146 Gigabytes of SSD RAID 1 storage or better.**

Yes, we have provided the ability to provision 146 Gigabytes of SSD RAID 1 Storage (or better) on all Workflow Database Server Virtual Machines.

**3.1.1.3.4 Microsoft Windows Server 2019 operating system.**

Yes, we have provided the ability to provision all Workflow Database Server(s) Virtual Machines with Microsoft Windows Server 2019 operating system.

**3.1.1.3.5 Microsoft Windows Server 2019 operating system.**

Yes, we have provided the ability to provision Microsoft SQL Server 2019 Standard Edition (Production Licensed) as part of an Oracle-approved pre-built Image & Configuration (with all necessary licenses and infrastructure) that is available in the Oracle Cloud Infrastructure Marketplace (OCI Marketplace).

More information on this image and configuration can be found here:

[https://cloudmarketplace.oracle.com/marketplace/en\\_US/listing/60923152](https://cloudmarketplace.oracle.com/marketplace/en_US/listing/60923152)

**3.1.1.4 Oracle Database Servers: Cluster of 2 Hosted Oracle servers in an active-active pair (Real Application Cluster) with the following minimum specification:**

Yes, we have provided all line items priced out to minimum specifications or greater listed for all section(s) and subsection(s) titled 3.1.1.4 Oracle Database Servers, this includes all sections and subsections for 3.1.1.4.1 - 3.1.1.4.6.4. Please see the attached pricing as well as the 'sample' architecture diagram we have provided as part of this response.

This includes OCPUs for OCI Enterprise Database Extreme Performance, which is the only fully-secure and certified licensed cloud offering certified and supported to run Oracle RAC database configurations. Licensing, as well as missing infrastructure support, currently restricts support for Oracle RAC on Third-Party Clouds.

The following two documents detail the licensing restriction:

1. "Licensing Oracle Software in the Cloud Computing Environment
2. "Oracle Programs" as referred to in the document mentioned above:

<https://www.oracle.com/us/corporate/pricing/cloud-licensing-070579.pdf>

<http://www.oracle.com/us/corporate/pricing/authorized-cloud-environments-3493562.pdf>

It should be noted that Oracle RAC is not listed as part of the Oracle programs that are eligible for Authorized Cloud Environments per the policy document listed here (<https://cloud.oracle.com/marketplace>) (“Licensing Oracle Software in the Cloud Computing Environment”).

No Third-Party Cloud currently meets Oracle’s requirements regarding natively provided shared storage. “Native” in this context means that the cloud provider must support shared storage as part of their infrastructure per Oracle’s support policy: “All storage products must be supported by the server (host) and storage vendors.”

<http://www.oracle.com/us/corporate/pricing/authorized-cloud-environments-3493562.pdf>

As part of the OCI Enterprise Database Extreme Performance Database Cloud, licensing features like Advanced Security, Partitioning, and Transparent Data Encryption (TDE) capabilities are automatically included in addition to other performance enhancement features like:

- Additional high-availability capabilities, including Oracle Real Application Clusters (Oracle RAC) support in virtual machine environments and Oracle Active Data Guard, enable customers to deploy resilient environments across multiple systems, availability domains, or Oracle Cloud Infrastructure regions.
- Additional performance capabilities, such as support for Oracle In-memory column stores and aggregation, allow customers to increase performance for data warehouses and analytics.
- Additional Oracle Sharding capabilities supporting unlimited primary and standby shards for increased performance and deployment flexibility.
- Oracle Cloud Infrastructure also provides industry-leading SLAs that cover performance, availability, and manageability for the lowest costs to run Oracle Database workloads in the Cloud in comparison to other cloud vendors.

Below is some pertinent information that your agency may find useful when comparing costs, security, and performance for running Oracle Database in the cloud between OCI and other cloud vendors:

### **FedRAMP & Cloud Security**

The Oracle Government Cloud (OCI-GOV or referred to as ‘Oracle Cloud’ throughout this response) is a (FedRAMP-High) accredited government cloud offering. Unlike other cloud providers (e.g. AWS, Azure, Google) that charge more for cloud infrastructure resources deployed in FedRAMP accredited cloud regions and data centers, Oracle does not charge customers any additional fees for this convenience and security. As an added benefit, their cloud resource availability and uptime (99.95%) are backed by actual SLAs, unlike the other aforementioned cloud providers. The West Virginia State Tax Department will experience immediate and significant cost-savings, overall security enhancements, and system performance increases just by moving their on-premises infrastructure to the Oracle Cloud.

## OCI-GOV vs. Other Clouds

Although at first glance IT services such as AWS and Microsoft Azure may provide an enticing price point for hosting Oracle products in their cloud; we have seen substantial price increases and erratic performance fluctuations (especially involving Oracle Database systems) once on-premises systems are formally moved into these clouds and considered 'operational'. Another important point of note is the fact that other cloud providers hosting Oracle typically provide 'Machine Images'. For example, Amazon uses 'AMIs' which are Amazon approved machine images that come with pre-installed cloud hardware and software configurations to optimize performance. Since this engagement requires a government compliant environment for the Cloud Systems, AWS will not be compliant using any Oracle Database AMI currently available in the Amazon Cloud Marketplace. In order to adhere to the necessary compliance requirement, the vendor would have to separately buy Oracle Database on-premises licenses and install those licenses on a VM in AWS with other required configurations as a work-around method to ensure FedRAMP-High compliance.

Speaking from professional experience, we have witnessed many less-than-favorable outcomes in similar situations that require a customer to 'bring their own license' to a non-Oracle Cloud database environment with a custom configuration. Utilizing a method like this always results in non-optimal system performance with astronomical price inconsistencies. When moving an Oracle Database into Oracle Cloud Infrastructure our customers have not only experienced predictive and reduced costs in comparison to on-premises and other clouds (typically a 50% reduction in infrastructure costs in comparison to AWS), but have also enjoyed unquestionably improved performance with more flexible overall security controls.

In conclusion, Tharseo IT highly recommends that the WV Tax Department uses Oracle Cloud Infrastructure for any Oracle Database application and system migration as part of their effort to reduce their overall footprint and reduce costs while enhancing their Oracle maintenance and support licenses.

Another important information piece to note is Oracle's Cloud unique partnership with Microsoft. Oracle Cloud and Microsoft Azure have created a one-of-a-kind cloud network interconnection between Oracle Cloud and Microsoft Azure data centers. Although this feature is only available in the commercial cloud and not FedRAMP approved for the Government Cloud today, this feature will soon be available within government regions in the coming months. If your agency decides to use a multi-cloud approach in the future that includes Microsoft Azure, you will see massive performance benefits and cost reductions for cloud workloads running in Oracle Cloud and Microsoft Azure with unmatched enterprise-level network security.

More Information about the Oracle Cloud and Microsoft Azure Partnership Agreement:

<https://www.oracle.com/corporate/pressrelease/microsoft-and-oracle-to-interconnect-microsoft-azure-and-oracle-cloud-060519.html>

<https://docs.oracle.com/en/solutions/learn-azure-oci-interconnect/index.html#GUID-A3BCA684-47C4-4644-90E8-99A7E3E0A6FE>

- 3.1.1.4.1 Minimum of 20 CPU Cores of Intel/AMD x64 processor(s) on each cluster node. Minimum clock speed of 2.5 GHz.
- 3.1.1.4.2 Minimum of 256 Gigabytes of RAM on each cluster node.
- 3.1.1.4.3 Minimum of 256 Gigabytes of SSD RAID 1 Storage on each cluster node for boot, operating system, and software installation.
- 3.1.1.4.4 Minimum of 5 Terabytes of SSD RAID 10 Storage or better shared between the cluster nodes for database storage.
- 3.1.1.4.5 Oracle Linux version 8 operating system.
- 3.1.1.4.6 Oracle 19c Enterprise Edition with the following minimum set of features enabled:
  - 3.1.1.4.6.1 Advanced Security.
  - 3.1.1.4.6.2 Partitioning.
  - 3.1.1.4.6.3 Transparent Data Encryption.
  - 3.1.1.4.6.4 Real Application Cluster.

Yes, we have included this in our pricing. This will consist of an OCI Database System Deployment with a 2-Node Oracle 19c RAC configuration, Enterprise Edition Extreme Performance Cloud Licensing, and will run on the X7 Series of VM DB System utilizing the Oracle Linux version 8 OS. There are 24 CPU cores on each cluster node (so 48 CPU cores total as there are 2 nodes) as well as 320 Gigabytes of RAM. Included with the DB System Configuration outlined above will be 7500 GB of Storage which includes (or better) to meet the other listed requirements above.

Beyond the configuration listed above for the Oracle Database Servers, Tharseo IT plans to also use this powerful database environment (48 CPUs, 2-Node Oracle RAC DB System Environment) to also host the GIS Oracle DB Servers (8 CPUs) in order to save your agency regular licensing and cloud costs (by 8 CPUs) without sacrificing performance and security. We have also proposed this same architecture for your Test/DR environment which, similar to the production environment, will also save your agency the cost of an additional 8 CPUs for a total of 16 CPUs saved in regular licensing and cloud infrastructure costs for your agency.

**3.1.1.5 Working Server:** 1 virtual machine with the following minimum specifications:

Yes, we have provided all line items priced out to minimum specifications or greater listed for all section(s) and subsection(s) titled 3.1.1.5 Working Server, this includes 3.1.1.5.1 - 3.1.1.5.4. Please see the attached pricing as well as the 'sample' architecture diagram we have provided as part of this response. We have provided the ability to provision 1 virtual machine with the minimum (or better) specifications.

3.1.1.5.1 Minimum of 4 CPU Cores of Intel/AMD x64 processor(s). Minimum clock speed of 2.5 GHz.

Yes, we have included this in our pricing. There are 4 CPU cores per VM shape (using the VM Standard E4 Flex Shape) with AMD x64 processor(s). The minimum clock speed is provided is 2.55 GHz with the flexibility to boost up to 3.5 GHz.

3.1.1.5.2 Minimum of 32 Gigabytes of RAM.

Yes, we have provided the ability to provision 32 Gigabytes of RAM (or better) on Working Server Virtual Machine(s).

3.1.1.5.3 Minimum of 2 Terabytes of storage (note that this storage does not require SSD or RAID, but neither is it precluded):

Yes, we have provided the ability to provision 2 Terabytes of storage (or better) on all Working Server Virtual Machine(s).

3.1.1.5.4 Oracle Linux 8 operating system.

Yes, we have provided the ability to provision all Working Server(s) Virtual Machine(s) with the Oracle Linux 8 operating system.

**3.1.1.6 Geographic Information System (GIS) Servers:** The project requires an ArcGIS installation including a database server that hosts ArcGIS Server, an application server, and associated software. The minimum requirements are as follows:

Yes, we have provided all line items priced out to minimum specifications or greater listed for section(s) titled 3.1.1.6 Geographic Information System (GIS) Servers, this includes all sections and subsections for 3.1.1.6.1-3.1.1.6.2.4. Please see the attached pricing as well as the 'sample' architecture diagram we have provided as part of this response. For the ArcGIS Database Server that hosts the ArcGIS server, please refer to our answer to question 3.1.1.4 Oracle Database Servers above. Our answer to said question provides information pertinent to this portion as well as the remainder of the ArcGIS installation that involves an Oracle Database component

(3.1.1.6.1-3.1.1.6.2 main sections and all of the included subsections (3.1.1.6.1.1 - 3.1.1.6.1.3 and 3.1.1.6.2.1 - 3.1.1.6.2.4 respectively).

**3.1.1.6.1 Oracle Database Server:** Cluster of 2 hosted Oracle servers in an active-active pair (Real Application Cluster) with the following minimum specifications:

Yes, refer to answer above.

**3.1.1.6.1.1** Minimum of 4 CPU Cores of Intel/AMD x64 processor(s) on each cluster node. Minimum clock speed of 2.5GHz.

Yes, refer to answer above.

**3.1.1.6.1.2** Minimum of 128 Gigabytes of RAM.

Yes, refer to answer above.

**3.1.1.6.1.3** Minimum of 2 Terabytes of SSD Raid 1 Storage for data drive.

Yes, refer to answer above.

**3.1.1.6.2 Oracle 19c Enterprise Edition** with the following minimum set of features enabled:

**3.1.1.6.2.1** Advanced Security.

**3.1.1.6.2.2** Partitioning.

**3.1.1.6.2.3** Transparent Data Encryption.

**3.1.1.6.2.4** Real Application Cluster

Yes, refer to answer above.

**3.1.1.7 Geographic Information System (GIS) Application Server:** One (1) virtual machine with the following minimum specifications.

Yes, we have provided all line items priced out to minimum specifications or greater listed for all section(s) and subsection(s) titled Geographic Information System (GIS) Application Server this includes 3.1.1.7, this includes 3.1.1.7.1 - 3.1.1.7.5. Please see the attached pricing as well as the 'sample' architecture diagram we have provided as part of this response.

We have provided the ability to provision 1 virtual machine with the minimum (or better) specifications.

3.1.1.7.1 Minimum of 4 CPU Cores of Intel/AMD x64 processor(s). Minimum clock speed of 2.5 GHz

Yes, we have included this in our pricing. There are 4 CPU cores per VM shape (using the VM Standard E4 Flex Shape) with AMD x64 processor(s). The minimum clock speed is provided is 2.55 GHz with the flexibility to boost up to 3.5 GHz.

3.1.1.7.2 Minimum of 128 Gigabytes of RAM.

Yes, we have provided the ability to provision 32 Gigabytes of RAM (or better) on all Geographic Information System (GIS) Application Server Virtual Machines.

3.1.1.7.3 Minimum of 146 Gigabytes of SSD RAID 1 Storage for boot drive.

Yes, we have provided the ability to provision 146 Gigabytes of SSD Raid 1 Storage (or better) on all Geographic Information System (GIS) Application Server Virtual Machines.

3.1.1.7.4 Minimum of 3 Terabytes of SSD RAID 1 storage for imagery data.

Yes, we have provided the ability to provision the minimum of 3 terabytes (or better) of SSD Raid 1 Storage for imagery data on all Geographic Information System (GIS) Application Server Virtual Machines.

3.1.1.7.5 Microsoft Windows Server 2019 Standard Edition

Yes, we have provided the ability to provision all A Geographic Information System (GIS) Application Server Virtual Machines with Microsoft Windows Server 2019 Standard Edition operating system.

3.1.1.8 ArcGIS Server Software: Must be included for servers listed in specifications 3.1.1.6.

3.1.1.8.1 Version 10.8 or latest release.

Yes, this is included in our pricing.

3.1.1.8.2 ArcGIS Enterprise Advanced for 4 CPU cores.

Yes, this is included in our pricing.

3.1.1.8.3 ArcGIS Image server for 4 CPU cores.

Yes, this is included in our pricing.

3.1.1.8.4 Must be licensed for Production.

Yes, this is licensed for production and is included in our pricing.

**3.1.1.9 Active Directory:** This system requires Microsoft Active Directory which will allow the State to create an Active Directory Domain and associated users, groups, group policies, and machine accounts. This domain must be separate from any others and must exclusively contain entities created for/by the State. The minimum requirements are as follows:

3.1.1.9.1 Two Domain Controllers: Provide 2 virtual machines with the following minimum configuration.

Yes, we have provided all line items priced out to minimum specifications or greater listed for all section(s) and subsection(s) titled 3.1.1.9 Active Directory, this includes 3.1.1.9.1 - 3.1.1.9.4. Please see the attached pricing as well as the 'sample' architecture diagram we have provided as part of this response. We have provided the ability to provision 2 virtual machines with the minimum (or better) specifications.

3.1.1.9.1.1 Minimum of 4 CPU Cores of Intel/AMD x64 processor(s). Minimum clock speed of 2.5 GHz.

Yes, we have included this in our pricing. There are 4 CPU cores per VM shape (using the VM Standard E4 Flex Shape) with AMD x64 processors. The minimum clock speed is provided is 2.55 GHz with the flexibility to boost up to 3.5 GHz.

3.1.1.9.1.2 32 gigabytes of RAM.

Yes, we have provided the ability to provision 32 Gigabytes of RAM (or better) on all Active Directory Virtual Machines.

3.1.1.9.1.3 146 gigabytes of SSD RAID 1 storage. 2.5 GHz.

Yes, we have provided the ability to provision 146 Gigabytes of SSD Raid 1 Storage (or better) on all Active Directory Virtual Machines.

3.1.1.9.1.4 Windows Server 2019 operating system.

Yes, we have provided the ability to provision all Active Directory Virtual Machines with the Microsoft Windows Server 2019 operating system.

**3.1.1.10 General Networking:** Vendor must provide network connections for the servers listed above with the following minimum requirements:

Yes, our pricing includes network connections for the servers listed above and meets all of the following minimum requirements and more.

3.1.1.10.1 Internal network traffic between servers must be isolated from other vendor customers.

Yes, all internal network traffic between servers is isolated from other vendor customers. Please see the diagram below for a better explanation on how Oracle Cloud Infrastructure’s Generation 2 Cloud has this feature built into the architecture with enterprises in mind:

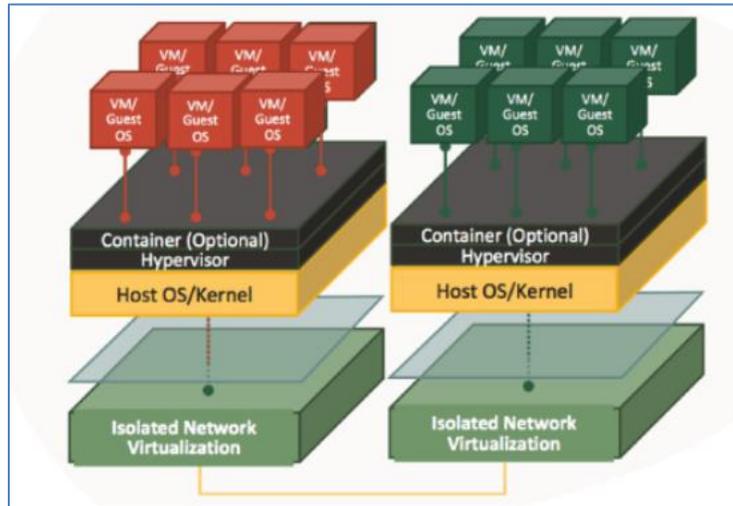


Figure 5: OCI Generation 2 Cloud Architecture

**Second-generation cloud advantage:** Oracle Cloud Infrastructure is different from first-generation clouds due to its use of a custom-designed SmartNIC that isolates and virtualizes the network. The SmartNIC is isolated by hardware and software from the host, preventing a compromised instance from compromising the network. Oracle Cloud Infrastructure maintains greater external control of host network functionality and can prevent network traversal attacks.

3.1.1.10.2 Ability to create multiple VLANs for servers to further isolate traffic between application layers.

Yes, OCI provides the ability to create multiple VLANs for servers to further isolate traffic between application layers. To accomplish this task, your agency can use the modifiable virtual cloud network (VCN), Subnet, and VLAN classless inter-domain routing (CIDR) feature in Oracle Cloud Infrastructure (OCI). This feature allows you to dynamically change the size of your VCN by adding or resizing existing CIDR ranges. You may also resize subnets VLANs by adjusting the subnet mask. This flexibility allows you to perform the following new tasks:

- Add extra IP address space to a VCN to allow space for more subnets to more resources without the need to peer with a newly created VCN.

- Reclaim unused IP addresses that are needed elsewhere in your environment.
- Resize VCNs to reduce the number of resources that are allowed in a particular VCN.
- Change the netmask to reduce or increase the size of a subnet or VLAN CIDR.

**3.1.1.10.3 Ability for VLANs to be Demilitarized Zones (DMZ) that isolate traffic between public networks and internal VLANs.**

Yes, this capability is included based on our pricing attached.

**3.1.1.10.4 Five public IP addresses to be used for the following:**

Yes, this feature is available at no cost and comes with the purchase of an Oracle Cloud Infrastructure Tenancy. Your tenancy comes with both Reserved Public IP Addresses and ephemeral public IP addresses. The differences between the two are listed below:

You can choose from two types of public IPs:

- Ephemeral: This address type is temporary and exists throughout the lifetime of the instance.
- Reserved: This address type is persistent and exists beyond the lifetime of the instance it's mapped to. You may unmap it and then remap it to another instance at your discretion.

The following table summarizes the discreet differences between the two address types.

Characteristic	Ephemeral Public IPs	Reserved Public IPs
<b>Allowed Assignment</b>	To a VNIC's <a href="#">primary private IP</a> only Limits: <ul style="list-style-type: none"> <li>• One per <a href="#">VNIC</a></li> <li>• Two per VM instance, and 16 per bare metal instance</li> </ul>	To either a primary or <a href="#">secondary private IP</a> Limit: 32 per <a href="#">VNIC</a>
<b>Creation</b>	Optionally created and assigned during instance launch or secondary VNIC creation. You can create and assign one later if the VNIC doesn't already have one.	You create one at any time. You can then assign it when you like. Limit: You can create 50 per region.
<b>Unassignment</b>	You may unassign the address at any time, which deletes it. You might do this if whoever launched the instance included a public IP, but you don't want the instance to have one. When you stop an instance, its ephemeral public IPs remain assigned to the instance.	You can unassign it at any time, which returns it to your tenancy's pool of reserved public IPs.

<b>Moving to a Different Resource</b>	If assigned to a secondary private IP: If you move the private IP to a different VNIC (must be in the same subnet), the ephemeral public IP goes with it. You cannot move an ephemeral public IP to a different private IP.	If assigned to a secondary private IP: If you move the private IP to a different VNIC (must be in the same subnet), the reserved public IP goes with it. You can move it (unassign and then reassign it) at any time to another private IP in the same region. Can be in a different VCN or Availability Domain.
<b>Automatic Deletion</b>	Its lifetime is tied to the private IP's lifetime. Automatically unassigned and deleted when: <ul style="list-style-type: none"> <li>• Its private IP is deleted.</li> <li>• Its VNIC is detached or terminated.</li> <li>• Its instance is terminated.</li> </ul>	Never. Exists until you delete it.
<b>Scope</b>	Availability Domain	Regional (can be assigned to a private IP in any Availability Domain in the region)
<b>Compartment and Availability Domain</b>	Same as the private IP's	Can be different from the private IP's

Oracle Cloud Infrastructure also provides the flexibility to Bring Your Own IP (BYOIP) address space to use with requisite resources in Oracle Cloud Infrastructure, in addition to using Oracle owned addresses. BYOIP lets you manage your IPv4 CIDR blocks to align with your existing security, management, and deployment policies and achieve:

- **Solution continuity and hardcoded dependencies:** Your VCN is an extension of your public Internet presence, without needing to reinvent policies and management processes. If you have IP addresses hard-coded in devices or built architectural dependencies on specific IP addresses, using BYOIP you ensure a smooth migration to Oracle Cloud Infrastructure.
- **IP pool management:** Some network administrators require the ability to summarize groups of IP addresses into pools and to create resources for deployment such as load balancers, firewalls, or web servers. IP Pool management provides tools to manage reserved public IP addresses.
- **IP reputation:** Some Internet services rely on a contiguous IP address space (such as a full span of IP addresses from 1 through 255) and act as a trusted contact point between services such as major email service providers and mail delivery systems.

Oracle performs a validation process on imported CIDR blocks, and after validation you are notified that the CIDR block is available for advertisement. You may also create one or multiple public IP pools from this address space by specifying subranges from the BYOIP CIDR block and use IP pools to allocate specific resources. In addition, you may start or stop advertisement of the BYOIP routes when needed.

3.1.1.10.4.1 Public IP for system user interface to system.

Yes, please reference the answer provided above to section 3.1.1.10.4 under 3.1.1.10 General Networking.

3.1.1.10.4.2 Public IP for public access to system. 3.1.1.10.4.3 Public IP for VPN service (see below).

Yes, please reference the answer provided above to section 3.1.1.10.4 under 3.1.1.10 General Networking.

3.1.1.10.4.2 Public IP for public access to system.

3.1.1.10.4.3 Public IP for VPN service (see below).

Yes, please reference the answer provided above to section 3.1.1.10.4 under 3.1.1.10 General Networking.

3.1.1.10.4.4 Public IP for bastion service (see below).

Yes, please reference the answer provided above to section 3.1.1.10.4 under 3.1.1.10 General Networking.

3.1.1.10.4.4 Public IP for bastion service (see below).

Yes, please reference the answer provided above to section 3.1.1.10.4 under 3.1.1.10 General Networking.

3.1.1.10.4.5 Public IP for the GIS Application Server.

Yes, please reference the answer provided above to section 3.1.1.10.4 under 3.1.1.10 General Networking.

3.1.1.11 Firewall Service: Vendor must provide a firewall service with the following minimum requirements:

Yes, the pricing attached includes a FortiGate Next-Gen-Firewall as a Service VM by Fortinet. that meets all of the criteria for 3.1.1.11 Firewall Service as well as the subsections 3.1.1.11.1 - 3.1.1.11.6.

3.1.1.11.1 Provide high availability with a minimum of 99.5% uptime.

Yes, Oracle Cloud Infrastructure's SLAs around Compute are 99.9-99.95% depending on architectural design.

3.1.1.11.2 Protect multiple VLANs as noted above in General Networking.

Yes, FortiGate supports this feature and this is also done natively in OCI as part of 'Networking'.

3.1.1.11.3 Incorporate threat intelligence to filter out known malicious IP addresses and Internet domains.

Yes, there are several different features services that FortiGate offers to do this. To see a full list, please see this link: <https://www.fortinet.com/content/dam/fortinet/assets/data-sheets/fortigate-vm.pdf>

3.1.1.11.4 Allow the State to create custom filtering rules for TCP/IP and UDP/IP traffic.

Yes, absolutely. The FortiGate Next Generation Firewall (NGFW) allows for custom security controls and filtering in addition to the granular security controls that are offered out of the box by Oracle Cloud Infrastructure.

3.1.1.11.5 Provide application traffic filtering both inbound and outbound.

Yes, the product provides this feature.

3.1.1.11.6 Log threats and firewall related events to allow the State to review those events. Threat events should be forwarded to agency designees in real time.

Yes, this feature is available. We have also included some OCI logging storage in our attached pricing just for this particular purpose.

3.1.1.12 Load Balancer Service: Vendor must provide a load balancer service with the following minimum requirements:

3.1.1.12.1 Provide high availability with a minimum of 99.5% uptime.

Yes, Oracle Cloud's Load Balancing Service has SLAs (financially-backed service commitments) for greater than 99.99% availability.

Yes, there is also an option to deploy a 'flexible' network load balancer (non-proxy load balancing) as well as the regular 'flexible' load balancer.

3.1.1.12.2 Support for both internal (server to server) and external (Internet to server) load balancing scenarios.

The OCI Load Balancer is a layer 4 (TCP) and layer 7 (HTTP) proxy which supports features such as SSL termination and advanced HTTP routing policies. It provides the utmost flexibility, with responsive scaling up and down. You choose a custom minimum bandwidth and an optional maximum bandwidth, both anywhere between 10–8,000 Mbps. The Network Load Balancer is a non-proxy load balancing solution that performs pass-through load balancing of layer 3 and layer 4 (TCP/UDP/ICMP) workloads. It offers an elastically scalable regional

VIP address that can scale up or down based on client traffic with no minimum or maximum bandwidth configuration requirement.

It also provides the benefits of flow high availability, source and destination IP address, and port preservation. It's designed to handle volatile traffic patterns and millions of flows, offering high throughput while maintaining ultra-low latency.

Another great feature that the OCI Network Load Balancer provides, is the ability to deploy and scale your network virtual appliances, such as firewalls and intrusion detection systems, behind a single regional IP address. You may also use a private Network Load Balancer as the next-hop route target towards which packets are forwarded along the path to their final destination. The OCI Network Load Balancer will be a great addition to your Firewall service and is extremely adaptable in any system architecture.

Please visit this link to read more about the OCI Flexible Load Balancer Service(s) as well view sample architectures that are relative to your agency's vision for this cloud environment:

<https://blogs.oracle.com/cloud-infrastructure/announcing-oracle-cloud-infrastructure-flexible-network-load-balancer>

#### 3.1.1.12.3 Probe load balanced systems to detect impaired/degraded health.

Yes, the OCI Load Balancer will take the impaired/degraded servers out of the rotation automatically once triggered or alerted via health checks. Using the load balancer along with the firewall service we have included will also provide benefits beyond detecting impaired/degraded health in your back-end servers.

#### 3.1.1.12.4 Direct traffic around impaired/degraded systems.

Yes, this is done automatically and can also be configured to your particular environmental needs.

#### 3.1.1.12.5 Log events to allow the State to review and audit those events.

Yes, this feature is available in the product.

### **3.1.1.13 Virtual Private Network Service:** Vendor must provide a virtual private network gateway with the following minimum requirements:

#### 3.1.1.13.1 Provide high availability with a minimum of 99.5% uptime.

Yes, Oracle Cloud Infrastructure has SLAs that are financially-backed service commitments which are greater than this percentage, as mentioned above.

#### 3.1.1.13.2 Support for encrypted point-to-site tunnels from Agency computers to cloud hosted VLANs across the public Internet.

Yes, Oracle Cloud Infrastructure has a VPN-Connect service that is free of charge with the purchase of an Oracle Cloud Infrastructure tenancy as part of the 'Networking' infrastructure.

Oracle Cloud supports secure FIPS 140 - 2 VPN access to all components included on the bid from the Agency Network. Tharseo IT has substantial experience working with the Oracle Cloud and Network configuration, as well as implementation of secure VPN connections from on-premise networks and datacenters to the Oracle Cloud FedRAMP compliant data centers. We have successfully and securely connected customer on-premise datacenters and accompanied network components to the cloud for agencies in the public sector and federal spaces. Tharseo IT also assisted and advised the Oracle FedRAMP Network Engineers/Team when moving customer systems and existing on-premise network connections to the Oracle Cloud Datacenters once they received their FedRAMP certification in 2019. Our team is close with the Oracle Cloud Network Engineers and their respective teams. Consequently, we were able to accommodate certain customer network configurations that were normally out of scope for Oracle. That being said, we would be happy to do the same for your agency should the opportunity were to arise.

Please see the below for supporting information on OCI VPN network support and setup in the cloud:

### **VPN Connection and Configuration Overview**

One way to connect your on-premises network and your virtual cloud network (VCN) is to use VPN Connect, which is an IPsec VPN. IPsec stands for Internet Protocol.

**Security or IP Security.** IPsec is a protocol suite that encrypts the entire IP traffic before the packets are transferred from the source to the destination. Tharseo IT believes that for this particular use-case (creating a hybrid cloud DR for your production database), the most cost-effective and efficient way to achieve your desired DR solution is to use IPsec VPN in comparison to a dedicated FastConnect. We have successfully set up IPsec VPN connections for several of our customers in the past with connection speeds of up to 500 Mbps and no connectivity issues. While Oracle offers FastConnect as an option to connect your on-premise datacenter to the cloud, for this particular engagement we do not see a need for it. However, if you decide to expand your cloud footprint in the future it may be something to take into consideration.

### **About the Oracle IPSEC VPN**

In general, IPsec can be configured in the following modes:

- Transport mode: IPsec encrypts and authenticates only the actual payload of the packet, and the header information stays intact.
- Tunnel mode (supported by Oracle): IPsec encrypts and authenticates the entire packet. After encryption, the packet is then encapsulated to form a new IP packet that has different header information.

Each Oracle IPsec VPN consists of multiple redundant IPsec tunnels. For a given tunnel, you may use either Border Gateway Protocol (BGP) dynamic routing or static routing to route that tunnel's traffic. More details regarding routing follow IPsec VPN site-to-site tunnels and their advantages are as follows:

- Public internet lines are used to transmit data, so dedicated, expensive lease lines from one site to another aren't necessary.
- The internal IP addresses of the participating networks and nodes are hidden from external users.
- The entire communication line between the source and destination sites is encrypted, significantly lowering the chances of information theft.

### Preferring a Specific Tunnel in the IPsec VPN

Within an IPsec VPN, you can influence which tunnel is preferred. Here are items you can configure:

- **Your CPE's BGP local preference:** If you use BGP, you can configure the BGP local preference attribute on your CPE device to control which tunnel is preferred for connections initiated from your on-premises network to your VCN. Because Oracle generally uses asymmetric routing, you must configure other attributes if you want Oracle to respond on that same tunnel. See the next two items:
- **More specific routes on the preferred tunnel:** You can configure your CPE to advertise more specific routes for the tunnel that you want to prefer. Oracle uses the route with the longest prefix match when responding to or initiating connections.
- **AS path prepending:** BGP prefers the shortest AS path, so if you use BGP, you can use AS path prepending to control which tunnel has the shortest path for a given route. Oracle uses the shortest AS path when responding to or initiating connections.

Supported IPSEC Parameters:

<https://docs.cloud.oracle.com/en-us/iaas/Content/Network/Reference/supportedIPsecparams.htm>

Verified CPE (Customer-Premises-Equipment) Devices (Routers):

<https://docs.cloud.oracle.com/en-us/iaas/Content/Network/Reference/CPElist.htm>

### Routing Options for VPN Connect

When you set up VPN Connect, it has two redundant IPsec tunnels. Oracle encourages you to configure your CPE device to use both tunnels (if your device supports it). Note that in the past, Oracle created IPsec VPNs that had up to four IPsec tunnels.

The following two routing types are available - you may choose the routing type separately for each tunnel in the IPsec VPN:

- **BGP dynamic routing:** The available routes are learned dynamically through BGP. The DRG dynamically learns the routes from your on-premises network. On the Oracle side, the DRG advertises the VCN's subnets.
- **Static routing:** When you set up the IPsec connection to the DRG, you may specify the particular routes to your on-premises network that you want the VCN to know about. You also must configure your CPE device with static routes to the VCN's subnets. These routes are not learned dynamically.

- Policy-based routing: When you set up the IPSec connection to the DRG, you specify the particular routes to your on-premises network that you want the VCN to know about. You also must configure your CPE device with static routes to the VCN's subnets. These routes are not learned dynamically.

3.1.1.13.3 Support for encrypted site-to-site tunnels from Agency facilities to cloud host VLANs across the public Internet.

Yes, please see answer to question 3.1.1.13.2 and other relative responses above.

3.1.1.13.4 Support for multi-factor authentication for VPN users.

Yes, both OCI and FortiGate support multi-factor authentication for VPN users.

3.1.1.13.5 Log events to allow the State to review and audit those events.

Yes, as mentioned earlier - we have also included some OCI logging storage in our attached pricing for this particular purpose.

3.1.1.14 Outbound Email Service: The system requires an outbound email service which will be bound to an email domain to be provided later. Email service must meet the following minimum requirements:

Oracle Cloud Infrastructure Email Delivery is an email sending service that provides a fast and reliable managed solution for sending high-volume emails that need to reach your recipients' inbox. Email Delivery provides the tools necessary to send application-generated email for mission-critical communications such as receipts, fraud detection alerts, multi-factor identity verification, and password resets.

Oracle Cloud Infrastructure's Email Deliverability team manages the platform using key deliverability metrics to ensure the best sending reputation possible for your emails. The following items are provided to you when you send email using the Email Delivery service:

- Unique mailbox provider SMTP configurations on our Mail Transfer Agents (MTA)
- Bounce collection
- User complaint collection
- Email authentication standards
- Deliverability performance

Tharseo IT has recently set-up and configured this service in one of our government customer's Oracle Cloud Infrastructure Environment that is both extremely isolated and has very strict security and governance protocols they must adhere to. This service was very straight forward to configure and was incredibly convenient to use.

3.1.1.14.1 Can transmit emails from any Agency server in the environment to recipients on the public Internet.

Yes, absolutely – we have first-hand experience doing this.

3.1.1.14.2 Can use an Agency provided domain name.

Yes, absolutely – we have first-hand experience doing this.

3.1.1.14.3 Implements/conforms to Sender Policy Framework (SPF).

Yes, the product conforms to SPF.

3.1.1.14.4 Implements/conforms to domain keys identified mail (DKIM).

Yes, the product conforms to DKIM.

3.1.1.14.5 Implements/conforms to Domain-based Message Authentication, Reporting, and Conformance (DMARC).

Yes, the product conforms to DMARC.

**3.1.1.15 Bastion Host:** The system requires a Bastion Host which will reside in its own secured VLAN and which will allow access to the internal servers via an encrypted SSH or other similar mechanism. The minimum requirements are as follows:

Yes, we have included a hardened Oracle Linux VM as part of our pricing to configure as a Bastion Host. Tharseo IT has provisioned and configured Bastion Hosts numerous times for a variety of different customer use-cases in OCI. If implemented in the proper cloud architecture with the appropriate security measures (like you have outlined as part of this solicitation), this is one of the more convenient and replicable methods to provide access to private system resources residing in the cloud in a secure manner.

3.1.1.15.1 Provide encrypted tunneling for secure RDP and SSH portal to access virtual machines.

Yes, there are a variety of ways this can be done with all the resources provided within our pricing that is attached.

3.1.1.15.2 Use SSH keys to create a public/private key pair mechanism and secure external access to the Bastion Host.

Yes, and most importantly the keys will be rotated and correctly managed: never stored on the server.

**3.1.1.16 Network Bandwidth:** Vendor must include Internet bandwidth for the system with the following minimum requirement

3.1.1.16.1 Inbound: 10 Terabytes of inbound bandwidth from the public Internet.

Yes, inbound bandwidth is always free in the Oracle Cloud.

Yes, the first 10 TB per month of outbound bandwidth is also always free in the Oracle Cloud.

3.1.1.17 Backup Service: Vendor will provide data backup services for the system with the following requirements.

3.1.1.17.1 Virtual Machine Backup: Vendor must backup all virtual machines and associated data storage with the following requirements.

3.1.1.17.1.1 Ability to backup entire virtual machines with a preference for application consistent backups.

Yes, this can be done with the click of button and put on a routine backup schedule that is either Oracle-defined and automated based on a pre-configured 'set' schedule and or can be more customized based on your agency's needs with the ability to customize the schedule and retention period. Based on the answers to questions provided in Addendum No. 6, this should not be a daunting task. There are numerous tools and methods available in OCI that can ensure consistent and timely backups that meet your agency's data governance, RTO, and RPO requirements. We recommend (especially for your agency's cloud environment), to enable cross-region replication to ensure all volumes and data existing in your production environment are replicated in real-time to the Test/DR environment. This ensures that the data in your Test/DR environment is an exact replica of your production environment. In addition, our attached pricing includes the capability.

Please find some helpful information below that we believe is relevant:

Volume backups are point-in-time snapshots of volume data. For more information about volume backups, see [Overview of Block Volume Backups](#).

There are two kinds of backup policies:

- **User defined:** Custom backup policies that you may create and configure schedules for.
- **Oracle defined:** Predefined backup policies that have a set backup frequency and retention period. You may not modify these policies.

**Backup Schedules:** Schedules define the backup frequency and retention period for a user defined backup policy, similar to Oracle defined backup policies. The difference is that you may customize the schedules associated with user defined policies. This gives you control over the backup frequency and retention period.

When defining a schedule for a user defined backup policy, the first thing you configure is the schedule type, this specifies the backup frequency. Oracle Cloud Infrastructure provides the following schedule types:

- **Daily:** Backups are generated daily. You specify the hour of the day for the backup.
- **Weekly:** Backups are generated weekly. You specify the day of the week, and the hour of that day for the backup.
- **Monthly:** Backups are generated monthly. You specify the day of the month, and the hour of that day for the backup.

- **Yearly:** Backups are generated yearly. You specify the month, the day of that month, and the hour of that day for the backup.

In addition to frequency, you also configure the following:

- **Retention time:** The amount of time to keep the backup, in days, weeks, months, or years. The time period is based on the schedule type.
- **Backup type:** Options are full or incremental, see [Volume Backup Types](#) for more information.
- **Time Zone:** The time zone to use for the backup schedule. Options are UTC or the regional data center time zone.

For more information, see [To add a schedule to a user defined backup policy](#).

You may also edit or remove schedules for a user defined policy at any time. See [To edit a schedule for a user defined backup policy](#) and [To delete a schedule for a user defined backup policy](#).

**Duplicating Existing Backup Policies:** You can create a new backup policy by duplicating any of the existing backup policies. If one of the Oracle defined policies is close to meeting your volume backup requirements, but requires some changes, you can create a new backup policy by duplicating the Oracle defined policy. This creates a new user defined backup policy with schedules already assigned, enabling you to use the Oracle defined policy's settings as a starting point to save important time and simplify the process.

You may also duplicate an existing user defined policy. For more information, see [To duplicate a backup policy](#). You can then add, edit, or delete schedules for the new backup policy.

**Scheduling Volume Backup Copies Across Regions:** The Block Volume service enables you to copy volume backups from one region to another for business continuity and disaster recovery scenarios, for more information, see [Copying Block Volume Backups Across Regions](#). With user-defined policies, you can automate this process so that volume backups are copied to another region on a schedule. Enabling the automatic copying

#### 3.1.1.17.1.2 Ability to perform/schedule backups as needed.

of scheduled volume backups is only supported with user-defined policies, so if you need to use this feature for a volume currently configured with an Oracle defined policy, you will need to duplicate the policy and then enable cross region copy. The volume backup copy in the target region has the same retention period as the volume backup in the source region.

Yes, they can be done in an automated fashion, on-demand, on a schedule, and according to whatever governance requirements that your agency and key stakeholders determine is the correct timeframe to perform them and retain them.

#### 3.1.1.17.1.3 Ability to restore backups as needed.

Yes, we will also be doing live-replication to the Test/DR site so there will always be a redundant copy with the ability to fail-over to if desired as well as restore to an earlier point-in-time in case of corruption or an issue that may occur for any reason.

#### 3.1.1.17.1.3 Ability to restore backups as needed.

Yes, we will also be doing live-replication to the Test/DR site so there will always be a redundant copy with the ability to fail-over to if desired as well as restore to an earlier point-in-time in case of corruption or an issue that may occur for any reason.

#### 3.1.1.17.1.4 Ability to control backup ageing and retention to a minimum of 60 days.

Yes, you can choose whatever backup and retention schedule you desire based on your agency's data governance requirements.

#### 3.1.1.17.1.5 SQL Server will be included with other virtual machine backups.

Yes, SQL Server will be included with other virtual machine backups and can be taken in the exact same way as mentioned above.

**3.1.1.18 Oracle Database Server Backup:** The database must be backed on a regular basis and Vendor database administrators must be able to manage these backups and perform/schedule them at several levels. These requirements include the following:

#### 3.1.1.18.1 Ability to perform/schedule hourly transaction log backups.

Yes of course, this can be done manually (stand alone, to use a backup to create a new database), automatically (incremental and full – daily, monthly, weekly), or on-demand. Like taking volume backups (mentioned above), you may also take backups based on your agency's data governance, RTO, or RPO requirements. Backups can be taken to object storage, block storage, and/or file storage (we have included these services as part of our attached pricing). Also, backups can be created using the OCI console, Database CLI (Database Command Line Interface), utilizing the API, or using methods like RMAN.

More information on database backups can be found here: <https://docs.oracle.com/en-us/iaas/Content/Database/Tasks/backingupOS.htm>

#### 3.1.1.18.2 Ability to perform/schedule daily differential backups.

Yes, this can absolutely be done with ease and set on an automatic backup and retention schedule with flexibility as well.

#### 3.1.1.18.3 Ability to perform/schedule weekly full backups.

Yes, this can absolutely be done with ease and set on an automatic backup and retention schedule with flexibility as well.

#### 3.1.1.18.4 Ability to restore backups as needed.

Yes, there are several methods you can use to restore backups. We have found that the quickest and simplest way to do this is from the console and/or from Object Storage. If you have an automatic backup schedule configured on the database, you may choose any of the backups (incremental & full) to restore to that point in time. You can also create a new database or a copy of a database using your backups.

More information on restoring database backups can be found here: [https://docs.oracle.com/en-us/iaas/Content/Database/Tasks/recoveringOS.htm#Recovering\\_a\\_Database\\_from\\_Object\\_Storage](https://docs.oracle.com/en-us/iaas/Content/Database/Tasks/recoveringOS.htm#Recovering_a_Database_from_Object_Storage)

#### 3.1.1.18.5 Ability to control backup ageing and retention to a minimum of 60 days.

Yes, as stated above you can customize the backup and retention schedule in a granular fashion based on your agency's data governance, RTO, and RPO requirements.

#### 3.1.1.19 **Full Site Backup:** Vendor must provide for a full site backup that includes all servers and data that can be managed by Vendor.

Yes, this capability is included in our attached pricing. Your Test/DR environment will also be a direct replica of your production environment, so there are multiple ways to ensure that data and all system configurations are backed up, redundant, and highly available for all agency needs. OCI also provides cloud-native toolsets out-of-the-box that allow you to simply manage all of your backups in a flexible manner.

#### **3.1.2 Testing System:** The system requires a second, mostly identical system to be used for test and staging purposes. As the project progresses, this environment may be (a) transitioned into a reduced testing environment, (b) kept as a full-sized replica environment, or (c) used as a disaster recovery target for the production environment. Vendor must provide an IaaS, PaaS, SaaS, or hybrid solution – including any required licenses, maintenance, and support for the term of the contract – as follows:

The Testing / DR System will be an identical system to your production environment that can and will be used for test and staging purposes. Once the project has progressed, these resources can be easily scaled up or down based on your agency's desire. Once these cloud resources are 'freed up', they can be used towards any other future project or environment that your agency seeks to use them for.

**All sections and answers provided above for your Production Environment (Section 3.1.2: Production Environment and all subsections) are applicable to all sections and subsections for 3.1.2 Testing System** since the two environments are identical. If we can answer any questions or be of further assistance to your agency, please do not hesitate to reach out to one of the Tharseo IT team members - contact info is below:

1. Zachary Ehrhardt: ZEhrhardt@tharseoit.com

2. Michael Tenreiro: MTenreiro@tharseoit.com
3. Amit Bahadur: Abahadur@tharseoit.com
4. Eric Wimer: EWimer@tharseoit.com

**3.1.2.4 Legacy Disaster Recovery System:** Part of this project is to protect legacy information assets for the current system while the Production and Testing Systems listed above are implemented and stabilized. The current system is an Oracle 12c Enterprise Edition version 12.1 database server. Note that this is a disaster recovery for the current on-premise system and not for the two systems listed in sections above. This solution should be housed in the same facility / fault-zone as the Testing system, above, to reduce service duplication. The Vendor must provide an IaaS, PaaS, SaaS, or hybrid solution meeting the requirements for this subproject are as follows:

Yes, this is included in our pricing attached.

**3.1.2.4.1 Oracle 12c Enterprise Edition version 12.1 hosted database server with minimum requirements:** 3.1.2.4.1.1 Eight (8) cores of fully licensed Oracle Database Server Enterprise Edition 12c version 12.1 or Equal. Note that the legacy system will not work with newer versions of the Oracle Database Server.

Yes, this is included in our pricing attached.

**3.1.2.4.1.2 Four (4) terabytes of storage for database objects including tablespaces, indexes, transaction logs, etc.** This is sufficient space to contain the existing legacy database and does not include any storage that may be required for other requirements such as replication or backups.

Yes, this is included in our pricing attached.

**3.1.2.4.2 Vendor will work with the State in setting up, configuring, and testing Oracle Data Guard from the current legacy on-premise system to the DR.** The current system has not been configured for Data Guard and any required software or tools above the Oracle 12c Enterprise Edition version 12.1 currently running on the legacy system will need to be part of this bid.

**3.1.2.4.3 This system will be housed with the Testing System and will share services listed in the Testing System above including Bastion Host, Email, Firewall, and VPN.**

Yes, we will work with the State in setting up, configuring, and testing Oracle Data Guard from the current legacy on-premise system to the Test/DR Cloud site. We are aware that the current system has not been configured for Data Guard and any required software or tools above Oracle 12c Enterprise Edition version 12.1 currently running on the legacy system and is included as part of this bid. Your on-premise Oracle Database Processor Licenses for Oracle 12c Enterprise Edition include Data Guard as part of the licensing cost. Similarly in the Oracle Cloud, your Enterprise Edition Database Licenses in OCI will also include Data Guard in the license

cost. Tharseo IT has significant experience setting up data guard hybrid DR deployments from on-premises Oracle Databases to standby Oracle Databases in OCI.

Enabling Disaster Recovery on the OCI DBaaS Enabling DR on the cloud requires instantiation of a Data Guard standby database in the Oracle OCI DBaaS (Database-as-a-Service), which we have provided pricing for as part of this bid (with a shape that supports 8 CPUs and meets all of the requirements outlined in the solicitation). Once instantiated, Data Guard maintains synchronization between the primary database on-premises and the standby database in the cloud.

- Utilization of the same Oracle MAA best practices as on-premises deployment. Use of additional Oracle MAA best practices specific to hybrid cloud deployments that are specified in this paper.
- Ability to switchover (planned events) or failover (unplanned event) production to the standby database in the cloud during planned maintenance or unplanned outages. Once the failed on-premises database is repaired, the ability to automatically resynchronize it with the new production database in the cloud and then switch production back to the on-premises database is enabled.

Pricing in reference to 3.1.2.4.2 and 3.1.2.4.3 are both included in our pricing attached.

**3.1.2.5 Geographic Zone:** This system will service users in or near West Virginia and the agency goal is to limit the latency experienced by users as much as possible. Vendor must provide documentation demonstrating that the Production and Testing systems will be housed in data centers east of the Mississippi River in the continental United States.

Yes, this is included in our pricing attached.

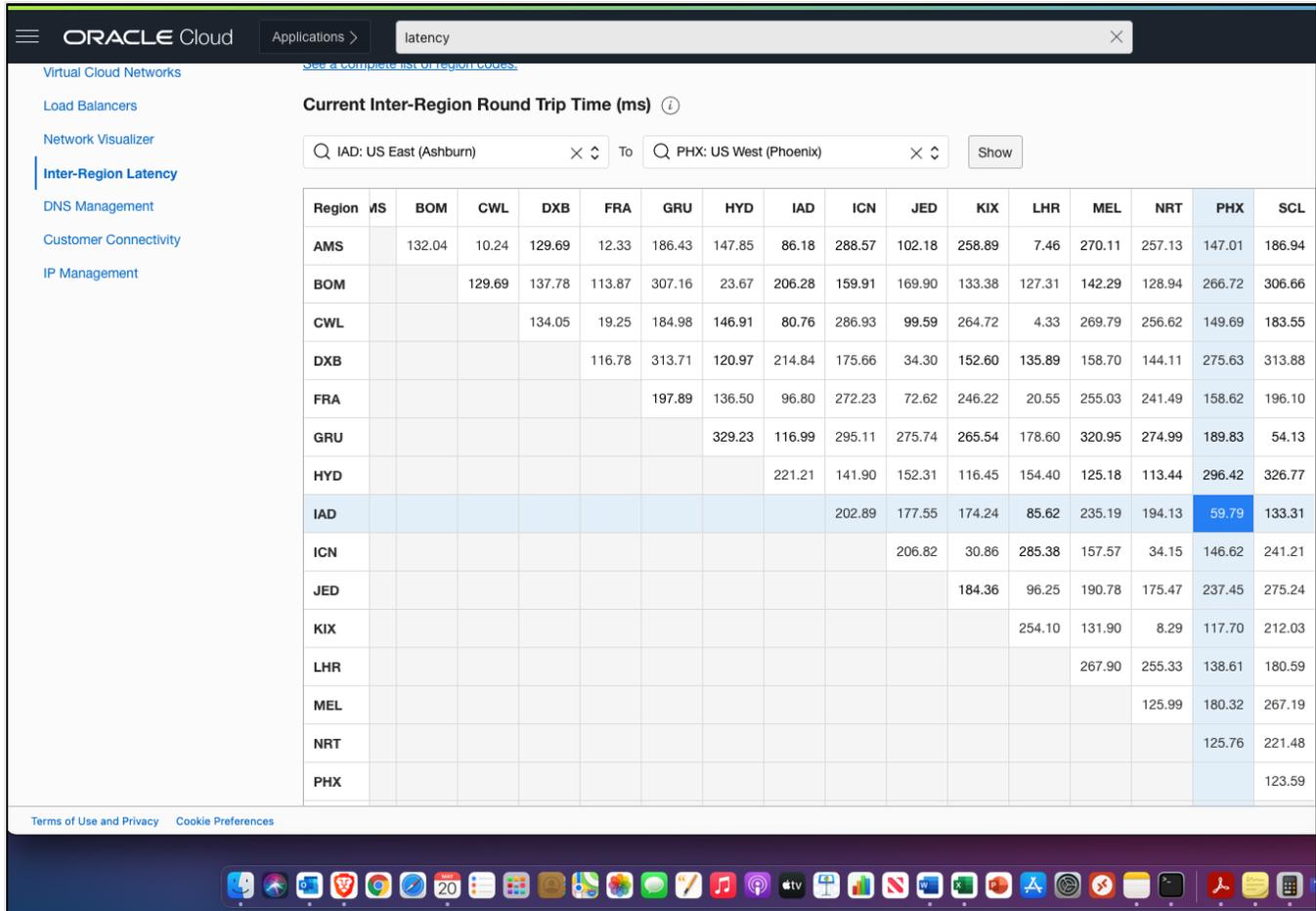
Oracle Cloud Infrastructure (OCI) currently has 2 FedRAMP-High accredited data centers.

1. US-Gov-East: Ashburn, VA
2. US-Gov-West: Phoenix, AZ

The latency between the two data centers on average is about 59.80 milliseconds. In the answers provided to the Q & A (Addendum No. 6), your agency stated that a latency measure of 200 milliseconds is acceptable. The latency between the data centers mentioned above is about 3.5 times faster than the acceptable requirement that was stated in the Q & A. Tharseo IT has customers using the exact same data centers mentioned above with a production site in Ashburn, VA and a DR Site in Phoenix, AZ, and latency between the 2 systems is sometimes faster than 59.80 milliseconds.

Since Oracle Cloud Infrastructure utilizes its own low-latency, high bandwidth secure network backbone, network latency between data centers (Cloud Regions) and all cloud resources (compute, databases, networking components, etc.) are not an issue. To provide context and proof of this, a screen shot is provided below with the actual round trip values that are in our company's Oracle Cloud Tenancy, for reference, these values were calculated on May 20, 2021 (you can see the date on the calendar at the bottom of the screen in the icon tray) at approximately 12:34pm EST. This dashboard is calculating the round trip time from the Ashburn, VA Datacenter (the data center and cloud region that your agency's production system would be housed in) to the

Phoenix, AZ Datacenter (the data center and cloud region that your agency’s Test/DR system would be housed in).



**Figure 6: OCI Inter-Region Latency**

Beyond the proof provided above, Oracle also provides SLAs for Availability, Manageability, and Performance for their OCI Networking resources as well as compute, databases, networking, etc. These SLAs for Networking are actual financially backed service commitments.

More information on this can be found here: <https://www.oracle.com/cloud/iaas/sla.html>

More information about Oracle Cloud Infrastructure’s Networking Features: <https://www.oracle.com/cloud/networking/virtual-cloud-network/>

**3.1.2.6 Fault Tolerance and Resilience:** The goal of the agency is to build a fault tolerant and resilient system. As such, the Agency prefers that the production and testing systems be housed in different availability zones, however, the vendor must, at a minimum, house the two systems in separate fault domains.

Yes, this is included in our pricing. Oracle Cloud provides three separate fault domains per AD (or AZ).

Our plan is to deploy the Production Environment in one Region (US-Gov-East located in Ashburn, VA) and then deploy Test/DR Environment in another Region (US-Gov-West located in Phoenix, AZ).

Both of these regions have different Availability Domains (ADs or AZs) and contain 3 different fault domains per AD, they are as follows:

**1. Region: US-Gov-East**

- Location: Ashburn, VA
- Availability Domain: US-Langley-1-AD-1
- Fault Domains: FD1, FD2, and FD3

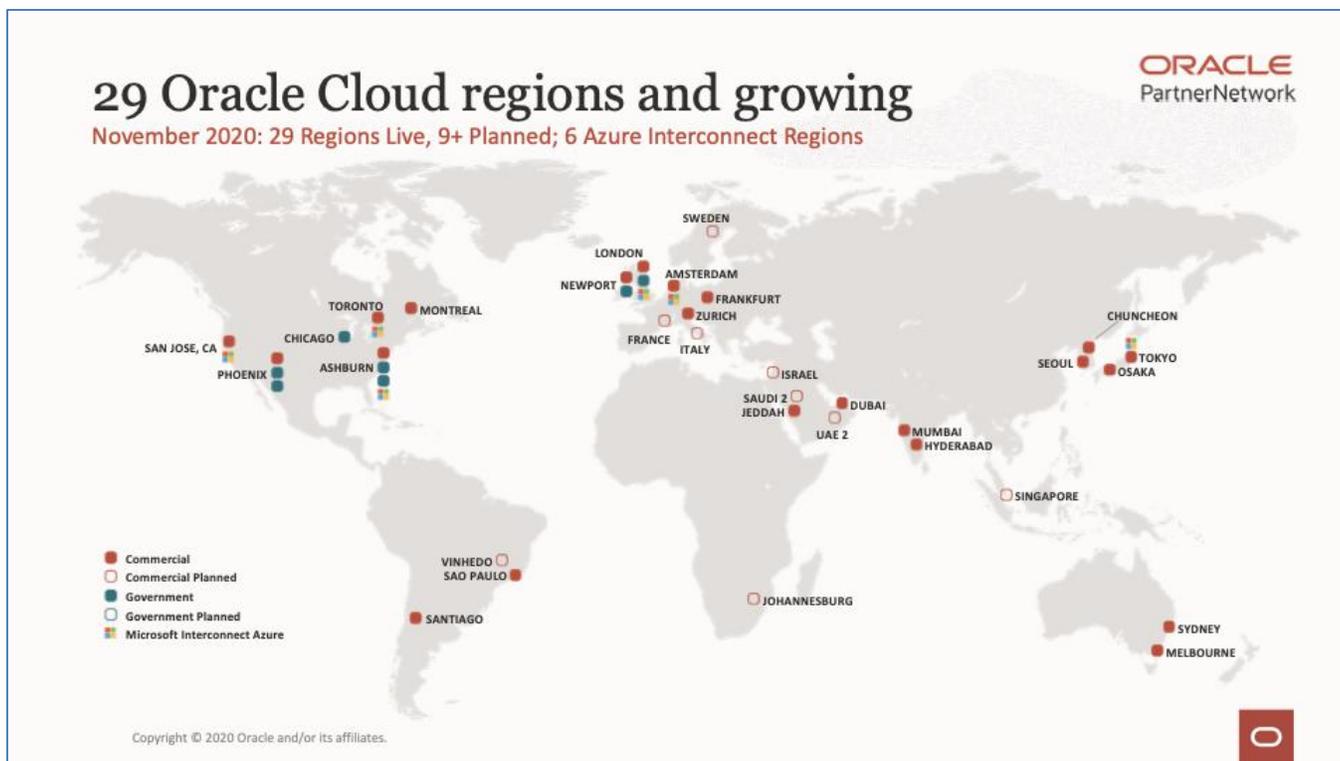
**2. Region: US-Gov-West**

- Location: Phoenix, AZ
- Availability Domain: US-Luke-1-AD-1
- Fault Domains: FD1, FD2, and FD3

Oracle is in process of adding another Gov region and more ADs to the existing (Above) Government regions.

### **3.2 General Requirements for All Systems and Components**

**3.2.1 FedRAMP Authorized Facility:** All components, services, and data must be hosted in a FedRAMP authorized facility with High Baseline Controls. The State will independently verify a Vendor's FedRAMP authorization at the following address: <https://marketplace.fedramp.gov>



**Figure 7: OCI Data Center Roadmap**

*\*Pictured above is an OCI data center road map that includes both existing and planned OCI data centers around the globe.*

Yes, OCI Government Cloud is FedRAMP-High authorized. Your agency can verify this information here:

<https://marketplace.fedramp.gov/#!/product/oracle-cloud-infrastructure-government-cloud?sort=productName&productNameSearch=oracle>

3.2.2 Encrypted at Rest: All virtual machines, associated storage, and data will be stored in an encrypted at rest manner such that any theft or accidental loss of storage media will not compromise the security of the system. Vendor must use FIPS-200 encryption.

Yes, as stated in our answers above - data will be encrypted at rest and this feature cannot be turned off. Oracle Cloud provides the additional ability to encrypt data in transit as well. FIPS compliance and encryption is built into the Oracle Cloud by default, but Tharseo IT will ensure that we are compliant with FIPS-200 encryption methods and processes. We are very familiar with the processes and security requirements surrounding this requirement as we have many customers with similar encryption requirements.

To see a full list of Oracle Cloud Infrastructure’s compliance please visit this link:

<https://www.oracle.com/cloud/cloud-infra-structure-compliance/>

**3.2.3 Service Level Agreement:** Vendor will have service level guarantees for all components and services of the system that include at a minimum:

3.2.3.1 Uptime of 99.5% of the time calculated on a per month basis.

Yes, please see answers above as well. Most of the time uptime will be greater than 99.5%.

3.2.3.2 An escalation matrix with response times based on severity of issues with:

3.2.3.2.1 Critical issue response of less than 1 hour: Those issues which prevent work from continuing and/or require immediate attention.

3.2.3.2.2 Moderate issue response of less than 4 hours: Those issues which degrade or impair service but allow work to continue.

3.2.3.2.3 Minor issue response of less than 8 hours: Those issues with minimal effect of business operation

3.2.3.3 24 hours per day / 7 days per week access to support by phone or email.

3.2.3.4 Must provide service credits for breaching service level targets or for any downtime the State experiences due to the Vendor’s issue.

Tharseo IT will be the single point-of-contact for all support issues and will provide 24 x 7 service support for this effort. Our team will maintain a 24 x 7 production support number and a dedicated support email address for this purpose. This unique support number and email address will ensure that our Support team experts are available 24 x 7. Rather than rotating a physical phone or having each on-call person provide a separate number, our methodology leverages one on-call number for our Support team, so that there is no scrambling for the right number when support is needed.

Tharseo IT team will require a ‘trouble-ticket’ template with the appropriate details so that our team can properly troubleshoot issues. Tharseo IT will evaluate WV State Tax Department’s existing triage process and templates and will make recommendations for modifying the details provided on a ticket to ensure our Support team has the information needed to quickly resolve an issue.

For Oracle Infrastructure issues, Tharseo IT will log a new ticket into [www.support.oracle.com](http://www.support.oracle.com) portal and engage with Oracle’s dedicated Customer Service Manager (CSM) for WV State Tax Department for all critical and high priority issues.

Oracle provides service credits when Oracle has not met any of the Service Commitments set forth in the Service Level Agreements section of the Oracle PaaS and IaaS Public Cloud Services pillar document with respect to the

applicable Oracle Cloud Infrastructure Service. Please refer to the following URL for details regarding Oracle’s General SLA Service Credit Process: <https://www.oracle.com/cloud/iaas/sla.html>

**Escalation Matrix:** Our objective to manage issues will be early identification of potential issues, development of mitigation strategies and contingency measures to avoid or minimize the impact of issues, and quick implementation of appropriate response to fix the issue within defined SLAs. The Tharseo IT Project Manager will track, report, and manage issues during the project. We have provided the sample escalation matrix for issues below and will work with WV State Tax team to classify issues into different severity levels accordingly.

Severity Level	Description	Example	Resolution Time
<b>Critical</b>	System Failure. No further processing is possible.	Critical to solution availability, results, functionality, performance, or usability.	Within one (1) hours of issue identification.
<b>Moderate</b>	Restricted function capability; however, processing can continue.	Non-critical component unavailable or functionally incorrect; incorrect calculation results in functionally critical key fields/dates (workaround is normally available).	Within four (4) hours of issue identification.
<b>Minor</b>	Minor cosmetic change needed.	Usability errors; screen or report errors that do not materially affect the quality and correctness of function, intended use, or results.	Within eight (8) hours of issue identification.

**3.3 Professional Services:** Vendor will perform professional services in both the Production and Testing environments as follows:

**3.3.1 Windows Operating System:** Vendor will provision all virtual machines and any subsequent scalability and/or modifications noted as running Microsoft Windows Server 2019 including:

- 3.3.1.1 Create the virtual machine.
- 3.3.1.2 Install the operating system.
- 3.3.1.3 Patch the operating system to the current level.
- 3.3.1.4 Install antivirus software.
- 3.3.1.5 Provide on-going support, updates, and maintenance as required.

Tharseo IT will provide the professional services listed in Section 3.3 as part the 100hrs of services listed in Line #4 of the CRFQ. We will provide resources with the following skillset:

- Oracle Cloud Architect
- Oracle Database Administrator
- MS SQL Database Administrator
- Cloud Network Engineer
- ArcGIS Administrator
- Technical Coordinator

These resources will be provided at an hourly blended rate as specified in Line #4 of the price list. Years of experience and skillset requirements will be managed by Tharseo IT based on the project needs.

As you mentioned in your response to Question 10 in Addendum 6, the total hours required to complete the provisioning of infrastructure and software installation may be more or less than 100hrs. Tharseo IT will track the total hours spent on these tasks and will work with Department of Administration and West Virginia State Tax Department incase additional hours are needed to complete the tasks.

**Oracle’s Funded-Allocation Model (FAM) for purchase of OCI resources:**

For purchase of Cloud resources on Oracle Cloud Infrastructure Cloud purchasing, we propose that VA Tax uses *Oracle’s new Funded Allocation Model (FAM) – formerly known as Universal Credits*. Oracle’s Funded Allocation Model enables customers to have the flexibility to use any Oracle Cloud Infrastructure and platform services at any time, in any region, to deliver faster time to market. For example, VA Tax will commit to using \$10,000.00 in cloud resources in Year 1 and those funds will be applied to the resources Tharseo IT has recommended for that first year. If the resources are not used, VA Tax will not be charged. In Year 2, that commitment increases to \$12,000.00 and the same for Year 3. This payment option offers a significant savings across cloud services, combining cost reduction and a predictable monthly spend with a ramp up period as you onboard your workloads. For additional information on FAM, please refer to the link below:

<https://www.oracle.com/cloud/bring-your-own-license/faq/universal-credit-pricing.html>

**3.3.2 SQL Server:** Vendor will provision all SQL Server 2019 systems and any subsequent scalability and/or modifications noted above including:

3.3.2.1 Provisioning the Windows virtual machine hosting the database software.

3.3.2.2 Installing the SQL Server 2019 software.

3.3.2.3 Patching SQL Server to the current patch level.

3.3.2.4 Vendor will create the required databases after the install.

3.3.2.5 Provide on-going support, updates, and maintenance as required

Yes, we will provide these services as part of Professional Services.

**3.3.2.6 Oracle Linux Operating System:** Vendor will provision all virtual machines and any subsequent scalability and/or modifications noted as running Oracle Linux 8 including:

3.3.2.6.1 Create the virtual machine.

3.3.2.6.2 Install the operating system.

3.3.2.6.3 Patch the operating system to the current level.

3.3.2.6.4 Provide on-going support, updates, and maintenance as required

Yes, we will provide these services as part of Professional Services.

3.3.2.7 Oracle Database Server: Vendor will provision all Oracle 19c Enterprise Edition systems and any subsequent scalability and/or modifications as follows:

- 3.3.2.7.1 Provision the Oracle Linux virtual machine hosting the database software.
- 3.3.2.7.2 Install the Oracle 19c Enterprise Edition software.
- 3.3.2.7.3 Install/create the Oracle Real Application Clusters.
- 3.3.2.7.4 Patch the database software to the current patch level.
- 3.3.2.7.5 Provide on-going support, updates, and maintenance as required.

Yes, we will provide these services as part of Professional Services.

3.3.2.8 ArcGIS Servers: Vendor will provision ArcGIS Enterprise and any subsequent scalability and/or modifications as follows:

- 3.3.2.8.1 Provision the virtual machines designated for ArcGIS Enterprise
- 3.3.2.8.2 Install ArcGIS data components on the Database.
- 3.3.2.8.3 Install other ArcGIS components on the Application Server.
- 3.3.2.8.4 Provide on-going support, updates, and maintenance as required

Yes, we will provide these services as part of Professional Services.

3.3.2.9 Active Directory: Vendor will provision the Active Directory and any subsequent scalability and/or modifications as follows:

- 3.3.2.9.1 Create the domain.
- 3.3.2.9.2 Join Windows Server 2019 machines to the domain.
- 3.3.2.9.3 Provide on-going support, updates, and maintenance as required.

Yes, we will provide these services as part of Professional Services.

3.3.2.11 Firewall Service: Vendor will perform initial firewall setup as follows:

3.3.2.11.1 Setup firewall with threat intelligence and malicious IP/domain filtering.

3.3.2.11.2 Setup event logging.

3.3.2.11.3 Create initial filtering rules based on Agency needs.

3.3.2.11.4 Provide on-going support, updates, and maintenance as required.

Yes, we will provide these services as part of Professional Services.

3.3.2.10 General Networking: Vendor will perform and maintain network setup as follows:

3.3.2.10.1 Create initial VLANs including a DMZ with initial routing and access control lists per Agency needs.

3.3.2.10.2 Provision virtual machines on VLANs.

3.3.2.10.3 Establish network address translations between public IP addresses and DMZ hosts.

3.3.2.10.4 Provide on-going support, updates, and maintenance as required.

Yes, we will provide these services as part of Professional Services.

3.3.2.12 Load Balancing Service: Vendor will perform initial load balancer setup as follows:

3.3.2.12.1 Setup initial load balancing for externally facing presentation servers.

3.3.2.12.2 Setup initial load balancing for internal server-to-server connections.

3.3.2.12.3 Setup health probes for initial scenarios.

3.3.2.12.4 Setup event logging.

3.3.2.12.5 Provide on-going support, updates, and maintenance as required

Yes, we will provide these services as part of Professional Services.

3.3.2.13 Backup Service: Vendor will perform initial configuration of the backup services for all systems listed above including:

3.3.2.13.1 Setup any backup software or agents required for performing backups.

3.3.2.13.2 Create an initial schedule for automatic backups per the State's needs.

3.3.2.13.3 Provide on-going support, updates, and maintenance as required.

Yes, we will provide these services as part of Professional Services.

**3.4 Security:** Vendors must agree to terms and conditions provided in State of West Virginia Software as a Service Cloud Addendum, attached to this solicitation.

We accept the terms and conditions provided in the State of West Virginia Software as a Services Cloud Addendum and have included the signed copy of the same in our response.

**3.5 Scalability:** The Agency requires a scalable solution that will accommodate any increased growth in storage and/or compute power.

3.5.1 The Agency must have the ability to acquire additional storage to support the above solutions per fifty (50) Gigabytes unit.

3.5.2 The Agency must have the ability to acquire additional computer to support the above solutions per one (1) CPU unit.

3.5.3 The Agency must have the ability to acquire additional RAM to support the above solutions per one (1) Gigabyte unit.

Oracle Cloud Infrastructure meets and exceeds the scalability requirement of storage, compute and RAM listed above.

**3.6 Licenses:** The Agency will not bring any licenses from current systems to this project. Any software or licenses required will need to be provided by the vendor for this project as part of its bid.

Yes, our pricing includes cost of licenses for software in scope of this project.

**Assumptions:**

1. In our cost assumption, Active Directory licensing cost is \$0. Tharseo IT will replicate Domain Controllers in OCI. Tharseo IT assumes that we will leverage WV State Tax Department's existing Microsoft Active

Directory licenses for both Test and Production environments. The license of a new MS Active Directory license, beyond those available with WV State Tax Department, will be \$6/license/month.

2. Tharseo IT has included the cost of two (2) VMs for the Production environment and two (2) VMs for the Test environment, licensed with Microsoft Windows operating system, to host the MS Active Directory Domain Controllers in OCI.
3. Based on Question 10 of Questions and Answers (Addendum 6), our assumption is that WV Tax Department will use 100hrs to estimate additional effort needed to complete the tasks under Professional Services as per the open-end contract specification.