



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

List View

## General Information

Contact

Default Values

Discount

Document Information

Procurement Folder: 79021

SO Doc Code: CRFQ

Procurement Type: Central Purchase Order

SO Dept: 0313

Vendor ID: 000000181470



SO Doc ID: DEP1600000010

Legal Name: UNISYS CORPORATION

Published Date: 9/11/15

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Close Date: 9/24/15

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Status: Closed

Response Time: 10:21

Solicitation Description: Addendum 01 Blade Center &amp; SAN Replacement

Total of Header Attachments: 0

Total of All Attachments: 0



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

State of West Virginia  
Solicitation Response

Proc Folder : 79021

Solicitation Description : Addendum 01 Blade Center & SAN Replacement

Proc Type : Central Purchase Order

Date issued	Solicitation Closes	Solicitation No	Version
	2015-09-24 13:30:00	SR 0313 ESR09211500000001196	1

VENDOR

000000181470  
UNISYS CORPORATION

FOR INFORMATION CONTACT THE BUYER

Beth Collins  
(304) 558-2157  
beth.a.collins@wv.gov

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	IBM Storwize V3700 3.5-inch Storage Controller Unit	2.00000	EA	\$18,809.000000	\$37,618.00

Comm Code	Manufacturer	Specification	Model #
43210000			

Extended Description : Section 3.1.1.1  
6099L2C  
IBM Storwize V3700 3.5-inch Storage Controller Unit or equal

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
2	8Gb FC 4 Port Host Interface Card	4.00000	EA	\$826.000000	\$3,304.00

Comm Code	Manufacturer	Specification	Model #
43210000			

Extended Description : Section 3.1.1.2  
00MJ095  
8Gb FC 4 Port Host Interface Card or equal.

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
3	8Gb FC SW SFP Transceivers (Pair)	4.00000	EA	\$0.010000	\$0.04

Comm Code	Manufacturer	Specification	Model #
43210000			

Extended Description : Section 3.1.1.3  
00MJ103  
8Gb FC SW SFP Transceivers (Pair) or equal

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
4	4 TB 7,200 rpm 6 Gb SAS NL 3.5 Inch HDD	24.00000	EA	\$0.010000	\$0.24

Comm Code	Manufacturer	Specification	Model #
43210000			

Extended Description : Section 3.1.1.4  
00MJ129  
4 TB 7,200 rpm 6 Gb SAS NL 3.5 Inch HDD or equal



Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
5	5m Fiber Cable (LC)	12.00000	EA	\$30.000000	\$360.00

Comm Code	Manufacturer	Specification	Model #
43210000			

Extended Description : Section 3.1.1.5  
00MJ170  
5m Fiber Cable (LC) or equal

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
6	3 Year Onsite Repair 24x7 4 Hour Response	2.00000	EA	\$6,732.000000	\$13,464.00

Comm Code	Manufacturer	Specification	Model #
43210000			

Extended Description : Section 3.1.1.6  
00TU915  
3 Year Onsite Repair 24x7 4 Hour Response

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
7	Integration (hardware only)Integration - TIPS# 607929	2.00000	EA	\$2,160.000000	\$4,320.00

Comm Code	Manufacturer	Specification	Model #
43210000			

Extended Description : Section 3.1.1.7  
P177/O1  
Integration (hardware only)Integration - TIPS# 607929

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
8	IBM Storwize V3700 3.5-inch Storage Expansion Unit	2.00000	EA	\$1,115.000000	\$2,230.00

Comm Code	Manufacturer	Specification	Model #
43210000			

Extended Description : Section 3.1.1.8  
6099LEU  
IBM Storwize V3700 3.5-inch Storage Expansion Unit or equal

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
9	4 TB 7,200 rpm 6 Gb SAS NL 3.5 Inch HDD	14.00000	EA	\$593.000000	\$8,302.00

Comm Code	Manufacturer	Specification	Model #
43211902			

Extended Description : Section 3.1.1.9  
00MJ129  
4 TB 7,200 rpm 6 Gb SAS NL 3.5 Inch HDD or equal

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
10	0.6m SAS Cable (mSAS HD to mSAS HD)	4.00000	EA	\$0.010000	\$0.04

Comm Code	Manufacturer	Specification	Model #
43210000			

Extended Description : Section 3.1.1.10  
00MJ176  
0.6m SAS Cable (mSAS HD to mSAS HD) or equal

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
11	3 Year Onsite Repair 24x7 4 Hour Response	2.00000	EA	\$0.010000	\$0.02

Comm Code	Manufacturer	Specification	Model #
43210000			

Extended Description : Section 3.1.1.11  
00TU936  
3 Year Onsite Repair 24x7 4 Hour Response

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
12	Integration (hardware only)Integration - TIPS# 608196	2.00000	EA	\$0.010000	\$0.02

Comm Code	Manufacturer	Specification	Model #
43210000			

Extended Description : Section 3.1.1.12  
P177/D1  
Integration (Hardware only)Integration - TIPS# 608196

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
13	Express x3650 M5, Xeon 12C E5-2670v3 120W 2.3GHz/213	5.00000	EA	\$5,741.000000	\$28,705.00

Comm Code	Manufacturer	Specification	Model #
43210000			

Extended Description :	Section 3.1.2.1 5462EEU Express x3650 M5, Xeon 12C E5-2670v3 120W 2.3GHz/2133MHz/30MB, 1x16GB, O/Bay HS 2.5in SATA/SAS, SR M5210, Multiburner, 750W p/s, Rack or equal
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Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
14	Intel Xeon 12C Processor Model E5-2670v3 120W 2.3GHz	5.00000	EA	\$1,292.000000	\$6,460.00

Comm Code	Manufacturer	Specification	Model #
43210000			

Extended Description :	Section 3.1.2.2 00FK647 Intel Xeon 12C Processor Model E5-2670v3 120W 2.3GHz/2133MHz/30MB or equal
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Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
15	16GB TruDDR4 Memory PC4-17000 CL15 2133MHz LP RDIMM	15.00000	EA	\$182.000000	\$2,730.00

Comm Code	Manufacturer	Specification	Model #
43210000			

Extended Description :	Section 3.1.2.3 46W0796 16GB TruDDR4 Memory PC4-17000 CL15 2133MHz LP RDIMM or equal
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Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
16	IBM 500GB 7.2K 6Gbps NL SAS 2.5in G3HS HDD	10.00000	EA	\$767.500000	\$7,675.00

Comm Code	Manufacturer	Specification	Model #
43210000			

Extended Description :	Section 3.1.2.4 00AJ121 IBM 500GB 7.2K 6Gbps NL SAS 2.5in G3HS HDD or equal
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Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
17	QLogic 8Gb FC Dual-port HBA for IBM System x	5.00000	EA	\$399.000000	\$1,995.00

Comm Code	Manufacturer	Specification	Model #
43210000			

Extended Description : Section 3.1.2.5  
42D0510  
QLogic 8Gb FC Dual-port HBA for IBM System x or equal

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
18	Broadcom NetXtreme I Quad Port GbE Adapter for IBM S	5.00000	EA	\$389.000000	\$1,945.00

Comm Code	Manufacturer	Specification	Model #
43210000			

Extended Description : Section 3.1.2.6  
90Y9352  
Broadcom NetXtreme I Quad Port GbE Adapter for IBM System x or equal

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
19	IBM Integrated Management Module Advanced Upgrade	5.00000	EA	\$638.000000	\$3,190.00

Comm Code	Manufacturer	Specification	Model #
43210000			

Extended Description : Section 3.1.2.7  
90Y3901  
IBM Integrated Management Module Advanced Upgrade or equal

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
20	System x 750W High Efficiency Platinum AC Power Supp	5.00000	EA	\$638.000000	\$3,190.00

Comm Code	Manufacturer	Specification	Model #
43210000			

Extended Description : Section 3.1.2.8  
00FK932  
System x 750W High Efficiency Platinum AC Power Supply or equal

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
21	3 Year Onsite Repair 24x7 4 Hour Response	5.00000	EA	\$2,598.200000	\$12,991.00

Comm Code	Manufacturer	Specification	Model #
43210000			

Extended Description : Section 3.1.2.9  
00NR851  
3 Year Onsite Repair 24x7 4 Hour Response

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
22	Integration (hardware only)Integration - TIPS# 607928	5.00000	EA	\$249.000000	\$1,245.00

Comm Code	Manufacturer	Specification	Model #
43210000			

Extended Description : Section 3.1.2.10  
P177/82  
Integration (hardware only)Integration - TIPS# 607928

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
23	Express x3650 M5, Xeon 6C E5-2609v3 85W 1.9GHz/1600M	1.00000	EA	\$2,871.000000	\$2,871.00

Comm Code	Manufacturer	Specification	Model #
43210000			

Extended Description : Section 3.1.3.1  
5462EAU  
Express x3650 M5, Xeon 6C E5-2609v3 85W 1.9GHz/1600MHz/15MB, 1x8GB, O/Bay HS 2.5in SATA/SAS, SR M5210, Multiburner, 550W p/s, Rack or equal

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
24	8GB TruDDR4 Memory (1Rx4, 1.2V) PC4-17000 CL15 2133M	1.00000	EA	\$548.000000	\$548.00

Comm Code	Manufacturer	Specification	Model #
43210000			

Extended Description : Section 3.1.3.2  
46W0788  
8GB TruDDR4 Memory (1Rx4, 1.2V) PC4-17000 CL15 2133MHz LP RDIMM or equal

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
25	IBM 500GB 7.2K 6Gbps NL SAS 2.5in G3HS HDD	2.00000	EA	\$291.000000	\$582.00

Comm Code	Manufacturer	Specification	Model #
43210000			

Extended Description : Section 3.1.3.3  
00AJ121  
IBM 500GB 7.2K 6Gbps NL SAS 2.5in G3HS HDD or equal

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
26	IBM Integrated Management Module Advanced Upgrade	1.00000	EA	\$34.000000	\$34.00

Comm Code	Manufacturer	Specification	Model #
43210000			

Extended Description : Section 3.1.3.4  
90Y3901  
IBM Integrated Management Module Advanced Upgrade or equal

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
27	System x 550W High Efficiency Platinum AC Power Supp	1.00000	EA	\$641.000000	\$641.00

Comm Code	Manufacturer	Specification	Model #
43210000			

Extended Description : Section 3.1.3.5  
00FK930  
System x 550W High Efficiency Platinum AC Power Supply or equal

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
28	3 Year Onsite Repair 24x7 4 Hour Response	1.00000	EA	\$2,598.000000	\$2,598.00

Comm Code	Manufacturer	Specification	Model #
43210000			

Extended Description : Section 3.1.3.6  
00NR851  
3 Year Onsite Repair 24x7 4 Hour Response

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
29	Integration (hardware only) Integration - TIPS# 60	1.00000	EA	\$249.000000	\$249.00

Comm Code	Manufacturer	Specification	Model #
43210000			

Extended Description :	Section 3.1.3.7 P177/B2 Integration (hardware only) Integration - TIPS# 607928
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September 24, 2015

Department of Administration, Purchasing Division  
2019 Washington Street East  
Charleston, WV 25305-0130

Sealed Bid: Unisys Corporation  
Buyer: Beth Collins  
Solicitation No: DEP1600000010  
Bid Opening Date: September 24, 2015  
Bid Opening Time: 1:30PM EST  
Fax Number: Unisys Corporation 215-986-9376

Unisys Corporation (Unisys) is responding to the CRFQ Solicitation DEP1600000010 that was published by the State of West Virginia, Department of Administration, Purchasing Division.

Please find attached the Unisys Response Unisys Response to State of West Virginia Department of Environmental Protection, Request for Quotation (RFQ), Blade Center and SAN Replacement.

Attached are the following materials.

- 1) Proposal overview and highlights – 12 pages
- 2) Excel spreadsheet with line item detail of the Intel server and storage configurations being offered. Which include a cross reference to the line item in the on line response submission in the WV OASIS system
- 3) Specification sheets on both the Unisys ES3000 Model 3560R G5 Enterprise Server and the EMC VNXe 3200 Unified Storage System
- 4) Vendor Preference Certificate signed by Unisys Corporation
- 5) Purchasing Affidavit signed by Unisys Corporation
- 6) General Terms and Conditions, Certification and Signature Page signed by Unisys Corporation
- 7) General Terms and Conditions, Addendum Acknowledgement Form signed by Unisys Corporation, CRFQ DEP1600000010, Addendum Number: 01

Should you require any additional information concerning the quoted products and services, please contact Unisys Representative, Meredith Hughes at 248-805-5014. Also, in addition to the Unisys response to meet the minimum requirements as requested in the RFQ, Unisys may also provide an alternative configuration which we feel meets the best practices available in the industry today.

We at Unisys appreciate and value our relationship with the State of West Virginia, and thank you for the interest that the State of West Virginia Department, Environmental Protection has shown in Unisys products and services.

Sincerely,

A handwritten signature in blue ink, reading 'Thomas P. Mannix', is written over a horizontal line.

Thomas P. Mannix  
Contracts Manager  
Unisys Corporation

Cc: Meredith Hughes, Unisys Corporation





### Statement of Understanding

This proposal has been prepared in accordance with Unisys understanding of your requirements based on the information provided and good systems design techniques. All timings, flow charts, system design and related information contained in this proposal represent Unisys best estimates. However, since the actual results in your particular operations (including among other aspects speeds, personnel requirements and costs) may vary from those indicated in the proposal due to variations in software, programs, volume, environment, personnel, and other factors, the final determination that the proposed products and services meet your requirements must be yours.

This proposal contains confidential information of Unisys Corporation. In consideration of the receipt of this document, recipient agrees not to reproduce or make this information available in any manner to persons outside the group directly responsible for evaluation of its contents.

Unisys Corporation (Unisys) presents this proposal to you in confidence to solicit an offer from you to Unisys to buy the products and services described herein. This proposal is not a contract or an offer to contract. By your receipt of this response, the State of West Virginia is not obligated to make an offer to Unisys to buy any products or services. Unisys proposal is based on the assumption that in addition to the terms of the RFQ, the Unisys products and related services contained in this proposal will be supplied under the terms and conditions set forth in the Unisys - State of West Virginia Master Agreement #95010052 (the "Master Agreement"), a copy of which is on file at the West Virginia Department of Administration and at the West Virginia Attorney General's Office. Such Master Agreement may be mutually amended by the parties. Client shall reference this quote on its order and include a copy of this quote and the signed Addendum. Neither party shall be bound unless and until a written Order under the parties' existing Agreement, contract #95010052 (the "Agreement"), expressly referencing this quote is signed by both parties.

*UNISYS*



## **Unisys Response to State of West Virginia Department of Environmental Protection**

September 16, 2015

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# **Unisys Response to State of West Virginia Department of Environmental Protection**

## **REQUEST FOR QUOTATION Blade Center and SAN Replacement**

**Complete Response – All Sections**

**September 16, 2015**

Unisys is a registered trademark of Unisys Corporation. Any other brand or product referenced herein is acknowledged to be a trademark or registered trademark of its respective holder.



## 1.1 Executive Overview of the Unisys Solution

**Introduction:** West Virginia is seeking information from IT providers on proposed solutions for its server and storage needs.

Unisys is an information services and technology provider to federal, state, and local governments and other industry marketplaces. We hold a significant market share in the industry and provide IT services for the world's top banks, insurance companies, brokerage firms, and other financial services companies around the globe. More than 2,200 financial services clients worldwide rely on our IT solutions.

More than 80 percent of Unisys worldwide delivery operations are services contracts that focus on providing vendor-agnostic solutions that provide best-of-breed technologies. As a result of our client engagements with government and commercial organizations all over the globe, Unisys successfully designs and delivers both server and storage solutions with industry leading technology. We support multiple petabytes of customer storage in our global Managed Storage Services offering using the best technologies available.

Unisys has been in the server business since we invented the first mainframe over 60 years ago and we have extensive relationships with the leading technology vendors. Today we are 100% focused on Intel based server technology with both our ES server family and uniquely even our ClearPath mainframe family is also based on Intel technology. Our experience in server & storage solutions allows us to recommend and build the right technical solution to meet the needs of our clients around the world. We are pleased to have the state of West Virginia as a long time Unisys customer for both storage and server technologies.

Our ES3000 server line is based on the latest server Intel technology and are specifically built for Unisys by a tier one OEM partner. Unisys brands, sells, supports and services these systems for our mission critical business to business clients. Since we do not operate in the high volume consumer market we chose a best of breed partner to leverage the high volume manufacturing process and cost savings associated with a quality market leading provider and allows Unisys to add value around our tremendous experience in information technology services and support.

Our storage competitors naturally favor solutions that highlight their own storage equipment over time. Unisys is uncommonly positioned to leverage competitive market pressures and bring the absolute best value solution to the State of West Virginia. This is a strategy our competitors, which are tied to their own hardware solutions, will not be motivated to employ. Our solutions reduce risk and cost, both in the initial transition and in the ongoing operations, by continuously driving toward the market's best technologies and rates. Based on the requirements specified by the State of West Virginia, we have chosen the EMC VNX product family, as the right solution to meet your needs.

Unisys is a proven leader in the area of server and storage and related solutions, services and technology. Unisys combines its solutions and services with its partners' "Best of Breed" technologies and solutions to provide clients with total solutions that incomparable in the marketplace.

The EMC VNX family is a high-performing unified storage platform with unsurpassed simplicity and efficiency, optimized for virtual applications. With the VNX Series, you'll achieve new levels of performance, protection, compliance, and ease of management.

Our solution provides an EMC VNXe3200 storage system that meets and exceeds the specifications provided by the State of West Virginian in the RFQ. The EMC VNXe3200 provides the capacity, speed and efficiency needed for mixed workloads. Powerful multicore optimization with MCx gives you performance that scales with your needs.

To further your FLASH 1st strategy the VNXe3200 can also be configured with powerful enterprise flash for data storage, as well as EMC's "FAST Cache" flash augmented cache for the highest performance and the lowest latency. Automated storage tiering with EMC's "FAST VP" also helps drive down your cost per gigabyte.

## 1.2 Technical Overview of the Unisys Proposed Solution

### Solution Overview:

### Servers

Unisys ES3000 family of servers offers a broad range of feature functionality from 1 socket to 4 socket systems leveraging the latest Intel processors and state of the art peripheral support. Add to this our long history in mission critical computing, high availability and reliability and over 60 years of experience in the server business and we have an unbeatable combination of skills to deliver best in class Intel based computing for our public sector and commercial clients around the world.

We feel confident that the Unisys response for the server specifications meets or exceeds the requirements as laid out by the RFQ. The basic configuration is as follows:

#### Group of 5 Servers:

##### 3.1.2 Server Hardware Host Group:

###### 3.1.2.1 5462EEU

Each ES3000 Model 3560R G5 server includes:

Slide Ready Rails No Arm

Power Saving Active Power Controller BIOS

Customer Supplied Windows 2012 Standard Edition

On-board Broadcom 5720 Quad Port 1Gb Network Daughter Card

SATA DVD+/-RW drive

3.1.2.2 00FK647- 2 Intel E5-2670 v3 12-core processor (2.30GHz)

3.1.2.8 00FK932- Dual 750 Watt Redundant AC Power Supply (1+1)

3.1.2.7 90Y3901- One iDRAC8 Enterprise Management Card

3.1.2.3 46W0796- 64GB Memory- (4) 16GB, 2133MHz Dual Rank RDIMM (Low Voltage x4)

- 3.1.2.4 00AJ121-** Internal Hard Drive Configuration - 8 Bay Cage (2.5" Drives)  
One PERC H730 Integrated RAID Controller (1GB NV Cache)  
Two 500GB 7.2K RPM Near-Line SAS 6G HP - 2.5" drive(s) in RAID 1 volume
- 3.1.2.6 90Y9352-** One Broadcom 5719 QP 1Gb Network Adapter
- 3.1.2.5 42D0510-** One Qlogic HBA QLE2562 PCI-e, Dual Port
- 3.1.2.9 00NR851-** 24x7 4HR MAINT for 3yrs
- 3.1.2.10 P177/82-** Server Rack Stack services

## Group of 1 Server:

- 3.1.3 Server Hardware Management Host:** This ES3000 Model 3560R G5 server includes:  
Power Saving Active Power Controller BIOS,  
Slide Ready Rails No Arm On-board Broadcom 5720  
Quad Port 1Gb Network Daughter  
SATA DVD+/-RW drive
- 3.1.3.1 5462EAU-** 1 Intel E5-2609 v3 6-core processor (1.90GHz)
- 3.1.3.5 00FK930-** Dual 750 Watt Redundant AC Power Supply (1+1)
- 3.1.3.4 90Y3901-** One iDRAC8 Enterprise Card
- 3.1.3.2 46W0788-** 16GB Memory - Two 8GB, 2133MHz Dual Rank RDIMM (Low Voltage x8)
- 3.1.3.3 00AJ121-** Internal Hard Drive Configuration - 8 Bay Cage (2.5" Drives)One PERC H730, Integrated RAID Controller (1GB NV Cache),  
Two 500GB 7.2K RPM Near-Line SAS 6G HP - 2.5" drive(s) in RAID 1 volume
- 3.1.3.6 00NR851-** 24x7 4HR MAINT for 3yrs
- 3.1.3.7 P177/B2 –** Server Rack Stack Services

In addition we also suggest you consider an optional configuration to improve the overall reliability, manageability and performance of the systems. If the State of West Virginia has an interest in learning more about these “best practices”, Unisys would be happy to provide an alternative configuration and pricing.

These minor changes would include the following:

1. Include cable management arms as many clients prefer to keep the cabling neat in the racks which will ease server maintenance.
2. The RFQ called 500GB 7.2K NL SAS drives, we find that these are typically used for archival data and typically not used for OS drives or actively accessed data. Our 600GB 10K RPM SAS 6G HP - 2.5" drive(s) in RAID 1 volume provides for a higher performing drive type.
3. The RFQ called for a single Dual port HBA card. While a single card works functionally, we provided two QLogic HBA QLE2560 PCI-e, single Port cards instead to provide a higher level of redundancy, which protects against a single card failure causing any loss of SAN data access.

## Storage

The **EMC® VNXe3200** storage system is a unified storage solution that is suitable for small to medium businesses (SMB) as well as the Remote Office/Branch Office (ROBO) deployments of larger organizations. This powerful storage system addresses the challenges mentioned above and is designed to be simple such that IT generalists with limited storage expertise are able to leverage the multitude of features that the system provides. The major benefits of the VNXe3200 storage system include:

- **High Availability** – The VNXe3200 has many High Availability considerations, such as hardware redundancy and RAID protection ensuring constant data flow to users and administrators.
- **Performance and Efficiency** – With the MCx Operating Environment and FAST VP technology the VNXe3200 includes the ability to better leverage Flash storage, processor cores, and other technologies to offer better price/performance ratios.
- **Unified Snapshots** – Due to a truly unified infrastructure, the VNXe3200 is able to take point-in-time snapshots of block or file data using the same storage space as the target resource. Unified Snapshots on the VNXe3200 is based on redirect-on-write technology.
- **Expanded Connectivity Support** – VNXe3200 systems support 8 Gb/s Fibre Channel, 10 GbE Optical, and 1 GbE copper through the use of optional I/O modules.
- **Block Replication** – The VNXe3200 offers two forms of replication for ensuring data redundancy and integrity. Asynchronous block storage replication is built into the VNXe3200 to provide a local and remote replication solution with other VNXe3200 systems. A built-in RecoverPoint splitter allows integration with EMC's RecoverPoint Appliance to deliver asynchronous and synchronous protection to another VNXe3200 as well as other EMC products (VNX, VMAX, etc.).
- **VMware Integration** – The VNXe3200 provides best-in-class VMware integration. By utilizing VASA, VAAI, and VMware Aware Integration, the VNXe3200 is able to integrate fully with VMware vCenter and ESXi hosts. This enables the monitoring of storage directly from VMware interfaces and the creation of datastores from Unisphere. In addition, support for VMware Site Recovery Manager (SRM) helps the VNXe3200 fit into a user's disaster recovery plan.
- **UFS64** – The initial deployment of UFS64, the 64-bit file system, is on the VNXe3200. With UFS64 and VNXe3200, a VMware NFS datastore of up to 64 TB in capacity can be created, delivering four times the capacity of a 32-bit file system.

The State of West Virginia, Department of Environmental Protection provided the minimum required specifications and our solution meets and/or exceeds each point, as follows:

## **Section 3.1.1 – General Requirements for Storage**

**Storage System:** Needed are two rack mountable storage systems using 8GB fiber channel communication to hosts for two separate physical locations and capable of RAID 5, Luns assigned to multiple hosts and hot spares. These storage systems should also have dual redundant controllers and power supplies and four redundant fiber channel connections for each controller and hot swappable drives. The raw storage capacity of each storage system should be 76 TB. The following part numbers are from Lenovo:

### **3.1.1.1 6099L2C IBM Storwize V3700 3.5-inch Storage Controller Unit or equal**

The Unisys solution provides one (1) 2U Dual Controller VNxe3200 3.5-inch Disk Processing Enclosure (DPE) with 48GB of memory per site. The VNxe3200 uses an Intel® Xeon® E5 Quad-Core CPU which runs at 2.2 GHz. The VNxe3200 takes advantage of that processing power by leveraging its MCx architecture to ensure that all the cores are being used optimally.

### **3.1.1.2 00MJ095 8Gb Port Host Interface Card or equal**

Two 4 port 8Gb/s Fibre Channel Host Interface Cards (one per controller) in included in each VNxe3200. The Fibre Channel I/O module auto-negotiates to 2 Gb/s, 4 Gb/s, or 8 Gb/s, and has an 8-lane PCI-E Gen-2 interface (Figure 17). It can be used for FC and NAS host connectivity.

### **3.1.1.3 00MJ103 8Gb FC SW SFP Transceivers (Pair) or equal**

The 8Gb/s “transceivers” (SFPs) are included with the 8Gb/s Fibre Channel Host Interface Cards above.



## 3.1.1.4 00MJ129 4 TB 7,200 rpm 6 GB SAS NL 3.5-inch HDD or equal

Each VNxe3200 DPE includes twelve (12) 4 TB 7,200 rpm 6 GB SAS NL 3.5-inch. The VNxe3200 also supports the following drive types:

Drive Type	Capacity	Size	12-Drive DAE*	25-Drive DAE
FAST Cache Optimized SSD	100GB	2.5"	✓	✓
FAST Cache Optimized SSD	200GB	2.5"	✓	✓
FAST VP Optimized SSD	100GB	2.5"	✓	✓
FAST VP Optimized SSD	200GB	2.5"	✓	✓
FAST VP Optimized SSD	800GB	2.5"	✓	✓
15K RPM SAS	300GB	2.5"	✓	✓
10K RPM SAS	600GB	2.5"	✓	✓
10K RPM SAS	900GB	2.5"	✓	✓
15K RPM SAS	300GB	3.5"	✓	
15K RPM SAS	600GB	3.5"	✓	
7.2K RPM NL-SAS	2TB	3.5"	✓	
7.2K RPM NL-SAS	4TB	3.5"	✓	

## 3.1.1.5 00MJ170 5m Fiber Cable (LC)

Four (4) 5m Fiber Channel LC-LC cables are included per site

## 3.1.1.6 00TU915 3 year Onsite Repair 24X7 4 hour response

Maintenance Level (HW and SW): 24x7 4 Hour Response for 3 years

## 3.1.1.7 P177/01 Integration TIPS# 607929

Unisys/EMC do not charge for individual component integration; however we have included our VNX Installation charge. This service provides for planning and physical installation of the equipment in your cabinets (assumes available space/power), as well as ensuring that the VNxe3200 is fully available for configuration.

## 3.1.1.8 6099LEU IBM Storwize V3700 3.5-inch Storage Expansion Unit or equal

One 2U 3.5-inch Disk Array Enclosure (DAE) is included per site. The VNxe3200 has two possible DAE configurations:

- 25-drive DAEs paired with 2.5" drives
- 12-drive DAEs paired with 3.5" drives

Both DAE configurations take up 2U of space in storage racks.

3.1.1.9 00MJ129 4 TB 7,200 rpm 6 Gb SAS NL 3.5-inch HDD or equal

Each VNXe3200 DAE includes seven (7) 4 TB 7,200 rpm 6 GB SAS NL 3.5-inch.

3.1.1.10 00MJ176 0.6m SAS Cable (mSAS HD to mSAS HD)

SAS connectivity cables are included with each DAE and are not a separately listed item.

3.1.1.11 00TU936 3 year Onsite Repair 24X7 4 hour Response

Maintenance Level (HW and SW) : 24x7 4 Hour Response for 3 years

3.1.1.12 P177/D1 Integration - TPS# 608196

Unisys/EMC do not charge for individual component integration, however we have included our VNX Installation charge. This service provides for planning and physical installation of the equipment in your cabinets (assumes available space/power), as well as ensuring that the VNXe3200 is fully available for configuration.

*Note: Our solution pricing also contains separated costs for all software components and delivery. We have added those costs into the DPE unit in item 3.1.1.1 on the provided bid form, as well as the costs for the items above. Our proposal also includes a detailed quote, as an attachment to our electronic submission.*

## VNXe3200 At a Glance

The table below provides an overview of the VNXe3200 specification, at a glance:

Model	VNXe3200
Number of SPs	2
Form factor	2U
DAE options	12-drive (3.5"), or 25-drive (2.5")
Minimum/maximum number of drives	6/150
Drive options	100   200   800 GB Flash SLC/MLC 300   600   900 GB SAS 2   4 TB NL-SAS
DPE options	12-drive (3.5"), or 25-drive (2.5")
System Drives options	200 GB Flash (MLC) 300   600   900 GB SAS 2   4 TB NL-SAS
CPU per system	Intel Xeon E5 Quad Core at 2.2GHz
Memory per system	48 GB
Back-end connection	6 Gb SAS
Number of back-end ports per SP	2
Embedded I/O ports per SP	4x 10 GbE
Configurable I/O slots per SP	1
I/O module options per SP	4-port 8 Gb Fibre Channel
RAID options	1/0, 5, 6
Management ports per system	LAN 2x 10/100/1000 Ethernet

## **Recommended Optional Services and Education**

In addition to the basic installation service for the VNXe3200, Unisys recommends the following optional services, to ensure that your system is up and running correctly and that you have the information and the knowledge to use it productively. If the State of West Virginia has an interest in learning more about these “optional services”, we have included them in the detailed configurations, but not in the on line pricing submission.

### **VNXe3200 Deployment Service**

This service would replace the basic VNX Installation Service and extend it by providing:

- Complete Installation, as noted above in the requirements section
- Configuration Planning
  - Disk layouts
  - LUNs
  - Host Connections
  - SAN Configuration
- Connection to the client SAN infrastructure
- Configuration of
  - Storage Pools
  - Connectivity Groups for hosts
  - Allocation of LUNs
  - Provisioning LUNs to hosts
- Completion of a “Configuration Guide” showing the details of the work done
- Basic Functional Overview with the client

### **VNXe Deployment Storage Adder**

This services compliments and extends the VNXe3200 Deployment service to include the same functions as that service, when additional DAEs are to be deployed in the environment.

### **VNXe eLearning ValuePak**

Include five (5) self-paced e-Learning courses

- VNXe Fundamentals
  - Overview on VNXe system features and functions, use cases, architecture and theory of operations, VNXe hardware/software options and suites, management options and capabilities
- VNXe Implementations
  - Rack, stack, cabling, power on, initial configuration, register the system and activate licenses, storage pool configuration, Basic network settings and iSCSI access, NAS configuration, Allocating storage to a host.
- Host to VNXe SAN Implementation

- Host Configuration – ESXi, Linux, and Windows, SAN Configuration, Configuring B-Series and MDS-Series Zoning, Volume Access Configuration.
- VNXe Management
  - Block and file storage provisioning in Microsoft Windows, UNIX/Linux, and virtualized environment using Unisphere, managing Unisphere security, basic monitoring, FAST, and configuring Unified Snapshots.
- VNXe Maintenance
  - VNXe online support resources, identifying failed hardware, system health and alerts, CRU and FRU replacement guidelines, CRU and FRU replacement demos, Software upgrades and licenses.

UNISYS						
Unisys Corporation Response to RFQ DEP1600000010						
Proposal: (ID: 160814) Intel Servers						
1 - Unisys ES3560R Intel Server Per RFQ Specification (ID: 360071)						
Qty	Style	Description	Extended List Price USD	Unit Price List	Extended Price Net	West Virginia RFQ Line Item
1	Installation Charges		249	249	249	29
Maintenance:						
Maintenance Level (HW and SW) : 24x7 4 Hour Response						
		Year 1	2,598	2,598	2,598	
		Year 2	0	0	0	
		Year 3	0	0	0	
		Maintenance Subtotal	2,598		2,598	28
Hardware :						
1	ES3565001-SVR	ES3/3560R G5 Server with TPM	1,300	1,084	1,084	23
1	ES3565003-SVR	ES3/3560R G5 Server FIPS TPM	59	49	49	23
1	ES3505102-CPU	ES3000 G5 Base E5-2609 v3 1.9GHZ,15M Cache,6.40GT/S QPI,No Turbo,No HT,6C/6T (85W)	515	430	430	23
1	ES3565006-OPT	ES3/3560R G5 PCIe Riser 3, Left	50	42	42	23
1	ES3565007-OPT	ES3/3560R G5 PCIe Riser 2, Center	50	42	42	23
1	ES3565002-ODD	ES3/3560R G5 DVD+/-RW, SATA, Internal	99	83	83	23
1	ES3505103-RAD	ES3/35xx G5 H730 Integrated RAID Controller, 1GB CACHE	599	500	500	23
1	ES3505001-NDC	ES3/35xx G5 Broadcom 5720 QP 1GB NDC	75	63	63	23
1	ES3565001-BZ2	ES3/3560R G5 Bezel	36	30	30	23
1	ES3565001-RCK	ES3/3560R G5 ReadyRails Sliding Rails Without Cable Management Arm	149	124	124	23
2	ES3505012-MEM	ES3/35xx G5 8GB RDIMM, 2133MT/S, 2R x8	508	212	424	23
2	ES3505005-DSK	ES3/35xx G5 500GB 7.2K NLSAS 6Gbps 2.5" HP HDD	658	274	548	24
1	ES3505002-SMC	ES3/35xx G5 IDRAC8 Enterprise	469	391	391	25
2	ES3505002-PWC	ES3/35xx G5 C13 TO C14, 12 AMP, 6.5 FEET (2M)	40	17	34	26

1	ES3505006-PWR	ES3/35xx G5 Dual, HP, Redundant PSU (1+1), 750W, Titanium, 200-240VAC	769	641	641	27
1	ES3565001-RSP	ES3/3560R G5 Required Info	0	0	0	27
1	ES3565002-SVR	ES3/3560R G5 Server with TPM MB	0	0	0	
1	ES3565001-CPU	ES3/3560R/3560R HCS G5 Processor Heatsink	0	0	0	
1	ES3599011-NKB	ES3000 No Keyboard	0	0	0	
1	ES3505001-CPU	ES3000 G5 No Additional Processor	0	0	0	
1	ES3565011-MEM	ES3/3560R/3560R HCS G5 DIMM Blanks For System With 1 Processor	0	0	0	
1	ES3565001-PCE	ES3/3560R G5 PCIe Slot Filler	0	0	0	
1	ES3565006-RAD	ES3/3560R G5 RAID 1 For H330/H730/H730P (2 HDD/SDD)	0	0	0	
1	ES3505005-MEM	ES3/35xx G5 Performance Optimized	0	0	0	
1	ES3565005-OPT	ES3/3560R G5 PCIe Riser 1 Filler Blank, Right	0	0	0	
1	ES3505004-OPT	ES3/35xx G5 UEFI BIOS	0	0	0	
1	ES3565022-SVR	ES3/3560R G5 8 - 2.5" HDD	0	0	0	
1	ES3505001-MEM	ES3/35xx G5 2133MT/S RDIMMS	0	0	0	
1	ES3565001-BZ1	ES3/3560R G5 Bezel CFI	0	0	0	
1	ES3565001-DOC	ES3/3560R/3560R HCS G5 System Documentation	0	0	0	
1	ES3505007-OPT	ES3/35xx G5 Power Saving Active Power Controller	0	0	0	
1	WUL3565131-WWP	ES3000 3560R G5 3yr 7x24 4hr Warranty Upgrade	0	0	0	
		<b>Hardware Subtotal</b>	<b>5,376</b>		<b>4,485</b>	
<b>Software :</b>						
1	COS2012-STD	Customer Supplied Windows 2012 Standard Edition	0	0	0	
		<b>Software Subtotal</b>	<b>0</b>		<b>0</b>	
		<b>Configuration Total</b>	<b>7,974</b>		<b>7,083</b>	

5 - ES3560R Intel Servers Per RFQ Specification (ID: 360070)						West Virginia RFQ Line Item
Qty	Style	Description	Extended List Price USD	Unit Price List	Extended Price Net	
5		Installation Charge	1245	249	1245	22
Maintenance:						
	Maintenance Level (HW and SW) : 24x7 4 Hour Response for 3 years					
		Year 1	12,991	12,991	12,991	
		Year 2	0	0	0	
		Year 3	0	0	0	
		Maintenance Subtotal	12,991		12,991	21
Hardware :						
5	ES3565001-SVR	ES3/3560R G5 Server with TPM	6,500	1,079	5,395	13
5	ES3565003-SVR	ES3/3560R G5 Server FIPS TPM	295	49	245	13
5	ES3505114-CPU	ES3000 G5 Base E5-2670 v3 2.3GHZ,30M Cache,9.60GT/S QPI,Turbo,HT,12C/24T (120W)	11,145	1,850	9,250	13
5	ES3505103-RAD	ES3/35xx G5 H730 Integrated RAID Controller, 1GB CACHE	2,995	497	2,485	13
5	ES3565002-ODD	ES3/3560R G5 DVD+/-RW, SATA, Internal	495	82	410	13
5	ES3565001-BZ2	ES3/3560R G5 Bezel	180	30	150	13
10	ES3505002-PWC	ES3/35xx G5 C13 TO C14, 12 AMP, 6.5 FEET (2M)	200	17	170	13
5	ES3565001-RCK	ES3/3560R G5 ReadyRails Sliding Rails Without Cable Management Arm	745	124	620	13
5	ES3505001-NDC	ES3/35xx G5 Broadcom 5720 QP 1GB NDC	375	62	310	13
5	ES3565006-OPT	ES3/3560R G5 PCIe Riser 3, Left	250	42	210	13
5	ES3565007-OPT	ES3/3560R G5 PCIe Riser 2, Center	250	42	210	13
5	ES3505214-CPU	ES3000 G5 2nd E5-2670 v3 2.3GHZ,30M Cache,9.60GT/S QPI,Turbo,HT,12C/24T	11,145	1,850	9,250	13
20	ES3505013-MEM	ES3/35xx G5 16GB RDIMM, 2133 MT/S, 2R x4	7,780	323	6,460	14
10	ES3505005-DSK	ES3/35xx G5 500GB 7.2K NLSAS 6Gbps 2.5" HP HDD	3,290	273	2,730	15
5	ES3505031-PCE	ES3/35xx G5 QLOGIC 2562, DP 8Gb Optical FC HBA	9,245	1,535	7,675	16
10	CBL17103-5	Cable: 5m Fiber OM3 10GbE 50/125 LC-LC	500	42	420	17
5	ES3505011-PCE	ES3/35xx G5 Broadcom 5719 QP 1Gb Network Interface Card	1,895	315	1,575	17
5	ES3505002-SMC	ES3/35xx G5 IDRAC8 Enterprise	2,345	389	1,945	18



5	ES3505006-PWR	ES3/35xx G5 Dual, HP, Redundant PSU (1+1), 750W, Titanium, 200-240VAC	3,845	638	3,190	19
5	ES3565002-SVR	ES3/3560R G5 Server with TPM MB	0	0	0	20
5	ES3565001-RSP	ES3/3560R G5 Required Info	0	0	0	
5	ES3565001-CPU	ES3/3560R/3560R HCS G5 Processor Heatsink	0	0	0	
5	ES3565012-MEM	ES3/3560R/3560R HCS G5 DIMM Blanks For System With 2 Processors	0	0	0	
5	ES3565002-CPU	ES3/3560R/3560R HCS G5 Processor Heatsink (2nd CPU)	0	0	0	
5	ES3565022-SVR	ES3/3560R G5 8 - 2.5" HDD	0	0	0	
5	ES3565001-BZ1	ES3/3560R G5 Bezel CFI	0	0	0	
5	ES3599011-NKB	ES3000 No Keyboard	0	0	0	
5	ES3565006-RAD	ES3/3560R G5 RAID 1 For H330/H730/H730P (2 HDD/SDD)	0	0	0	
5	ES3505005-MEM	ES3/35xx G5 Performance Optimized	0	0	0	
5	ES3505001-MEM	ES3/35xx G5 2133MT/S RDIMMS	0	0	0	
5	ES3505007-OPT	ES3/35xx G5 Power Saving Active Power Controller	0	0	0	
5	ES3565001-DOC	ES3/3560R/3560R HCS G5 System Documentation	0	0	0	
5	ES3565005-OPT	ES3/3560R G5 PCIe Riser 1 Filler Blank, Right	0	0	0	
5	ES3505004-OPT	ES3/35xx G5 UEFI BIOS	0	0	0	
5	WUL3565131-WWP	ES3000 3560R G5 3yr 7x24 4hr Warranty Upgrade	0	0	0	
		<b>Hardware Subtotal</b>	<b>63,475</b>		<b>52,700</b>	
<b>Software :</b>						
5	COS2012-STD	Customer Supplied Windows 2012 Standard Edition	0	0	0	
		<b>Software Subtotal</b>	<b>0</b>		<b>0</b>	
		<b>Configuration Total</b>	<b>76,466</b>		<b>65,691</b>	

Unisys Corporation Response to RFQ DEP1600000010							
Storage Subsystem							
VNxe3200 Site A (ID: 360075)							
West Virginia							
RFQ Line Item							
Qty	Style	Description	Extended List Price USD	Unit Price USD	Extended Price USD		
Maintenance:							
Maintenance Level (HW and SW) : 24x7 4 Hour Response							
		Year 1	2,244	2,244	2,244		
		Year 2	2,244	2,244	2,244		
		Year 3	2,244	2,244	2,244		
		Maintenance Subtotal	6,732		6,732	6	
Hardware :							
1	VNX232-DP1	VNXe3200;2xSP DPE;12x3.5 DS;12x4TB 7200K	21,850	12,892	12,892	1	
1	VNX232-DA1	2U DAE WITH 12 x 3.5 INCH DRIVE SLOTS	1,890	1,115	1,115	8	
7	VNX267-SA4	VNXe 3200 4TB NL SAS 12X3.5	7,035	593	4,151	9	
3	VNX232-PW2	2 C13 PWRCRD W/ NEMA 5-15 PLUGS 125V 10A	0	0	0		
2	VNX2328-FBR	ONE 4 Port 8GB Fibre Channel IO Module	2,800	826	1,652	2	
1	INS10001-SRS	EMC INSTALL ESRS Trigger	0	0	0		
6	OSM1000-PRC	PWR CORD:IEC320-C13/C14	78	8	48	1	
6	CBL17103-5	Cable: 5m Fiber OM3 10GbE 50/125 LC-LC	300	30	180	5	
		Hardware Subtotal	33,953		20,038		
Software :							
1	RP1000-LCS	RECOVERPOINT LICENSE SOLUTION	0	0 OTC	0		
1	VNX100-LSN	VNXe LICENSE SOLUTION PSNT AS LAC	0	0 OTC	0		
1	OPN456104-909	VNXE3200 FAST SUITE =IC	0	0 OTC	0		
1	VNX456104-905	VNXE3200 BASE OE DUAL SP ECOSYS =IC	4,880	2,879 OTC	2,879	1	
1	VNX456106-733	VNXE3200 RP/SE FOR LOCAL PROTECTION =IC	0	0 OTC	0		
1	VNX456106-737	RP4VM for VNX/VNXe32 STARTER PACK =IB	0	0 OTC	0		
1	VNX456106-734	VNXE3200 RP/SE FOR REMOTE PROTECTION =IC	0	0 OTC	0		
1	VNX456106-747	VNXE3200 Remote Protection=IC	0	0 OTC	0		
26	VNX232-CAP	VNXE OE PER TB HI CAP FOR VNxe3200	5,070	115 OTC	2,990	1	
		Software Subtotal	9,950		5,869		
Services :							
1	VNX1000-INS	VNX INSTALLATION	2,160	2,160	2,160	7	
		Services Subtotal	2,160		2,160		
		Configuration Total	52,795		34,799		
VNxe3200 Site A - Optional Services (ID: 360078)							
Qty	Style	Description	Extended List Price USD	Unit Price USD	Extended Price USD		
Services :							
1	EDC100-PAK	VNXe eLearning ValuePak	500	500	500		
2	OPN278-DSA	VNXe Deployment Storage Adder	4,100	2,050	4,100		
1	OPN320-DPM	VNXe3200 Deployment	6,350	6,350	6,350		
		Services Subtotal	10,950		10,950		
		Configuration Total	10,950		10,950		

VNXe3200 Site B (ID: 360938)							
Qty	Style	Description	Extended List Price USD	Unit Price USD		Extended Price USD	
Maintenance:							
Maintenance Level (HW and SW) : 24x7 4 Hour Response							
		Year 1	2,244	2,244		2,244	
		Year 2	2,244	2,244		2,244	
		Year 3	2,244	2,244		2,244	
		Maintenance Subtotal	6,732			6,732	6
Hardware :							
1	VNX232-DP1	VNXe3200;2xSP DPE;12x3.5 DS;12x4TB 7200K	21,850	12,892		12,892	1
1	VNX232-DA1	2U DAE WITH 12 x 3.5 INCH DRIVE SLOTS	1,890	1,115		1,115	8
7	VNX267-SA4	VNXe 3200 4TB NL SAS 12X3.5	7,035	593		4,151	9
3	VNX232-PW2	2 C13 PWRCRD W/ NEMA 5-15 PLUGS 125V 10A	0	0		0	
2	VNX2328-FBR	ONE 4 Port 8GB Fibre Channel IO Module	2,800	826		1,652	2
1	INS10001-SRS	EMC INSTALL ESRs Trigger	0	0		0	
6	OSM1000-PRC	PWR CORD:IEC320-C13/C14	78	8		48	1
6	CBL17103-5	Cable: 5m Fiber OM3 10GbE 50/125 LC-LC	300	30		180	5
		Hardware Subtotal	33,953			20,038	
Software :							
1	RP1000-LCS	RECOVERPOINT LICENSE SOLUTION	0	0 OTC		0	
1	VNX100-LSN	VNXe LICENSE SOLUTION PSNT AS LAC	0	0 OTC		0	
1	OPN456104-909	VNXE3200 FAST SUITE =IC	0	0 OTC		0	
1	VNX456104-905	VNXE3200 BASE OE DUAL SP ECOSYS =IC	4,880	2,879 OTC		2,879	1
1	VNX456106-733	VNXE3200 RP/SE FOR LOCAL PROTECTION =IC	0	0 OTC		0	
1	VNX456106-737	RP4VM for VNX/VNXe32 STARTER PACK =IB	0	0 OTC		0	
1	VNX456106-734	VNXE3200 RP/SE FOR REMOTE PROTECTION =IC	0	0 OTC		0	
1	VNX456106-747	VNXE3200 Remote Protection=IC	0	0 OTC		0	
26	VNX232-CAP	VNXE OE PER TB HI CAP FOR VNXe3200	5,070	115 OTC		2,990	1
		Software Subtotal	9,950			5,869	
Services :							
1	VNX1000-INS	VNX INSTALLATION	2,160	2,160		2,160	7
		Services Subtotal	2,160			2,160	
		Configuration Total	52,795			34,799	
VNXe3200 Site B - Optional Services (ID: 360939)							
Qty	Style	Description	Extended List Price USD	Unit Price USD		Extended Price USD	
Services :							
1	EDC100-PAK	VNXe eLearning ValuePak	500	500		500	
2	OPN278-DSA	VNXe Deployment Storage Adder	4,100	2,050		4,100	
1	OPN320-DPM	VNXe3200 Deployment	6,350	6,350		6,350	
		Services Subtotal	10,950			10,950	
		Configuration Total	10,950			10,950	

# EMC VNXe3200 UNIFIED STORAGE SYSTEM



The VNXe3200

The VNXe3200 is the most affordable unified hybrid flash and unified all flash storage system, bringing the power of EMC's VNX® to the IT generalist.

The VNXe3200™ delivers industry-recognized affordability, simplicity, and efficiency along with support for MCx™ multicore optimization, FAST™ Cache SSD caching, FAST VP auto-tiering, and Fibre Channel host connectivity. These enterprise-class features were previously reserved for higher-end storage systems but are standard with both the hybrid flash and all flash systems.

With the award-winning ease of use of Unisphere™ Management Software, the VNXe3200's deep integration with VMware and Microsoft for simplified provisioning and deploying virtualized applications, and EMC's legendary support, there is no need to be a storage expert to take advantage of these new and powerful storage systems.

## Specifications

### HYBRID/ALL FLASH, UNIFIED ARCHITECTURE

The VNXe3200 is a dense, 2U dual-controller unified storage system that provides FC and IP connectivity for concurrent SAN or NAS operations. With it you can:

- Setup for NAS or SAN in minutes with new Unisphere wizards.
- Be just one click away from a support specialist via online chat.
- Reduce capacity requirements by up to 50% via thin provisioning and file deduplication.
- Store 200 VSPEX® VM's with the new MCx optimized architecture.

The VNXe3200's performance and low \$/GB sets a new bar for entry-level storage.

### VNXe PHYSICAL SPECIFICATIONS

	VNXe3200
<b>Min/Max Drives</b>	6 to 150*
<b>Max FAST Cache</b>	400GB
<b>Drive Enclosure Options</b>	25x2.5" Flash/SAS drives (2U) 12x3.5" SAS/ NL SAS drives (2U)
<b>CPU/Memory per Controller</b>	1 x 2.2 GHz Xeon (Sandy Bridge) Quad Core/ 24 GB
<b>Base 10 GB/s IP Ports per Controller (Base-T)</b>	4**
<b>Max Flex IO Modules per Controller</b>	1
<b>Raid Options</b>	RAID 10/5/6

\* 500 TB max capacity.

\*\* Ports can auto-negotiate to 1GbE



# REDEFINE

SPECIFICATION SHEET

## SYSTEM LIMITS AND SUPPORT

<b>Supported Pool LUNs</b>	Up to 512
<b>Maximum LUN Size</b>	16 TB
<b>Maximum FS Size</b>	16 TB
<b>Total Raw Capacity</b>	500 TB
<b>Maximum File Systems</b>	500

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## VNXe3200 CONNECTIVITY

The VNXe3200 provides flexible DAS, NAS, or SAN connectivity options through Ethernet and Fibre Channel ports and supports a wide range of protocols including CIFS (SMB 1, SMB 2 and SMB 3), NFSv3, iSCSI, and Fibre Channel

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## FLEX IO MODULE OPTIONS

<b>IO Modules</b>	<b>VNXe3200</b>
1GbE	4 ports per module
10GbE Optical	4 ports per module
8 Gb/s Fibre Channel Module	4 ports per module

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## BACK-END (DISK) CONNECTIVITY

Each storage processor includes two 6 Gb/s x 4 Serial Attached SCSI (SAS) port providing connection to additional disk drive expansion enclosures.

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## MAXIMUM CABLE LENGTHS

SAS Cable Length (enclosure to enclosure): 6 meters

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## SUPPORTED DISK ARRAY ENCLOSURES (DAEs)

The VNXe3200 supports one or more of the following DAEs:

	<b>VNXe3200 12 Drive Disk Expansion</b>	<b>VNXe3200 25 Drive Disk Expansion</b>
<b>Drive Enclosures</b>	3.5" SAS, NL-SAS, Flash (2U)	2.5" SAS, Flash (2U)
<b>Drive Quantity</b>	12	25
<b>Controller Interface</b>	6 Gb SAS	6 Gb SAS

## SUPPORTED DISK DRIVES

	100 GB*	200 GB*	800 GB**	300 GB	600 GB	600 GB	900 GB	2 TB NL	4TB NL
<b>Interface</b>	6 Gb/s SAS	6 Gb/s SAS	6 Gb/s SAS	6 Gb/s SAS	6 Gb/s SAS	6 Gb/s SAS	6 Gb/s SAS	6 Gb/s SAS	6 Gb/s SAS
<b>Capacity (RPM)</b>	100 GB (Flash)	200 GB (Flash)	800 GB (Flash)	300 GB (15,000)	600 GB (15,000)	600 GB (10,000)	900 GB (10,000)	2 TB (7,200)	4 TB (7,200)
<b>Formatted Capacity*</b>	91.69 GB	183.41 GB	733.56 GB	268.37 GB	536.77 GB	536.77 GB	820.58 GB	1823.56 GB	3668.55 GB
<b>AFA Capacity (Raw) Options</b>	N/A	2.2TB, 3.2TB	8.0TB						
<b>Form Factor</b>	2.5", 3.5"	2.5", 3.5"	2.5"	2.5" 3.5"	3.5"	2.5" 3.5"	2.5" 3.5"	3.5"	3.5"
<b>Height</b>	1.0"	1.0"	1.0"	1.0"	1.0"	1.0"	1.0"	1.0"	1.0"
<b>Data Buffer</b>	N/A SSD	N/A SSD	N/A SSD	16 MB (min.)	16 MB (min.)	16 MB (min.)	16 MB (min.)	128 MB	128 MB
<b>Buffer to/from Media</b>	260 MB/s	260 MB/s	260 MB/s	97 MB/s	150 MB/s	93 MB/s	93 MB/s	84 MB/s	84 MB/s
<b>SP to/from Buffer</b>	600 MB/s (max)	600 MB/s (max)	600 MB/s	600 MB/s (max)	600 MB/s (max)	600 MB/s (max)	600 MB/s (max)	600 MB/s (max)	600 MB/s (max)
<b>Average Seek</b>	N/A	N/A	N/A	3.5 ms (Read) 4.0 ms (Write)	3.4 ms (Read) 3.9 ms (Write)	3.7 ms (Read) 4.2 ms (Write)	3.7 ms (Read) 4.2 ms (Write)	8.2 ms (Read) 9.2 ms (Write)	8.5 ms (Read) 9.5 ms (Write)
<b>Rotation Latency</b>	N/A	N/A	N/A	2.0 ms	2.0 ms	3.0 ms	3.0 ms	4.17 ms	4.16 ms

\* 100/200GB Flash drives are available in both FAST Cache and FAST VP supported versions. The VNXe3200 AFA uses the 200GB SSD for both the 2.2TB and 3.2TB 2.5" DPE capacity models

\*\* 800GB Flash drives are supported only in FAST VP. The VNXe3200 AFA uses the 800GB SSD for the 8.0TB 2.5" DPE capacity model

## PROTOCOLS SUPPORTED

CIFS (SMB 1, SMB 2 and SMB 3), NFSv3, iSCSI, Fibre Channel

Network Lock Manager (NLM) v3, v4

Routing Information Protocol (RIP) v1-v2

Simple Network Management Protocol (SNMP)

Network Data Management Protocol (NDMP) v1-v4

Address Resolution Protocol (ARP)

Internet Control Message Protocol (ICMP)

Simple Network Time Protocol (SNTP)

Lightweight Directory Access Protocol (LDAP)

## SERVER OPERATING SYSTEM SUPPORT

Apple MAC O/S 10.8 or greater

Citrix XenServer 6.1

HP-UX

IBM AIX

IBM VIOS 2.2, 2.3

Microsoft Windows Server 2008, Windows Server 2008 R2+

Windows Server 2012, Windows Server 2012 R2\*

Microsoft Windows 7, Microsoft Windows 8 and Vista

Microsoft Hyper-V

Novell Suse Enterprise Linux

Oracle Linux

RedHat Enterprise Linux

Solaris 10 x86, Solaris 10 Sparc

Solaris 11 and 11.1 supported, SPARC & x86

VMware® ESXi5.x®

\* Base interoperability only.



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## VNXe SOFTWARE

VNXe offers support for a variety of advanced storage features. These features are standard or may be purchased via software packages. More information regarding features and packages can be found in the VNXe Software Suites data sheet.

**VNXe3200 Base Software Package** – Standard integrated management and monitoring of all aspects of VNXe systems including the Operating Environment 3.1.1\*, all protocols (as listed above), Unisphere Management with integrated support, Unisphere Central, FAST Suite - FAST VP + FAST Cache, Monitoring & Reporting software, Unified Snapshots, Remote Protection – Native Asynchronous Block Replication, File Deduplication & Compression, Thin Provisioning, Event Enabler (common Anti-Virus), File Level retention. Also included:

- An optional 64-bit File System - for use with VMware VMDK over NFS:
  - 64TB maximum file system size
  - Allows a user to extend and shrink both thick and thin Datastores

### Optional Software:

**RecoverPoint Advanced Protection** - Provides local and remote Continuous Data Protection for recovery to any point in time. Software licenses included:

- RecoverPoint/EX Local license
- RecoverPoint/EX Remote license
- Virtual RecoverPoint Appliance

**AppSync Copy Management** –Fast copy and rapid restores of VMware, Exchange, SQL, SharePoint, Oracle, and more

### Virtual Storage Integrator (VSI)

Allows VMware administrators to manage VNXe3200 storage from within VMware vCenter™.

### EMC Storage Analytics

Powerful monitoring and analytics tool for VMware vRealize™ Operations Manager, (EMC Adapter for VNXe)

### PowerPath

Intelligent load balancing and multi-pathing software for networked storage environments

\*The VNXe3200 Operating Environment is a licensed and priced item.

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## CLIENT CONNECTIVITY FACILITIES

File access by NFS, CIFS protocols

Block access by iSCSI and FC

Link Aggregation (IEEE 802.3ad) – File access only

Virtual LAN (IEEE 802.1q)

Network Status Monitor (NSM) v1

Portmapper v2

Network Information Service (NIS) client

Supports Microsoft DFS as Leaf node or Root Server

LDAP signing for Windows

Access Base Enumeration (ABE) for SMB protocol access

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## VMWARE INTEGRATION

VMware vStorage APIs for Array Integration (VAAI) for File and Block improves performance by leveraging more efficient, array-based operations

vStorage APIs for Storage Awareness (VASA) provides storage awareness for VMware administrators

## VNXe ELECTRICAL SPECIFICATIONS

Requirement	VNXe3200 Processor Enclosure (3.5" Drives)	VNXe3200 Processor Enclosure (2.5" Drives)	VNXe3200 Expansion Enclosure (12 x 3.5" Drives)	VNXe3200 Expansion Enclosure (25 x 2.5" Drives)
<b>AC Line Voltage</b>	100 to 240 V ac± 10%, single-phase, 47 to 63 Hz	100 to 240 V ac± 10%, single-phase, 47 to 63 Hz	100 to 240 V ac± 10%, single-phase, 47 to 63 Hz	100 to 240 V ac± 10%, single-phase, 47 to 63 Hz
<b>AC Line Current</b>	5.2A max at 100 V ac, 2.6 A max at 200 V ac	4.93A max at 100 V ac, 2.47A max at 200 V ac	2.5 A max at 100 V ac, 1.3 A max at 200 V ac	2.5 A max at 100 V ac, 1.3A max at 200 V ac
<b>Power Consumption</b>	520 V ac (470 W) max	493 V ac (443 W) max	250 V ac (240 W) max	250 V ac 230 W) max
<b>Power Factor</b>	0.98 min at full load, low voltage	0.98 min at full load, low voltage	0.98 min at full load, low voltage	0.98 min at full load, low voltage
<b>Heat Dissipation</b>	1.69 x 10 <sup>6</sup> J/hr, (1604 Btu/hr) max	1.59 x 10 <sup>6</sup> J/hr, (1512 Btu/hr) max	8.64 x 10 <sup>5</sup> J/hr, (820 Btu/hr) max	8.28 x 10 <sup>5</sup> J/hr, (785 Btu/hr) max
<b>AC Protection</b>	15 A fuse on each power supply, both phases	15 A fuse on each power supply, both phases	15 A fuse on each power supply, both phases	10 A fuse on each power supply, both phases
<b>AC Inlet Type</b>	IEC320-C14 appliance coupler, per power supply	IEC320-C14 appliance coupler, per power supply	IEC320-C14 appliance coupler, per power supply	IEC320-C14 appliance coupler, per power supply
<b>Ride-through Time</b>	12 ms min	12 ms min	30 ms min	30 ms min
<b>Current Sharing</b>	± 5 percent of full load, between power supplies	± 5-percent of full load, between power supplies	± 15 percent of full load, between power supplies	± 10 percent of full load, between power supplies

## VNXe PHYSICAL DIMENSIONS (APPROXIMATE)

	VNXe3200 Processor Enclosure (3.5" Drives)	VNXe3200 Processor Enclosure (2.5" Drives)	VNXe3200 Expansion Enclosure (12 x 3.5" Drives)	VNXe3200 Expansion Enclosure (25 x 2.5" Drives)
<b>Dimension (H/W/L)</b>	3.40 in x 17.5 in x 20.0 in/ 8.64 cm x 44.45 cm x 50.8 cm	3.40 in x 17.5 in x 17.0 in/ 8.64 cm x 44.45 cm x 43.18 cm	3.40 in x 17.5 in x 20.0 in/ 8.64 cm x 44.45 cm x 50.8 cm	3.45 in x 17.5 in x 13 in/ 8.76 cm x 44.45 cm x 33.02 cm
<b>Weight (max)</b>	61.8lb/28.1kg	51.7 lb/23.5 kg	52.0 lb/23.6 kg	48.1 lb/21.8 kg



## OPERATING ENVIRONMENT (MEETS ASHRAE EQUIPMENT CLASS A4)

<b>RECOMMENDED RANGE OPERATION</b>	The limits under which equipment will operate the most reliably while still achieving reasonably energy-efficient data center operation.	18C to 27C (64.4F to 80.6F) at 5.5C (41.9F) dew point to 60% relative humidity and 15C (59F) dew point.
<b>CONTINUOUS ALLOWABLE RANGE OF OPERATION</b>	Data center economization techniques (e.g. free cooling) may be employed to improve overall data center efficiency. These techniques may cause equipment inlet conditions to fall outside the recommended range but still within the continuously allowable range. Equipment may be operated without an hourly limitation in this range.	10°C to 35°C (50°F to 95°F) to 20% to 80% relative humidity with 21C (69.8°F) maximum dew point (maximum wet bulb temperature). De-rate maximum allowable dry bulb temperature at 1°C per 300m above 950m (1F per 547 ft above 3117ft).
<b>EXPANDED ALLOWABLE RANGE OF OPERATION</b>	During certain times of the year, equipment inlet conditions may fall outside of the continuously allowable range but still within the two expanded ranges. Equipment operation is limited to ≤ 10% or ≤ 1% of the annual operating hours in these ranges.	5°C to 10°C and 35°C to 45°C (with no direct sunlight on equipment) at -12°C dew point and 8% to 90% relative humidity with 24°C dew point (maximum wet bulb temperature). Outside the continuously allowable range (10°C to 35°C), the system can operate down to 5°C or up to 40°C for a maximum of 10% of its annual operating hours. Additionally, the system can operate as high as 45°C for a maximum of 1% of its annual operating hours. For temperatures between 40°C and 45°C (104°F to 113°F), derate maximum allowable dry bulb temperature by 1C per 125m above 950m (1.8°F/410 ft above 2953 ft.).
<b>EXCEPTIONS TO EXPANDED ALLOWABLE RANGE OPERATION</b>	When operating in the expanded allowable temperature range, system performance is guaranteed while the system is waiting or being serviced.	Due to certain rare operational modes, it is recommended that service be deferred on the 2.5" and 3.5" Disk Array enclosures when temperatures exceed 40°C.
<b>TEMPERATURE GRADIENT</b>	20°C/hr (36°F/hr)	
<b>ALTITUDE</b>	3050m (10,000ft)	

## Statement of Compliance

This Information Technology Equipment is compliant with the electromagnetic compatibility (EMC) and product safety regulations/standards required by the countries in which the product is sold. EMC compliance is based on FCC part 15, CISPR22/CISPR24 and EN55022/EN55024 standards, including applicable international variations. EMC compliant Class A products are marketed for use in business, industrial, and commercial environments. Product Safety compliance is based on IEC 60950-1 and EN60951-1 standards, including applicable national deviations.

This Information Technology Equipment is in compliance with EU RoHS Directive 2011/65/EU.

The individual devices used in this product are approved under a unique regulatory model identifier that is affixed to each individual device rating label, which may differ from any marketing or product family name in this data sheet.

For additional information see <https://support.emc.com> under the Safety & EMI Compliance Information tab.



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REDEFINE  
SPECIFICATION SHEET

EMC<sup>2</sup>



# Unisys ES3000 Model 3560R G5 Enterprise Server

## Product Information Sheet



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### Product Overview

The highly versatile Unisys ES3000 Model 3560R Enterprise Server excels at running a wide range of applications and virtualization environments for both mid-size and large enterprises. This 2-socket 2U Intel® Xeon® processor rack server delivers the ideal combination of internal expandability and rack density. It provides your business the ability to maximize server performance while optimizing data center space usage. Designed to handle demanding database, email, network infrastructure and application virtualization workloads, the Model 3560R server provides the flexibility and performance modern data centers require.

### Product Highlights

- Eighteen-core Intel® Xeon® E5-2600 v3 processors deliver superior performance
- Up to 16 internal hard drives and integrated PCIe Gen3-capable expansion slots enable you to keep pace with the explosion of data in the virtual age

- The system's large memory footprint (up to 768GB) maximizes your data center's application capacity
- Up to four GPUs maximize performance in VDI and HPC environments

### Typical Deployment Scenarios

- **Virtualization:** With eighteen-core processors, up to 768GB of memory and the ability to support four accelerators or GPUs, the Model 3560R is an ideal platform to consolidate multiple small application environments and to support Virtual Desktop Infrastructure (VDI)
- **Mail and Messaging:** With 7 PCI slots, a wide choice of Ethernet controllers and embedded RAID capability, the Model 3560R server has the configuration flexibility and I/O capacity to tackle typical mail and messaging workloads
- **Database Workloads:** With the Model 3560R server, you can take advantage of up to 48TB of internal storage plus the latest Intel Xeon E5 series processor performance to power midsized database workloads and data warehouses

## Technical Specifications for the ES3000 Model 3560R G5 Enterprise Server

Form Factor	2U rack			<ul style="list-style-type: none"><li>Platinum Efficiency 1100W</li><li>Gold Efficiency 1100W DC</li></ul>
Processors	One or two Intel® E5-2600 v3 processors with up to eighteen-cores, Hyper Threading and Turbo support		Availability	ECC memory; hot-plug hard drives; high efficiency, hot-plug redundant power supplies; hot-plug redundant cooling; interactive LCD screen; tool-less chassis
Cache	2.5MB per processor core		Features and Options	
Interconnect	Two Intel QuickPath Interconnect (QPI) links at up to 8.0 GT/s		Remote Management	iDRAC8 Express iDRAC8 Enterprise (optional) System Identification front/rear buttons and LED
Memory	Up to 768GB (12 DIMM slots per processor socket) supporting 4GB/8GB/16GB/32GB DDR4 DIMMs @ up to 2133MT/s		Systems Management	IPMI 2.0 Complaint OpenManage
I/O Slots	Up to 7 PCIe Gen3 slots: <ul style="list-style-type: none"><li>1 – x16 full-height, full-length</li><li>1 – x8 full-height, full-length</li><li>3 – x8 half-height, half-length</li><li>2 – x8 full-height, full-length or 1 – x16 full-height, full-length</li></ul>		Front Ports	1 – VGA port 2 – USB 3.0 ports 1 – vFlash media slot
Drive Controller Options	Internal: <ul style="list-style-type: none"><li>PERC S130 (Software RAID)</li><li>PERC H330</li><li>PERC H730</li><li>PERC H730P</li></ul>	External: <ul style="list-style-type: none"><li>PERC 830</li><li>12Gbps SAS HBA (non-RAID)</li></ul>	Rear Ports	1 – VGA port 2 – USB 3.0 ports 4 – RJ-45 Ethernet LOM ports 1 – RJ-45 iDRAC7 port 1 – Serial connector
Hard Drive Bays	8 – 3.5” hot swap drive bays or 16 – 2.5” hot swap drive bays		Operating Systems	Supported Operating systems include: <ul style="list-style-type: none"><li>Windows Server® 2012 R2 with Hyper-V Datacenter and Standard Editions</li><li>Windows Server® 2012 with Hyper-V, Datacenter and Standard Editions</li><li>Microsoft® Windows Server 2008® R2 SP1, x64 (includes Hyper-V™ v2)</li><li>SUSE® Linux Enterprise Server</li><li>Red Hat® Enterprise Linux®</li><li>VMware® vSphere®</li><li>Citrix® XenServer®</li></ul>
Maximum Internal Storage	Up to 48TB		Physical Specifications	Chassis dimensions: 75.58cm (29.75”) D x 48.2cm (18.98”) W x 8.73cm (3.44”) H Maximum weight: 29.5kg (64.9lb) Support for Rapid Rails, 2-post flush mount, 2-post center mount, and third party VersaRails racking solutions
Hot-plug Hard Drive Options	2.5” SSD: SAS, SATA 2.5”: 15K SAS, 10K SAS, 7.2K nearline SAS, 7.2K SATA 3.5”: 15K SAS, 7.2K nearline SAS, 7.2K SATA Self Encrypting Disk (SED) drive options are also available			
Optical Drive	SATA DVD-ROM drive or SATA DVD +/- RW drive			
Network	Various NDC options for <ul style="list-style-type: none"><li>4x 1GbE</li><li>2x 10GbE + 2x 1GbE</li><li>4x 10GbE</li></ul>			
Power Supply	Dual hot-plug auto-ranging PSU Options: <ul style="list-style-type: none"><li>Titanium Efficiency 750W</li><li>Platinum Efficiency 495W</li><li>Platinum Efficiency 750W</li></ul>			

For more information, contact your Unisys representative or visit [www.unisys.com](http://www.unisys.com)

This document is not a contract and does not create any binding representations or warranties by Unisys. All representations are contained only in the applicable agreement signed by the parties.

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**VENDOR PREFERENCE CERTIFICATE**

Certification and application\* is hereby made for Preference in accordance with **West Virginia Code**, §5A-3-37. (Does not apply to construction contracts). **West Virginia Code**, §5A-3-37, provides an opportunity for qualifying vendors to request (at the time of bid) preference for their residency status. Such preference is an evaluation method only and will be applied only to the cost bid in accordance with the **West Virginia Code**. This certificate for application is to be used to request such preference. The Purchasing Division will make the determination of the Vendor Preference, if applicable.

**1. Application is made for 2.5% vendor preference for the reason checked:**

- \_\_\_\_ Bidder is an individual resident vendor and has resided continuously in West Virginia for four (4) years immediately preceding the date of this certification; **or**,  
 \_\_\_\_ Bidder is a partnership, association or corporation resident vendor and has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; or 80% of the ownership interest of Bidder is held by another individual, partnership, association or corporation resident vendor who has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; **or**,  
 \_\_\_\_ Bidder is a nonresident vendor which has an affiliate or subsidiary which employs a minimum of one hundred state residents and which has maintained its headquarters or principal place of business within West Virginia continuously for the four (4) years immediately preceding the date of this certification; **or**,

**2. Application is made for 2.5% vendor preference for the reason checked:**

- \_\_\_\_ Bidder is a resident vendor who certifies that, during the life of the contract, on average at least 75% of the employees working on the project being bid are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; **or**,

**3. Application is made for 2.5% vendor preference for the reason checked:**

- \_\_\_\_ Bidder is a nonresident vendor employing a minimum of one hundred state residents or is a nonresident vendor with an affiliate or subsidiary which maintains its headquarters or principal place of business within West Virginia employing a minimum of one hundred state residents who certifies that, during the life of the contract, on average at least 75% of the employees or Bidder's affiliate's or subsidiary's employees are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; **or**,

**4. Application is made for 5% vendor preference for the reason checked:**

- \_\_\_\_ Bidder meets either the requirement of both subdivisions (1) and (2) or subdivision (1) and (3) as stated above; **or**,

**5. Application is made for 3.5% vendor preference who is a veteran for the reason checked:**

- \_\_\_\_ Bidder is an individual resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard and has resided in West Virginia continuously for the four years immediately preceding the date on which the bid is submitted; **or**,

**6. Application is made for 3.5% vendor preference who is a veteran for the reason checked:**

- \_\_\_\_ Bidder is a resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard, if, for purposes of producing or distributing the commodities or completing the project which is the subject of the vendor's bid and continuously over the entire term of the project, on average at least seventy-five percent of the vendor's employees are residents of West Virginia who have resided in the state continuously for the two immediately preceding years.

**7. Application is made for preference as a non-resident small, women- and minority-owned business, in accordance with West Virginia Code §5A-3-59 and West Virginia Code of State Rules.**

- \_\_\_\_ Bidder has been or expects to be approved prior to contract award by the Purchasing Division as a certified small, women- and minority-owned business.

Bidder understands if the Secretary of Revenue determines that a Bidder receiving preference has failed to continue to meet the requirements for such preference, the Secretary may order the Director of Purchasing to: (a) reject the bid; or (b) assess a penalty against such Bidder in an amount not to exceed 5% of the bid amount and that such penalty will be paid to the contracting agency or deducted from any unpaid balance on the contract or purchase order.

By submission of this certificate, Bidder agrees to disclose any reasonably requested information to the Purchasing Division and authorizes the Department of Revenue to disclose to the Director of Purchasing appropriate information verifying that Bidder has paid the required business taxes, provided that such information does not contain the amounts of taxes paid nor any other information deemed by the Tax Commissioner to be confidential.

**Under penalty of law for false swearing (West Virginia Code, §61-5-3), Bidder hereby certifies that this certificate is true and accurate in all respects; and that if a contract is issued to Bidder and if anything contained within this certificate changes during the term of the contract, Bidder will notify the Purchasing Division in writing immediately.**

Bidder: Unisys Corporation

Signed: Thomas P. Maunick

Date: 9/24/2015

Title: Contracts Manager, Unisys Corporation

STATE OF WEST VIRGINIA  
Purchasing Division**PURCHASING AFFIDAVIT**

**MANDATE:** 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 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: Unisys CorporationAuthorized Signature: Thomas P. Manau Date: 9/24/2015State of New JerseyCounty of Union, to-wit:Taken, subscribed, and sworn to before me this 24 day of September, 2015.

KAREN F. DeMAIO  
My Commission expires NOTARY PUBLIC OF NEW JERSEY, 20    .  
MY COMMISSION ENDS 05/24/18

AFFIX SEAL HERE

NOTARY PUBLIC

Karen F. DeMaio

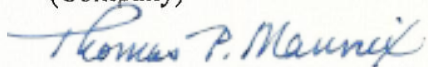


### CERTIFICATION AND SIGNATURE PAGE

By signing below, or submitting documentation through wvOASIS, I certify that I have reviewed this Solicitation in its entirety; understand the requirements, terms and conditions, and other information contained 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.

Unisys Corporation

(Company)



Thomas P. Mannix  
Contracts Manager

(Authorized Signature) (Representative Name, Title)

(908)445-7560

9/24/2015

(Phone Number) (Fax Number) (Date)

ADDENDUM ACKNOWLEDGEMENT FORM  
SOLICITATION NO.: DEP1600000010

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

Unisys Corporation

Company



Authorized Signature

Thomas P. Mannix  
Contracts Manager

9/24/2015

Date

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