



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 02

List View

General Information [Contact](#) [Default Values](#) [Discount](#) [Document Information](#)

Procurement Folder: 437057

SO Doc Code: CRFQ

Procurement Type: Central Purchase Order

SO Dept: 0210

Vendor ID: 000000219154

SO Doc ID: ISC1800000015

Legal Name: SOFTWARE INFORMATION SYSTEMS LLC

Published Date: 5/31/18

Alias/DBA:

Close Date: 6/5/18

Total Bid: \$272,882.13

Close Time: 13:30

Response Date: 06/04/2018

Status: Closed

Response Time: 17:11

Solicitation Description: Addendum 2-Data Center Storage System (OT18148)

Total of Header Attachments: 2

Total of All Attachments: 2



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

**State of West Virginia  
 Solicitation Response**

**Proc Folder :** 437057  
**Solicitation Description :** Addendum 2-Data Center Storage System (OT18148)  
**Proc Type :** Central Purchase Order

Date issued	Solicitation Closes	Solicitation Response	Version
	2018-06-05 13:30:00	SR 0210 ESR06041800000005723	1

<b>VENDOR</b>
000000219154 SOFTWARE INFORMATION SYSTEMS LLC

**Solicitation Number:** CRFQ 0210 ISC1800000015

**Total Bid :** \$272,882.13      **Response Date:** 2018-06-04      **Response Time:** 17:11:05

**Comments:**

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

<b>Signature on File</b>	<b>FEIN #</b>	<b>DATE</b>
--------------------------	---------------	-------------

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 Data Center Storage System	1.00000	EA	\$262,882.130000	\$262,882.13

Comm Code	Manufacturer	Specification	Model #
43210000			

Extended Description : Data Storage System

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
2	3.1.2 Training	5.00000	EA	\$2,000.000000	\$10,000.00

Comm Code	Manufacturer	Specification	Model #
43210000			

Extended Description : Training - per student price for five (5) students



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

State of West Virginia  
 Request for Quotation  
 21 – Info Technology

Proc Folder: 437057

Doc Description: Addendum 2-Data Center Storage System (OT18148)

Proc Type: Central Purchase Order

Date Issued	Solicitation Closes	Solicitation No	Version
2018-05-31	2018-06-05 13:30:00	CRFQ 0210 ISC1800000015	3

**BID RECEIVING LOCATION**

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

**VENDOR**

Vendor Name, Address and Telephone Number:

Software Information System, LLC  
 200 Association Drive, Suite 210  
 Charleston, WV 25311

304 768-1645

**FOR INFORMATION CONTACT THE BUYER**

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

Signature X

FEIN #

61-1371685

DATE

6-5-2019

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

**ADDITIONAL INFORMATION:**

Addendum

Addendum No.02 issued to publish and distribute the attached information to the vendor community.

\*\*\*\*\*

The West Virginia Purchasing Division is soliciting bids on behalf of the West Virginia Office of Technology (WVOT) to establish a contract for the one-time purchase of an on-premise data storage system with encryption capability. Agencies, including PEIA, will utilize this system to encrypt data and to meet Federal regulations. The proposed system will be installed in the West Virginia Office of Technology Data Center located at 1900 Kanawha Blvd. E, Building 6, Room 110, Charleston, WV 25305 per the terms and conditions and specifications as attached.

INVOICE TO		SHIP TO	
DEPARTMENT OF ADMINISTRATION OFFICE OF TECHNOLOGY 1900 KANAWHA BLVD E, BLDG 5 10TH FLOOR CHARLESTON WV25305 US		RECEIVING DEPARTMENT OF ADMINISTRATION OFFICE OF TECHNOLOGY 908 BULLITT ST CHARLESTON WV 25301-1002 US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
1	3.1.1 Data Center Storage System	1.00000	EA	<i>\$ 262,992.13</i>	<i>\$ 262,992.13</i>

Comm Code	Manufacturer	Specification	Model #
43210000			

**Extended Description :**  
Data Storage System

INVOICE TO		SHIP TO	
DEPARTMENT OF ADMINISTRATION OFFICE OF TECHNOLOGY 1900 KANAWHA BLVD E, BLDG 5 10TH FLOOR CHARLESTON WV25305 US		RECEIVING DEPARTMENT OF ADMINISTRATION OFFICE OF TECHNOLOGY 908 BULLITT ST CHARLESTON WV 25301-1002 US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
2	3.1.2 Training	5.00000	EA	<i>\$ 2,000.00</i>	<i>\$ 10,000.00</i>

Comm Code	Manufacturer	Specification	Model #
43210000			

**Extended Description :**  
Training - per student price for five (5) students

**ADDENDUM ACKNOWLEDGEMENT FORM**  
**SOLICITATION NO.:** \_\_\_\_\_

**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 checked="" 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.

Software Transformation Systems LLC  
Company  
Charles P. Arnett  
Authorized Signature  
6-5-2018  
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.

Charles D. Arnett, Sr. Client Executive  
(Name, Title)

(Printed Name and Title)

200 Association Drive Suite 210, Charleston, WV 25311  
(Address)

304 768-1645 Fax 304 768-1671  
(Phone Number) / (Fax Number)

carnette@thisis12.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.

Software Information Systems LLC  
(Company)

Charles D. Arnett, Sr. Client Executive  
(Authorized Signature) (Representative Name, Title)

Charles D. Arnett Sr. Client Executive  
(Printed Name and Title of Authorized Representative)

6-5-2018  
(Date)

304 768-1645 Fax 304 768-1671  
(Phone Number) (Fax Number)

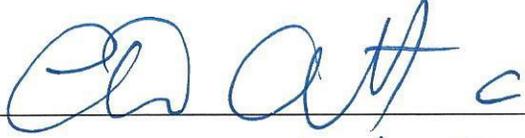
**EXHIBIT A – Pricing Sheet  
Data Center Storage System (OT18148)**

Vendor: \_\_\_\_\_

Date: 6-4-2019

Contract Item	Item Description	Description	Quantity	Unit of Measure	Unit Cost	Extended Cost
3.1.1	Storage System	Net App F15 9200	1	EA	\$1 262,892.13	262,892.13
3.1.2	Training		5	Per Student	2000	10,000.00

Total Cost \$1 272,892.13

Vendor Signature:    
 Charles D. Fruit 6-4-2019

# Itemized Build List

CRFQ 021 ISC180000015

due 6-5-2018

## NetApp Storage Array

Item	QTY	Part Number	Description	List Price	Ext Price
1	2	FAS8200A-002	FAS8200 HA System,Premium Bundle Includes all Protocols, SnapRestore,SnapMirror SnapVault, FlexClone, SnapManager Suite, Single Mailbox Recovery (SMBR), Snap Center Foundation FC BareCage SFP+,-C	\$22,500.00	\$45,000.00
2	2	X6566B-05-R6-C	Cable,Direct Attach CU SFP+10G,0.5M,-C C]	\$60.00	\$120.00
3	16	X66250-2-C	Cable,LC-LC,OM4,2m,-C	\$125.00	\$2,000.00
4	8	X66032A-C	Cable,12Gb,Mini SAS HD,2m,-C	\$285.00	\$2,280.00
5	1	X6235-C	Chassis,FAS8200,AFF-A300,AC PS,-C	\$0.00	\$0.00
6	1	DOC-8200-C	Documents,8200,-C	\$0.00	\$0.00
7	4	X1558A-R6-C	Power Cable,In-Cabinet,48-IN,C13-C14,-C	\$0.00	\$0.00
8	3	X-02659-00-C	Rail Kit,4-Post,Rnd/Sq-Hole,Adj,24-32,-C	\$115.00	\$345.00
9	4	X6596-R6-C	SFP+ FC Optical,16Gb -C [Cat:L]	\$1,035.00	\$4,140.00
10	2	X1133A-R6-C	HBA,4-Port FCP Trgt/Init 16Gb PCIe w/SFP+,-C [Cat:	\$5,200.00	\$10,400.00
11	2	X3313A-C	FlashCache Upgrade,2TB,-C [Cat: D]	\$8,420.00	\$16,840.00
12	4	X6599A-R6-C	SFP+ Optical 10Gb Shortwave,-C	\$795.00	\$3,180.00
13	1	DS224C S-96-24S-2P-C	SSD SHLF,12G,24x960GB,2P,C [Cat: D]	\$48,380.00	\$48,380.00
14	1	DS460C-07- 8.0-60B-2P-C	DSK SHLF,12G,60x8TB,7.2K,2P,-C [Cat: D]	\$60,750.00	\$60,750.00
15	1	SW-2-CL-BASE	SW-2,Base,CL,Node	\$0.00	\$0.00
16	2	SW-2-8200A-NVE-C	SW,Data at Rest Encryption Enabled,8200A,-C	\$0.00	\$0.00
17	2	SW-2-8200A-TPM-C	SW,Trusted Platform Module Enabled,8200A,-C	\$0.00	\$0.00
18	2	DATA-AT-REST-	Data at Rest Encryption Capable Operating Sys	\$0.00	\$0.00
19	230	OS-ONTAP1-	ONTAP,Per-0.1TB,PREMBNDL,Perf,2P,-C	\$522.00	\$120,060.00
20	4800	CAP2-PREM-2P-C	ONTAP,Per-0.1TB,PREMBNDL,Ultra-Pef,2P,-C	\$41.00	\$196,800.00
21	1	CS Warranty Extension 48 Month Premium Hardware/Software Support/4HR		\$73,887.51	\$73,887.51
<b>Subtotal</b>					<b>\$584,182.51</b>
<b>Discounted Subtotal</b>					<b>\$262,882.13</b>
22	5	Training	Training	\$2,000.00	\$10,000.00
<b>Total</b>					<b>\$272,882.13</b>

All of the requirements of this solicitation are met with this solution.



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

(Required by W. Va. Code § 6D-1-2)

Contracting Business Entity: Software Information System Address: 200 Association Dr. Suite 211  
WC Charleston, WV 25301  
Authorized Agent: Charles D Arnett Address: \_\_\_\_\_  
Contract Number: 15C1800000005 Contract Description: Storage System  
Governmental agency awarding contract: 154C

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.

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.

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: [Signature] Date Signed: 6-4-2018

**Notary Verification**

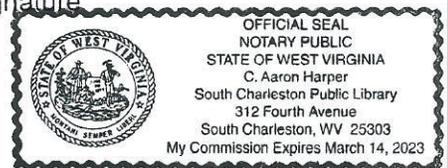
State of West Virginia, County of Marshall:

I, Charles D Arnett, 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 4<sup>th</sup> day of June, 2018.

[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: \_\_\_\_\_



Revised October 7, 2017

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: Software Integration Systems LLC

Authorized Signature: [Signature] Date: 6-4-2018

State of West Virginia

County of Kanawha, to-wit:

Taken, subscribed, and sworn to before me this 4 day of June, 2018.

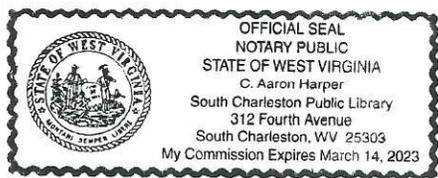
My Commission expires March 14, 2023.

AFFIX SEAL HERE

NOTARY PUBLIC

[Signature]

Purchasing Affidavit (Revised 01/19/2018)





## Datasheet

# NetApp FAS8200 Hybrid Flash System

Quickly respond to changing storage needs across flash, disk, and cloud with industry-leading data management

### Key Benefits

#### **Simplify Your Storage Environment**

Run SAN and NAS workloads with unified scale-out storage.

#### **Accelerate Enterprise Applications**

Reduce latency and speed operations with up to 50% higher performance than that of previous generation.

#### **Maximize Uptime**

Eliminate planned downtime to add, upgrade, or retire storage with no disruptions.

#### **Consolidate Infrastructure**

Scale up to 57PB, cluster with AFF all-flash systems, and integrate existing third-party storage arrays.

#### **Optimize for the Hybrid Cloud**

Easily implement a service-oriented IT architecture with leading cloud integration.

### The Challenge

#### **Enabling the data-driven business**

As the role of technology has expanded to cover key business operations as well as back-office functions, IT leaders have had to rethink the way they architect storage. Traditional requirements such as storage uptime, scalability, and cost efficiency are still critical, but so are factors such as flash acceleration, cloud integration, unified support for SAN and NAS, and simplified data mining for competitive advantage.

Many enterprises struggle, held back by structural limitations in legacy storage and data architectures. Traditional storage arrays might deliver on basic needs, but are divided into separate silos or are incapable of meeting advanced service requirements and leveraging the cloud.

### The Solution

#### **Accelerate business operations with unified scale-out storage**

The demands of a data-driven business require a new approach to storage with an integrated combination of high-performance hardware; leading cloud connectivity; and adaptive, scalable storage software. It needs to support existing workloads as well as adapt and scale quickly to address new applications and evolving IT models.

FAS8200 hybrid storage systems are engineered specifically to address these needs. Powered by NetApp® ONTAP® data management software, the FAS8200 unifies your SAN and NAS storage infrastructure. When FAS8200 systems are clustered with NetApp AFF all-flash arrays and integrated with the cloud, you have the control to easily move your data to where it's needed for your business and place it in the storage environment that delivers the best combination of flash performance, storage capacity, and cost efficiency. With proven agility and data management capabilities, the FAS8200 has the flexibility to keep up with changing business needs while delivering on core IT requirements.

#### **Unlock the power of flash**

Flash-accelerated FAS8200 hybrid storage systems deliver up to 50% more performance than our previous generation FAS storage, boosting throughput, lowering latency, and meeting stringent service levels. The base configuration of each HA pair includes 2TB of onboard Flash Cache™ based on NVMe technology, which can be expanded up to 4TB of integrated Flash Cache and up to 72TB of total flash per HA pair when leveraging Flash Pool™ intelligent data caching. Hot data is automatically promoted to flash in real time, so you get the full benefit of flash performance.

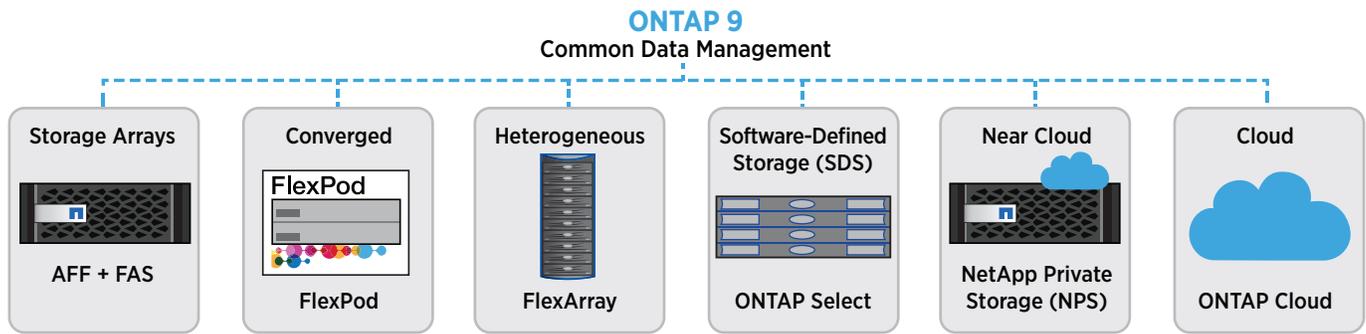


Figure 1) Standardize data management across architectures with a rich set of enterprise data services.

### Scale and adapt to meet changing needs

Optimize and accelerate your storage environment as performance and capacity requirements change. Scale up by adding capacity, adding more flash acceleration, and upgrading controllers. Scale out by growing from 2 nodes up to a 24-node cluster with 57PB of capacity, including combinations of different FAS and AFF models.

FAS8200 systems also support massive NAS containers, which are easy to manage. With the NetApp FlexGroup feature of ONTAP 9, a single namespace can grow to 20PB and 400 billion files while maintaining consistent high performance and resiliency.

With nondisruptive addition and replacement of storage systems and components, scaling occurs without maintenance windows or the challenge of coordinating downtime across teams. Perform your updates during regular work hours.

### Achieve unparalleled availability and nondisruptive operations

FAS8200 enterprise storage is engineered to meet demanding availability requirements. All models are designed to deliver 99.9999% availability or greater through a comprehensive approach that combines highly reliable hardware, innovative software, and sophisticated service analytics.

Software and firmware updates, hardware repair and replacement, load balancing, and tech refresh happen without planned downtime. Plus, NetApp Integrated Data Protection technologies protect your data, accelerate recovery, and integrate with leading backup applications for easier management.

Optimize your data infrastructure with the cloud-based predictive analytics and proactive support of NetApp Active IQ®. Prevent problems, save time, and gain insight by leveraging machine learning to get real-time predictions and recommendations based on community wisdom from NetApp's massive user base.

NetApp MetroCluster™ expands data protection to eliminate risk of data loss by synchronously mirroring data between locations for continuous availability of information. A MetroCluster storage array can exist in a single data center or in two different data centers that are located across a campus, across a metropolitan area, or in different cities. No matter what happens, your data can be protected from loss and is continuously available to meet the most business-critical needs. Plus, MetroCluster solutions

based on the FAS8200 offer enhanced configuration flexibility from the new controller architecture, which moves Flash Cache intelligent data caching from the PCIe slots to the motherboard and adds FCVI connectivity to the onboard UTA2 ports.

### Get more from existing storage array investments

Simplify your IT operations and deliver more value from existing third-party arrays by using them as additional storage capacity behind FAS8200 systems. FlexArray® virtualization software running on the FAS8200 extends ONTAP to include storage capacity from EMC, Hitachi, HPE, IBM, and NetApp E-Series arrays. Consolidate management of your existing storage to increase efficiency, add support for SAN and NAS workloads, and provide superior data management functionality.

### Optimize hybrid cloud deployment

Organizations today are focusing on service-oriented IT architectures where cloud IT models are leveraged to enhance return on investment and assets. The FAS8200 running ONTAP is optimized for private and hybrid cloud with secure multitenancy, adaptive quality of service (QoS), nondisruptive operations, and easily defined tiers of service.

Easily burst analytics and DevOps workloads to the cloud by connecting your FAS8200 to NetApp Cloud Volumes, the first enterprise-class native file service available in major hyperscalers.

For advanced data services that are common between your on-premises and cloud environments, leverage ONTAP Cloud, a version of ONTAP software that runs in Amazon Web Services (AWS) and Azure. Providing the storage efficiency, availability, and scalability of ONTAP, it allows easy movement of data between your on-premises FAS8200 and AWS or Azure environment with NetApp SnapMirror® data replication software.

For organizations that need an enterprise-class hybrid cloud with data governance and security, the FAS8200 can be used in a NetApp Private Storage (NPS) for Cloud solution. With NPS for Cloud, you can directly connect to multiple clouds using a private, high-bandwidth, low-latency connection. Connect to industry-leading clouds such as AWS, Microsoft Azure, or IBM Cloud and switch between them at any time, all while maintaining complete control of your data on your dedicated, private FAS8200.

## Build the right long-term platform

When it comes to long-term storage infrastructure investments, it is critical to focus on flexibility for adapting to future requirements, simplification of your storage environment, and total cost of ownership. The FAS8200 provides a significant price-performance benefit. Plus it delivers industry-leading storage efficiency technologies such as inline deduplication, inline compression, inline compaction, thin provisioning, and space-efficient Snapshot™ copies to reduce your cost per effective gigabyte of storage.

It is also critical to look at the security of your data environment. With the NetApp Volume Encryption feature of ONTAP, you can easily and efficiently protect your at-rest data by encrypting any volume on FAS (and AFF) systems. No special encrypting disks required. Plus, optional external key management can further increase security.

In a data-driven business, you also need the ability to leverage data for competitive advantage and to assign resources dynamically for more effective operations. The NetApp OnCommand® suite of management and optimization software is composed of a range of products for use with the FAS8200, including automation, integration, device-level management, and enterprise storage resource management.

**Table 1) FAS8200 technical specifications**

Scale-Out	
	FAS8200
<b>NAS Scale-Out: 1-24 Nodes (12 HA Pairs)</b>	
Maximum drives (HDD/SSD)	5,760/2,880
Maximum raw capacity	57PB
Maximum onboard Flash Cache based on NVMe technology	48TB
Maximum Flash Pool	864TB
Maximum memory	3072GB
<b>SAN Scale-Out: 1-12 Nodes (6 HA Pairs)</b>	
Maximum drives (HDD/SSD)	2,880/1,440
Maximum raw capacity	28PB
Maximum onboard Flash Cache based on NVMe technology	24TB
Maximum Flash Pool	288TB
Maximum memory	1536GB
Cluster interconnect	2 10GbE

## Get It Right from the Start Using NetApp Expertise

Whether you're planning your next-generation data center, need specialized know-how for a hybrid cloud environment, or want to optimize the operational efficiency of your existing infrastructure, we have the expertise. NetApp Services and our certified partners can help you navigate your digital transformation to successfully create, deliver, and consume data services that power your business. [Learn more at netapp.com/services](http://netapp.com/services).

## About NetApp

NetApp is the data authority for hybrid cloud. We provide a full range of hybrid cloud data services that simplify management of applications and data across cloud and on-premises environments to accelerate digital transformation. Together with our partners, we empower global organizations to unleash the full potential of their data to expand customer touchpoints, foster greater innovation and optimize their operations. For more information, visit [www.netapp.com](http://www.netapp.com). #DataDriven

**Per HA Pair Specifications (Active-Active Dual Controller)**

	FAS8200
Maximum drives (HDD/SSD)	480/480
Maximum raw capacity	4800TB
Maximum onboard Flash Cache based on NVMe technology	4TB
Maximum Flash Pool	72TB
Controller form factor	3U
ECC memory	256GB
NVRAM	16GB
PCIe expansion slots	4
Onboard I/O: UTA 2 (8Gb/16Gb FC, GbE/10GbE, or FCVI ports [MetroCluster only])	8
Onboard I/O: 10GbE	4
Onboard I/O: 10GbE Base-T	4
Onboard I/O: 12Gb SAS	8

### OS Version: ONTAP 9.1 RC1 and Later

Shelves and media	See the Shelves and Media page1 on NetApp.com for the most current information.
Storage protocols supported	FC, FCoE, iSCSI, NFS, pNFS, CIFS/SMB
Host/client operating systems supported	Windows 2000, Windows Server 2003, Windows Server 2008, Windows Server 2012, Windows Server 2016, Windows XP, Linux, Sun Solaris, AIX, HP-UX, Mac OS, VMware, ESX

1. [netapp.com/us/products/storage-systems/disk-shelves-and-storage-media/index.aspx](http://netapp.com/us/products/storage-systems/disk-shelves-and-storage-media/index.aspx).

**Table 2) NetApp FAS8200 series software**

	<p>The ONTAP 9 Base Bundle includes a set of software products that deliver leading data management, storage efficiency, data protection, and high performance. The optional Premium Bundle and extended value software products provide advanced capabilities, including instant cloning, data replication, application-aware backup and recovery, volume encryption, and data retention.</p>
<p>Software included in ONTAP 9 Base Bundle</p>	<p>The Base Bundle includes the following NetApp technologies:</p> <ul style="list-style-type: none"><li>• Storage protocols: all supported data protocol licenses (FC, FCoE, iSCSI, NFS, pNFS, CIFS/SMB)</li><li>• Efficiency: NetApp FlexVol®, deduplication, compression, compaction, and thin provisioning</li><li>• Availability: multipath I/O</li><li>• Data protection: RAID-TEC™, RAID DP®, and Snapshot</li><li>• Performance: adaptive QoS</li><li>• Scalable NAS container: FlexGroup</li><li>• Management: OnCommand System Manager and OnCommand Unified Manager</li></ul>
<p>Software included in ONTAP 9 Premium Bundle (optional)</p>	<p>To add capabilities to the Base Bundle, the optional Premium Bundle includes the following NetApp technologies:</p> <ul style="list-style-type: none"><li>• <b>FlexClone®</b>: instant virtual copies with file and volume granularity</li><li>• <b>SnapMirror®</b>: integrated data replication technology for simple, efficient, flexible disaster recovery and backup use cases</li><li>• <b>SnapRestore®</b>: restore entire Snapshot copies in seconds</li><li>• <b>SnapCenter®</b>: unified, scalable software and plug-in suite for application-consistent data protection and clone management</li><li>• <b>SnapManager®</b> suite: application- and virtual machine-aware backup and cloning</li></ul> <p>See <a href="http://NetApp.com">NetApp.com</a> for information about additional software available from NetApp.</p>
<p>Extended value software (optional)</p>	<p>Separate optional software, beyond the Base Bundle and Premium Bundle, is also available:</p> <ul style="list-style-type: none"><li>• <b>OnCommand Insight</b>: infrastructure analytics platform that provides optimization, troubleshooting, monitoring, and cost analysis of your IT infrastructure</li><li>• <b>SnapLock®</b>: compliance software for write once, read many (WORM)-protected file data</li><li>• <b>Volume Encryption</b>: granular, volume-level data-at-rest encryption</li><li>• <b>FlexArray</b>: virtualization of existing third-party storage arrays into an ONTAP environment to leverage the array storage capacity behind a NetApp FAS</li></ul>