



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: 475601

Doc Description: Hardware, Software, Installation, and Support

Proc Type: Central Purchase Order

Date Issued	Solicitation Closes	Solicitation No	Version
2018-09-12	2018-09-26 13:30:00	CRFQ 1500 AGO1900000001	1

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:

ePlus Technology, inc.
 13595 Dulles Technology Drive,
 Herndon, VA 20171
 Tel: 703-984-8400

RECEIVED
 2018 SEP 26 AM 9:17
 WV PURCHASING
 DIVISION

FOR INFORMATION CONTACT THE BUYER

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

Signature X

(Steve Menarini, SVP) FEIN #

54-1904151

DATE

9/26/2018

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

ADDITIONAL INFORMATION:

The West Virginia Purchasing Division is soliciting bids on behalf of The Office of the West Virginia Attorney General to establish a contract for the one time purchase of NetApp or equal Storage Area Network (SAN) Hardware, Software, Installation, and Support per the terms and conditions and specifications as attached.

INVOICE TO		SHIP TO	
ATTORNEY GENERAL'S OFFICE 1900 KANAWHA BLVD E		ATTORNEY GENERALS OFFICE 1900 KANAWHA BLVD E	
CHARLESTON	WV25305	CHARLESTON	WV 25305
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
1	Please see the attached Exhibit A Pricing Page	1.00000	LS		

Comm Code	Manufacturer	Specification	Model #
71151106			

Extended Description :

Per Specifications in 3.1 of CRFQ AGO1900000001.

AGO1900000001	Document Phase Draft	Document Description Hardware, Software, Installation, and Support	Page 3 of 3
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ADDITIONAL TERMS AND CONDITIONS

See attached document(s) for additional Terms and Conditions

INSTRUCTIONS TO VENDORS SUBMITTING BIDS

1. REVIEW DOCUMENTS THOROUGHLY: The attached documents contain a solicitation for bids. Please read these instructions and all documents attached in their entirety. These instructions provide critical information about requirements that if overlooked could lead to disqualification of a Vendor's bid. All bids must be submitted in accordance with the provisions contained in these instructions and the Solicitation. Failure to do so may result in disqualification of Vendor's bid.

2. MANDATORY TERMS: The Solicitation may contain mandatory provisions identified by the use of the words "must," "will," and "shall." Failure to comply with a mandatory term in the Solicitation will result in bid disqualification.

3. PREBID MEETING: The item identified below shall apply to this Solicitation.

A pre-bid meeting will not be held prior to bid opening

A **NON-MANDATORY PRE-BID** meeting will be held at the following place and time:

A **MANDATORY PRE-BID** meeting will be held at the following place and time:

All Vendors submitting a bid must attend the mandatory pre-bid meeting. Failure to attend the mandatory pre-bid meeting shall result in disqualification of the Vendor's bid. No one person attending the pre-bid meeting may represent more than one Vendor.

An attendance sheet provided at the pre-bid meeting shall serve as the official document verifying attendance. The State will not accept any other form of proof or documentation to verify attendance. Any person attending the pre-bid meeting on behalf of a Vendor must list on the attendance sheet his or her name and the name of the Vendor he or she is representing.

Additionally, the person attending the pre-bid meeting should include the Vendor's E-Mail address, phone number, and Fax number on the attendance sheet. It is the Vendor's responsibility to locate the attendance sheet and provide the required information. Failure to complete the attendance sheet as required may result in disqualification of Vendor's bid.

All Vendors should arrive prior to the starting time for the pre-bid. Vendors who arrive after the starting time but prior to the end of the pre-bid will be permitted to sign in, but are charged with knowing all matters discussed at the pre-bid.

Questions submitted at least five business days prior to a scheduled pre-bid will be discussed at the pre-bid meeting if possible. Any discussions or answers to questions at the pre-bid meeting are preliminary in nature and are non-binding. Official and binding answers to questions will be published in a written addendum to the Solicitation prior to bid opening.

4. VENDOR QUESTION DEADLINE: Vendors may submit questions relating to this Solicitation to the Purchasing Division. Questions must be submitted in writing. All questions must be submitted on or before the date listed below and to the address listed below in order to be considered. A written response will be published in a Solicitation addendum if a response is possible and appropriate. Non-written discussions, conversations, or questions and answers regarding this Solicitation are preliminary in nature and are nonbinding.

Submitted e-mails should have solicitation number in the subject line.

Question Submission Deadline: September 19, 2018 at 9:00 AM (EST)

Submit Questions to: Jessica Chambers

2019 Washington Street, East

Charleston, WV 25305

Fax: (304) 558-4115 (Vendors should not use this fax number for bid submission)

Email: Jessica.S.Chambers@wv.gov

5. VERBAL COMMUNICATION: Any verbal communication between the Vendor and any State personnel is not binding, including verbal communication at the mandatory pre-bid conference. Only information issued in writing and added to the Solicitation by an official written addendum by the Purchasing Division is binding.

6. BID SUBMISSION: All bids must be submitted electronically through wvOASIS or signed and delivered by the Vendor to the Purchasing Division at the address listed below on or before the date and time of the bid opening. Any bid received by the Purchasing Division staff is considered to be in the possession of the Purchasing Division and will not be returned for any reason. The Purchasing Division will not accept bids, modification of bids, or addendum acknowledgment forms via e-mail. Acceptable delivery methods include electronic submission via wvOASIS, hand delivery, delivery by courier, or facsimile.

The bid delivery address is:
Department of Administration, Purchasing Division
2019 Washington Street East
Charleston, WV 25305-0130

A bid that is not submitted electronically through wvOASIS should contain the information listed below on the face of the envelope or the bid may be rejected by the Purchasing Division.:

SEALED BID:

BUYER: Jessica Chambers
SOLICITATION NO.: CRFQ AGO1900000001
BID OPENING DATE: 9/26/2018
BID OPENING TIME: 1:30 PM (EST)
FAX NUMBER: (304)558-3970

The Purchasing Division may prohibit the submission of bids electronically through wvOASIS at its sole discretion. Such a prohibition will be contained and communicated in the wvOASIS system resulting in the Vendor's inability to submit bids through wvOASIS. Submission of a response to an Expression or Interest or Request for Proposal is not permitted in wvOASIS.

For Request For Proposal ("RFP") Responses Only: In the event that Vendor is responding to a request for proposal, the Vendor shall submit one original technical and one original cost proposal plus _____ convenience copies of each to the Purchasing Division at the address shown above. Additionally, the Vendor should identify the bid type as either a technical or cost proposal on the face of each bid envelope submitted in response to a request for proposal as follows:

BID TYPE: (This only applies to CRFP)

- Technical
 Cost

7. BID OPENING: Bids submitted in response to this Solicitation will be opened at the location identified below on the date and time listed below. Delivery of a bid after the bid opening date and time will result in bid disqualification. For purposes of this Solicitation, a bid is considered delivered when confirmation of delivery is provided by wvOASIS (in the case of electronic submission) or when the bid is time stamped by the official Purchasing Division time clock (in the case of hand delivery).

Bid Opening Date and Time: September 26, 2018 at 1:30 PM (EST)

Bid Opening Location: Department of Administration, Purchasing Division
2019 Washington Street East
Charleston, WV 25305-0130

Revised 06/08/2018

8. ADDENDUM ACKNOWLEDGEMENT: Changes or revisions to this Solicitation will be made by an official written addendum issued by the Purchasing Division. Vendor should acknowledge receipt of all addenda issued with this Solicitation by completing an Addendum Acknowledgment Form, a copy of which is included herewith. Failure to acknowledge addenda may result in bid disqualification. The addendum acknowledgement should be submitted with the bid to expedite document processing.

9. BID FORMATTING: Vendor should type or electronically enter the information onto its bid to prevent errors in the evaluation. Failure to type or electronically enter the information may result in bid disqualification.

10. ALTERNATE MODEL OR BRAND: Unless the box below is checked, any model, brand, or specification listed in this Solicitation establishes the acceptable level of quality only and is not intended to reflect a preference for, or in any way favor, a particular brand or vendor. Vendors may bid alternates to a listed model or brand provided that the alternate is at least equal to the model or brand and complies with the required specifications. The equality of any alternate being bid shall be determined by the State at its sole discretion. Any Vendor bidding an alternate model or brand should clearly identify the alternate items in its bid and should include manufacturer's specifications, industry literature, and/or any other relevant documentation demonstrating the equality of the alternate items. Failure to provide information for alternate items may be grounds for rejection of a Vendor's bid.

This Solicitation is based upon a standardized commodity established under W. Va. Code § 5A-3-61. Vendors are expected to bid the standardized commodity identified. Failure to bid the standardized commodity will result in your firm's bid being rejected.

11. EXCEPTIONS AND CLARIFICATIONS: The Solicitation contains the specifications that shall form the basis of a contractual agreement. Vendor shall clearly mark any exceptions, clarifications, or other proposed modifications in its bid. Exceptions to, clarifications of, or modifications of a requirement or term and condition of the Solicitation may result in bid disqualification.

12. COMMUNICATION LIMITATIONS: In accordance with West Virginia Code of State Rules §148-1-6.6, communication with the State of West Virginia or any of its employees regarding this Solicitation during the solicitation, bid, evaluation or award periods, except through the Purchasing Division, is strictly prohibited without prior Purchasing Division approval. Purchasing Division approval for such communication is implied for all agency delegated and exempt purchases.

13. REGISTRATION: Prior to Contract award, the apparent successful Vendor must be properly registered with the West Virginia Purchasing Division and must have paid the \$125 fee, if applicable.

14. UNIT PRICE: Unit prices shall prevail in cases of a discrepancy in the Vendor's bid.

15. PREFERENCE: Vendor Preference may be requested in purchases of motor vehicles or construction and maintenance equipment and machinery used in highway and other infrastructure projects. Any request for preference must be submitted in writing with the bid, must specifically identify the preference requested with reference to the applicable subsection of West Virginia Code § 5A-3-37, and should include with the bid any information necessary to evaluate and confirm the applicability of the requested preference. A request form to help facilitate the request can be found at:
<http://www.state.wv.us/admin/purchase/vrc/Venpref.pdf>.

15A. RECIPROCAL PREFERENCE: The State of West Virginia applies a reciprocal preference to all solicitations for commodities and printing in accordance with W. Va. Code § 5A-3-37(b). In effect, non-resident vendors receiving a preference in their home states, will see that same preference granted to West Virginia resident vendors bidding against them in West Virginia. A request form to help facilitate the request can be found at:
<http://www.state.wv.us/admin/purchase/vrc/Venpref.pdf>.

16. SMALL, WOMEN-OWNED, OR MINORITY-OWNED BUSINESSES: For any solicitations publicly advertised for bid, in accordance with West Virginia Code §5A-3-37(a)(7) and W. Va. CSR § 148-22-9, any non-resident vendor certified as a small, women-owned, or minority-owned business under W. Va. CSR § 148-22-9 shall be provided the same preference made available to any resident vendor. Any non-resident small, women-owned, or minority-owned business must identify itself as such in writing, must submit that writing to the Purchasing Division with its bid, and must be properly certified under W. Va. CSR § 148-22-9 prior to contract award to receive the preferences made available to resident vendors. Preference for a non-resident small, women-owned, or minority owned business shall be applied in accordance with W. Va. CSR § 148-22-9.

17. WAIVER OF MINOR IRREGULARITIES: The Director reserves the right to waive minor irregularities in bids or specifications in accordance with West Virginia Code of State Rules § 148-1-4.6.

18. ELECTRONIC FILE ACCESS RESTRICTIONS: Vendor must ensure that its submission in wvOASIS can be accessed and viewed by the Purchasing Division staff immediately upon bid opening. The Purchasing Division will consider any file that cannot be immediately accessed and viewed at the time of the bid opening (such as, encrypted files, password protected files, or incompatible files) to be blank or incomplete as context requires, and are therefore unacceptable. A vendor will not be permitted to unencrypt files, remove password protections, or resubmit documents after bid opening to make a file viewable if those documents are required with the bid. A Vendor may be required to provide document passwords or remove access restrictions to allow the Purchasing Division to print or electronically save documents provided that those documents are viewable by the Purchasing Division prior to obtaining the password or removing the access restriction.

19. NON-RESPONSIBLE: The Purchasing Division Director reserves the right to reject the bid of any vendor as Non-Responsible in accordance with W. Va. Code of State Rules § 148-1-5.3, when the Director determines that the vendor submitting the bid does not have the capability to fully perform, or lacks the integrity and reliability to assure good-faith performance.”

20. ACCEPTANCE/REJECTION: The State may accept or reject any bid in whole, or in part in accordance with W. Va. Code of State Rules § 148-1-4.5. and § 148-1-6.4.b.”

21. YOUR SUBMISSION IS A PUBLIC DOCUMENT: Vendor’s entire response to the Solicitation and the resulting Contract are public documents. As public documents, they will be disclosed to the public following the bid/proposal opening or award of the contract, as required by the competitive bidding laws of West Virginia Code §§ 5A-3-1 et seq., 5-22-1 et seq., and 5G-1-1 et seq. and the Freedom of Information Act West Virginia Code §§ 29B-1-1 et seq.

DO NOT SUBMIT MATERIAL YOU CONSIDER TO BE CONFIDENTIAL, A TRADE SECRET, OR OTHERWISE NOT SUBJECT TO PUBLIC DISCLOSURE.

Submission of any bid, proposal, or other document to the Purchasing Division constitutes your explicit consent to the subsequent public disclosure of the bid, proposal, or document. The Purchasing Division will disclose any document labeled “confidential,” “proprietary,” “trade secret,” “private,” or labeled with any other claim against public disclosure of the documents, to include any “trade secrets” as defined by West Virginia Code § 47-22-1 et seq. All submissions are subject to public disclosure without notice.

22. INTERESTED PARTY DISCLOSURE: West Virginia Code § 6D-1-2 requires that the vendor submit to the Purchasing Division a disclosure of interested parties to the contract for all contracts with an actual or estimated value of at least \$1 Million. That disclosure must occur on the form prescribed and approved by the WV Ethics Commission prior to contract award. A copy of that form is included with this solicitation or can be obtained from the WV Ethics Commission. This requirement does not apply to publicly traded companies listed on a national or international stock exchange. A more detailed definition of interested parties can be obtained from the form referenced above.

23. WITH THE BID REQUIREMENTS: In instances where these specifications require documentation or other information with the bid, and a vendor fails to provide it with the bid, the Director of the Purchasing Division reserves the right to request those items after bid opening and prior to contract award pursuant to the authority to waive minor irregularities in bids or specifications under W. Va. CSR § 148-1-4.6. This authority does not apply to instances where state law mandates receipt with the bid.

NOTE: Please see ePlus Exceptions at the end of this response.

GENERAL TERMS AND CONDITIONS:

- 1. CONTRACTUAL AGREEMENT:** Issuance of a Award Document signed by the Purchasing Division Director, or his designee, and approved as to form by the Attorney General's office constitutes acceptance of this Contract made by and between the State of West Virginia and the Vendor. Vendor's signature on its bid signifies Vendor's agreement to be bound by and accept the terms and conditions contained in this Contract.
- 2. DEFINITIONS:** As used in this Solicitation/Contract, the following terms shall have the meanings attributed to them below. Additional definitions may be found in the specifications included with this Solicitation/Contract.
 - 2.1. "Agency" or "Agencies"** means the agency, board, commission, or other entity of the State of West Virginia that is identified on the first page of the Solicitation or any other public entity seeking to procure goods or services under this Contract.
 - 2.2. "Bid" or "Proposal"** means the vendors submitted response to this solicitation.
 - 2.3. "Contract"** means the binding agreement that is entered into between the State and the Vendor to provide the goods or services requested in the Solicitation.
 - 2.4. "Director"** means the Director of the West Virginia Department of Administration, Purchasing Division.
 - 2.5. "Purchasing Division"** means the West Virginia Department of Administration, Purchasing Division.
 - 2.6. "Award Document"** means the document signed by the Agency and the Purchasing Division, and approved as to form by the Attorney General, that identifies the Vendor as the contract holder.
 - 2.7. "Solicitation"** means the official notice of an opportunity to supply the State with goods or services that is published by the Purchasing Division.
 - 2.8. "State"** means the State of West Virginia and/or any of its agencies, commissions, boards, etc. as context requires.
 - 2.9. "Vendor" or "Vendors"** means any entity submitting a bid in response to the Solicitation, the entity that has been selected as the lowest responsible bidder, or the entity that has been awarded the Contract as context requires.

3. CONTRACT TERM; RENEWAL; EXTENSION: The term of this Contract shall be determined in accordance with the category that has been identified as applicable to this Contract below:

Term Contract

Initial Contract Term: This Contract becomes effective on _____ and extends for a period of _____ year(s).

Renewal Term: This Contract may be renewed upon the mutual written consent of the Agency, and the Vendor, with approval of the Purchasing Division and the Attorney General's office (Attorney General approval is as to form only). Any request for renewal should be delivered to the Agency and then submitted to the Purchasing Division thirty (30) days prior to the expiration date of the initial contract term or appropriate renewal term. A Contract renewal shall be in accordance with the terms and conditions of the original contract. Unless otherwise specified below, renewal of this Contract is limited to _____ successive one (1) year periods or multiple renewal periods of less than one year, provided that the multiple renewal periods do not exceed the total number of months available in all renewal years combined. Automatic renewal of this Contract is prohibited. Renewals must be approved by the Vendor, Agency, Purchasing Division and Attorney General's office (Attorney General approval is as to form only)

Alternate Renewal Term – This contract may be renewed for _____ successive _____ year periods or shorter periods provided that they do not exceed the total number of months contained in all available renewals. Automatic renewal of this Contract is prohibited. Renewals must be approved by the Vendor, Agency, Purchasing Division and Attorney General's office (Attorney General approval is as to form only)

Delivery Order Limitations: In the event that this contract permits delivery orders, a delivery order may only be issued during the time this Contract is in effect. Any delivery order issued within one year of the expiration of this Contract shall be effective for one year from the date the delivery order is issued. No delivery order may be extended beyond one year after this Contract has expired.

Fixed Period Contract: This Contract becomes effective upon Vendor's receipt of the notice to proceed and must be completed within _____ days.

Fixed Period Contract with Renewals: This Contract becomes effective upon Vendor's receipt of the notice to proceed and part of the Contract more fully described in the attached specifications must be completed within _____ days. Upon completion of the work covered by the preceding sentence, the vendor agrees that maintenance, monitoring, or warranty services will be provided for _____ year(s) thereafter.

One Time Purchase: The term of this Contract shall run from the issuance of the Award Document until all of the goods contracted for have been delivered, but in no event will this Contract extend for more than one fiscal year.

Other: See attached.

Revised 06/08/2018

4. NOTICE TO PROCEED: Vendor shall begin performance of this Contract immediately upon receiving notice to proceed unless otherwise instructed by the Agency. Unless otherwise specified, the fully executed Award Document will be considered notice to proceed.

5. QUANTITIES: The quantities required under this Contract shall be determined in accordance with the category that has been identified as applicable to this Contract below.

Open End Contract: Quantities listed in this Solicitation are approximations only, based on estimates supplied by the Agency. It is understood and agreed that the Contract shall cover the quantities actually ordered for delivery during the term of the Contract, whether more or less than the quantities shown.

Service: The scope of the service to be provided will be more clearly defined in the specifications included herewith.

Combined Service and Goods: The scope of the service and deliverable goods to be provided will be more clearly defined in the specifications included herewith.

One Time Purchase: This Contract is for the purchase of a set quantity of goods that are identified in the specifications included herewith. Once those items have been delivered, no additional goods may be procured under this Contract without an appropriate change order approved by the Vendor, Agency, Purchasing Division, and Attorney General's office.

6. EMERGENCY PURCHASES: The Purchasing Division Director may authorize the Agency to purchase goods or services in the open market that Vendor would otherwise provide under this Contract if those goods or services are for immediate or expedited delivery in an emergency. Emergencies shall include, but are not limited to, delays in transportation or an unanticipated increase in the volume of work. An emergency purchase in the open market, approved by the Purchasing Division Director, shall not constitute a breach of this Contract and shall not entitle the Vendor to any form of compensation or damages. This provision does not excuse the State from fulfilling its obligations under a One Time Purchase contract.

7. REQUIRED DOCUMENTS: All of the items checked below must be provided to the Purchasing Division by the Vendor as specified below.

BID BOND (Construction Only): Pursuant to the requirements contained in W. Va. Code § 5-22-1(c), All Vendors submitting a bid on a construction project shall furnish a valid bid bond in the amount of five percent (5%) of the total amount of the bid protecting the State of West Virginia. The bid bond must be submitted with the bid.

PERFORMANCE BOND: The apparent successful Vendor shall provide a performance bond in the amount of 100% of the contract. The performance bond must be received by the Purchasing Division prior to Contract award.

LABOR/MATERIAL PAYMENT BOND: The apparent successful Vendor shall provide a labor/material payment bond in the amount of 100% of the Contract value. The labor/material payment bond must be delivered to the Purchasing Division prior to Contract award.

In lieu of the Bid Bond, Performance Bond, and Labor/Material Payment Bond, the Vendor may provide certified checks, cashier's checks, or irrevocable letters of credit. Any certified check, cashier's check, or irrevocable letter of credit provided in lieu of a bond must be of the same amount and delivered on the same schedule as the bond it replaces. A letter of credit submitted in lieu of a performance and labor/material payment bond will only be allowed for projects under \$100,000. Personal or business checks are not acceptable. Notwithstanding the foregoing, West Virginia Code § 5-22-1 (d) mandates that a vendor provide a performance and labor/material payment bond for construction projects. Accordingly, substitutions for the performance and labor/material payment bonds for construction projects is not permitted.

MAINTENANCE BOND: The apparent successful Vendor shall provide a two (2) year maintenance bond covering the roofing system. The maintenance bond must be issued and delivered to the Purchasing Division prior to Contract award.

LICENSE(S) / CERTIFICATIONS / PERMITS: In addition to anything required under the Section of the General Terms and Conditions entitled Licensing, the apparent successful Vendor shall furnish proof of the following licenses, certifications, and/or permits prior to Contract award, in a form acceptable to the Purchasing Division.

The apparent successful Vendor shall also furnish proof of any additional licenses or certifications contained in the specifications prior to Contract award regardless of whether or not that requirement is listed above.

Revised 06/08/2018

8. INSURANCE: The apparent successful Vendor shall furnish proof of the insurance identified by a checkmark below and must include the State as an additional insured on each policy prior to Contract award. The insurance coverages identified below must be maintained throughout the life of this contract. Thirty (30) days prior to the expiration of the insurance policies, Vendor shall provide the Agency with proof that the insurance mandated herein has been continued. Vendor must also provide Agency with immediate notice of any changes in its insurance policies, including but not limited to, policy cancellation, policy reduction, or change in insurers. The apparent successful Vendor shall also furnish proof of any additional insurance requirements contained in the specifications prior to Contract award regardless of whether or not that insurance requirement is listed in this section.

Vendor must maintain:

Commercial General Liability Insurance in at least an amount of: \$1,000,000.00 per occurrence.

Automobile Liability Insurance in at least an amount of: \$250,000.00 per occurrence.

Professional/Malpractice/Errors and Omission Insurance in at least an amount of: _____ per occurrence.

Commercial Crime and Third Party Fidelity Insurance in an amount of: _____ per occurrence.

Cyber Liability Insurance in an amount of: _____ per occurrence.

Builders Risk Insurance in an amount equal to 100% of the amount of the Contract.

Pollution Insurance in an amount of: _____ per occurrence.

Aircraft Liability in an amount of: _____ per occurrence.

Revised 06/08/2018

Notwithstanding anything contained in this section to the contrary, the Director of the Purchasing Division reserves the right to waive the requirement that the State be named as an additional insured on one or more of the Vendor's insurance policies if the Director finds that doing so is in the State's best interest.

9. WORKERS' COMPENSATION INSURANCE: The apparent successful Vendor shall comply with laws relating to workers compensation, shall maintain workers' compensation insurance when required, and shall furnish proof of workers' compensation insurance upon request.

10. [Reserved]

11. LIQUIDATED DAMAGES: This clause shall in no way be considered exclusive and shall not limit the State or Agency's right to pursue any other available remedy. Vendor shall pay liquidated damages in the amount specified below or as described in the specifications:

_____ for _____

Liquidated Damages Contained in the Specifications

12. ACCEPTANCE: Vendor's signature on its bid, or on the certification and signature page, constitutes an offer to the State that cannot be unilaterally withdrawn, signifies that the product or service proposed by vendor meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise indicated, and signifies acceptance of the terms and conditions contained in the Solicitation unless otherwise indicated.

13. PRICING: The pricing set forth herein is firm for the life of the Contract, unless specified elsewhere within this Solicitation/Contract by the State. A Vendor's inclusion of price adjustment provisions in its bid, without an express authorization from the State in the Solicitation to do so, may result in bid disqualification.

14. PAYMENT IN ARREARS: Payment in advance is prohibited under this Contract. Payment may only be made after the delivery and acceptance of goods or services. The Vendor shall submit invoices, in arrears.

15. PAYMENT METHODS: Vendor must accept payment by electronic funds transfer and P-Card. (The State of West Virginia's Purchasing Card program, administered under contract by a banking institution, processes payment for goods and services through state designated credit cards.)

16. TAXES: The Vendor shall pay any applicable sales, use, personal property or any other taxes arising out of this Contract and the transactions contemplated thereby. The State of West Virginia is exempt from federal and state taxes and will not pay or reimburse such taxes.

17. ADDITIONAL FEES: Vendor is not permitted to charge additional fees or assess additional charges that were not either expressly provided for in the solicitation published by the State of West Virginia or included in the unit price or lump sum bid amount that Vendor is required by the solicitation to provide. Including such fees or charges as notes to the solicitation may result in rejection of vendor's bid. Requesting such fees or charges be paid after the contract has been awarded may result in cancellation of the contract.

18. FUNDING: This Contract shall continue for the term stated herein, contingent upon funds being appropriated by the Legislature or otherwise being made available. In the event funds are not appropriated or otherwise made available, this Contract becomes void and of no effect beginning on July 1 of the fiscal year for which funding has not been appropriated or otherwise made available.

19. CANCELLATION: The Purchasing Division Director reserves the right to cancel this Contract immediately upon written notice to the vendor if the materials or workmanship supplied do not conform to the specifications contained in the Contract. The Purchasing Division Director may also cancel any purchase or Contract upon 30 days written notice to the Vendor in accordance with West Virginia Code of State Rules § 148-1-5.2.b.

20. TIME: Time is of the essence with regard to all matters of time and performance in this Contract.

21. APPLICABLE LAW: This Contract is governed by and interpreted under West Virginia law without giving effect to its choice of law principles. Any information provided in specification manuals, or any other source, verbal or written, which contradicts or violates the West Virginia Constitution, West Virginia Code or West Virginia Code of State Rules is void and of no effect.

22. COMPLIANCE WITH LAWS: Vendor shall comply with all applicable federal, state, and local laws, regulations and ordinances. By submitting a bid, Vendor acknowledges that it has reviewed, understands, and will comply with all applicable laws, regulations, and ordinances.

SUBCONTRACTOR COMPLIANCE: Vendor shall notify all subcontractors providing commodities or services related to this Contract that as subcontractors, they too are required to comply with all applicable laws, regulations, and ordinances. Notification under this provision must occur prior to the performance of any work under the contract by the subcontractor.

23. ARBITRATION: Any references made to arbitration contained in this Contract, Vendor's bid, or in any American Institute of Architects documents pertaining to this Contract are hereby deleted, void, and of no effect.

24. MODIFICATIONS: This writing is the parties' final expression of intent. Notwithstanding anything contained in this Contract to the contrary no modification of this Contract shall be binding without mutual written consent of the Agency, and the Vendor, with approval of the Purchasing Division and the Attorney General's office (Attorney General approval is as to form only). Any change to existing contracts that adds work or changes contract cost, and were not included in the original contract, must be approved by the Purchasing Division and the Attorney General's Office (as to form) prior to the implementation of the change or commencement of work affected by the change.

25. WAIVER: The failure of either party to insist upon a strict performance of any of the terms or provision of this Contract, or to exercise any option, right, or remedy herein contained, shall not be construed as a waiver or a relinquishment for the future of such term, provision, option, right, or remedy, but the same shall continue in full force and effect. Any waiver must be expressly stated in writing and signed by the waiving party.

26. SUBSEQUENT FORMS: The terms and conditions contained in this Contract shall supersede any and all subsequent terms and conditions which may appear on any form documents submitted by Vendor to the Agency or Purchasing Division such as price lists, order forms, invoices, sales agreements, or maintenance agreements, and includes internet websites or other electronic documents. Acceptance or use of Vendor's forms does not constitute acceptance of the terms and conditions contained thereon.

27. ASSIGNMENT: Neither this Contract nor any monies due, or to become due hereunder, may be assigned by the Vendor without the express written consent of the Agency, the Purchasing Division, the Attorney General's office (as to form only), and any other government agency or office that may be required to approve such assignments.

28. WARRANTY: The Vendor expressly warrants that the goods and/or services covered by this Contract will: (a) conform to the specifications, drawings, samples, or other description furnished or specified by the Agency; (b) be merchantable and fit for the purpose intended; and (c) be free from defect in material and workmanship.

29. STATE EMPLOYEES: State employees are not permitted to utilize this Contract for personal use and the Vendor is prohibited from permitting or facilitating the same.

30. PRIVACY, SECURITY, AND CONFIDENTIALITY: The Vendor agrees that it will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the Agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the Agency's policies, procedures, and rules. Vendor further agrees to comply with the Confidentiality Policies and Information Security Accountability Requirements, set forth in <http://www.state.wv.us/admin/purchasc/privacy/default.html>.

31. YOUR SUBMISSION IS A PUBLIC DOCUMENT: Vendor's entire response to the Solicitation and the resulting Contract are public documents. As public documents, they will be disclosed to the public following the bid/proposal opening or award of the contract, as required by the competitive bidding laws of West Virginia Code §§ 5A-3-1 et seq., 5-22-1 et seq., and 5G-1-1 et seq. and the Freedom of Information Act West Virginia Code §§ 29B-1-1 et seq.

DO NOT SUBMIT MATERIAL YOU CONSIDER TO BE CONFIDENTIAL, A TRADE SECRET, OR OTHERWISE NOT SUBJECT TO PUBLIC DISCLOSURE.

Submission of any bid, proposal, or other document to the Purchasing Division constitutes your explicit consent to the subsequent public disclosure of the bid, proposal, or document. The Purchasing Division will disclose any document labeled "confidential," "proprietary," "trade secret," "private," or labeled with any other claim against public disclosure of the documents, to include any "trade secrets" as defined by West Virginia Code § 47-22-1 et seq. All submissions are subject to public disclosure without notice.

32. LICENSING: In accordance with West Virginia Code of State Rules § 148-1-6.1.e, Vendor must be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, West Virginia Insurance Commission, or any other state agency or political subdivision. Obligations related to political subdivisions may include, but are not limited to, business licensing, business and occupation taxes, inspection compliance, permitting, etc. Upon request, the Vendor must provide all necessary releases to obtain information to enable the Purchasing Division Director or the Agency to verify that the Vendor is licensed and in good standing with the above entities.

SUBCONTRACTOR COMPLIANCE: Vendor shall notify all subcontractors providing commodities or services related to this Contract that as subcontractors, they too are required to be licensed, in good standing, and up-to-date on all state and local obligations as described in this section. Obligations related to political subdivisions may include, but are not limited to, business licensing, business and occupation taxes, inspection compliance, permitting, etc. Notification under this provision must occur prior to the performance of any work under the contract by the subcontractor.

33. ANTITRUST: In submitting a bid to, signing a contract with, or accepting a Award Document from any agency of the State of West Virginia, the Vendor agrees to convey, sell, assign, or transfer to the State of West Virginia all rights, title, and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the State of West Virginia for price fixing and/or unreasonable restraints of trade relating to the particular commodities or services purchased or acquired by the State of West Virginia. Such assignment shall be made and become effective at the time the purchasing agency tenders the initial payment to Vendor.

34. VENDOR CERTIFICATIONS: By signing its bid or entering into this Contract, Vendor certifies (1) that its bid or offer was made without prior understanding, agreement, or connection with any corporation, firm, limited liability company, partnership, person or entity submitting a bid or offer for the same material, supplies, equipment or services; (2) that its bid or offer is in all respects fair and without collusion or fraud; (3) that this Contract is accepted or entered into without any prior understanding, agreement, or connection to any other entity that could be considered a violation of law; and (4) that it has reviewed this Solicitation in its entirety; understands the requirements, terms and conditions, and other information contained herein.

Vendor's signature on its bid or offer also affirms that neither it nor its representatives have any interest, nor shall acquire any interest, direct or indirect, which would compromise the performance of its services hereunder. Any such interests shall be promptly presented in detail to the Agency. The individual signing this bid or offer on behalf of Vendor certifies that he or she is authorized by the Vendor to execute this bid or offer or any documents related thereto on Vendor's behalf; that he or she is authorized to bind the Vendor in a contractual relationship; and that, to the best of his or her knowledge, the Vendor has properly registered with any State agency that may require registration.

35. VENDOR RELATIONSHIP: The relationship of the Vendor to the State shall be that of an independent contractor and no principal-agent relationship or employer-employee relationship is contemplated or created by this Contract. The Vendor as an independent contractor is solely liable for the acts and omissions of its employees and agents. Vendor shall be responsible for selecting, supervising, and compensating any and all individuals employed pursuant to the terms of this Solicitation and resulting contract. Neither the Vendor, nor any employees or subcontractors of the Vendor, shall be deemed to be employees of the State for any purpose whatsoever. Vendor shall be exclusively responsible for payment of employees and contractors for all wages and salaries, taxes, withholding payments, penalties, fees, fringe benefits, professional liability insurance premiums, contributions to insurance and pension, or other deferred compensation plans, including but not limited to, Workers' Compensation and Social Security obligations, licensing fees, etc. and the filing of all necessary documents, forms, and returns pertinent to all of the foregoing.

Vendor shall hold harmless the State, and shall provide the State and Agency with a defense against any and all claims including, but not limited to, the foregoing payments, withholdings, contributions, taxes, Social Security taxes, and employer income tax returns.

36. INDEMNIFICATION: The Vendor agrees to indemnify, defend, and hold harmless the State and the Agency, their officers, and employees from and against: (1) Any claims or losses for services rendered by any subcontractor, person, or firm performing or supplying services, materials, or supplies in connection with the performance of the Contract; (2) Any claims or losses resulting to any person or entity injured or damaged by the Vendor, its officers, employees, or subcontractors by the publication, translation, reproduction, delivery, performance, use, or disposition of any data used under the Contract in a manner not authorized by the Contract, or by Federal or State statutes or regulations; and (3) Any failure of the Vendor, its officers, employees, or subcontractors to observe State and Federal laws including, but not limited to, labor and wage and hour laws.

37. PURCHASING AFFIDAVIT: In accordance with West Virginia Code §§ 5A-3-10a and 5-22-1(i), the State is prohibited from awarding a contract to any bidder that owes a debt to the State or a political subdivision of the State, Vendors are required to sign, notarize, and submit the Purchasing Affidavit to the Purchasing Division affirming under oath that it is not in default on any monetary obligation owed to the state or a political subdivision of the state.

38. ADDITIONAL AGENCY AND LOCAL GOVERNMENT USE: This Contract may be utilized by other agencies, spending units, and political subdivisions of the State of West Virginia; county, municipal, and other local government bodies; and school districts ("Other Government Entities"), provided that both the Other Government Entity and the Vendor agree. Any extension of this Contract to the aforementioned Other Government Entities must be on the same prices, terms, and conditions as those offered and agreed to in this Contract, provided that such extension is in compliance with the applicable laws, rules, and ordinances of the Other Government Entity. A refusal to extend this Contract to the Other Government Entities shall not impact or influence the award of this Contract in any manner.

39. CONFLICT OF INTEREST: Vendor, its officers or members or employees, shall not presently have or acquire an interest, direct or indirect, which would conflict with or compromise the performance of its obligations hereunder. Vendor shall periodically inquire of its officers, members and employees to ensure that a conflict of interest does not arise. Any conflict of interest discovered shall be promptly presented in detail to the Agency.

40. REPORTS: Vendor shall provide the Agency and/or the Purchasing Division with the following reports identified by a checked box below:

Such reports as the Agency and/or the Purchasing Division may request. Requested reports may include, but are not limited to, quantities purchased, agencies utilizing the contract, total contract expenditures by agency, etc.

Quarterly reports detailing the total quantity of purchases in units and dollars, along with a listing of purchases by agency. Quarterly reports should be delivered to the Purchasing Division via email at purchasing.requisitions@wv.gov.

41. BACKGROUND CHECK: In accordance with W. Va. Code § 15-2D-3, the Director of the Division of Protective Services shall require any service provider whose employees are regularly employed on the grounds or in the buildings of the Capitol complex or who have access to sensitive or critical information to submit to a fingerprint-based state and federal background inquiry through the state repository. The service provider is responsible for any costs associated with the fingerprint-based state and federal background inquiry.

After the contract for such services has been approved, but before any such employees are permitted to be on the grounds or in the buildings of the Capitol complex or have access to sensitive or critical information, the service provider shall submit a list of all persons who will be physically present and working at the Capitol complex to the Director of the Division of Protective Services for purposes of verifying compliance with this provision. The State reserves the right to prohibit a service provider's employees from accessing sensitive or critical information or to be present at the Capitol complex based upon results addressed from a criminal background check.

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Service providers should contact the West Virginia Division of Protective Services by phone at (304) 558-9911 for more information.

42. PREFERENCE FOR USE OF DOMESTIC STEEL PRODUCTS: Except when authorized by the Director of the Purchasing Division pursuant to W. Va. Code § 5A-3-56, no contractor may use or supply steel products for a State Contract Project other than those steel products made in the United States. A contractor who uses steel products in violation of this section may be subject to civil penalties pursuant to W. Va. Code § 5A-3-56. As used in this section:

- a. "State Contract Project" means any erection or construction of, or any addition to, alteration of or other improvement to any building or structure, including, but not limited to, roads or highways, or the installation of any heating or cooling or ventilating plants or other equipment, or the supply of and materials for such projects, pursuant to a contract with the State of West Virginia for which bids were solicited on or after June 6, 2001.
- b. "Steel Products" means products rolled, formed, shaped, drawn, extruded, forged, cast, fabricated or otherwise similarly processed, or processed by a combination of two or more or such operations, from steel made by the open heath, basic oxygen, electric furnace, Bessemer or other steel making process. The Purchasing Division Director may, in writing, authorize the use of foreign steel products if:
- c. The cost for each contract item used does not exceed one tenth of one percent (.1%) of the total contract cost or two thousand five hundred dollars (\$2,500.00), whichever is greater. For the purposes of this section, the cost is the value of the steel product as delivered to the project; or
- d. The Director of the Purchasing Division determines that specified steel materials are not produced in the United States in sufficient quantity or otherwise are not reasonably available to meet contract requirements.

43. PREFERENCE FOR USE OF DOMESTIC ALUMINUM, GLASS, AND STEEL: In Accordance with W. Va. Code § 5-19-1 et seq., and W. Va. CSR § 148-10-1 et seq., for every contract or subcontract, subject to the limitations contained herein, for the construction, reconstruction, alteration, repair, improvement or maintenance of public works or for the purchase of any item of machinery or equipment to be used at sites of public works, only domestic aluminum, glass or steel products shall be supplied unless the spending officer determines, in writing, after the receipt of offers or bids, (1) that the cost of domestic aluminum, glass or steel products is unreasonable or inconsistent with the public interest of the State of West Virginia, (2) that domestic aluminum, glass or steel products are not produced in sufficient quantities to meet the contract requirements, or (3) the available domestic aluminum, glass, or steel do not meet the contract specifications. This provision only applies to public works contracts awarded in an amount more than fifty thousand dollars (\$50,000) or public works contracts that require more than ten thousand pounds of steel products.

The cost of domestic aluminum, glass, or steel products may be unreasonable if the cost is more than twenty percent (20%) of the bid or offered price for foreign made aluminum, glass, or steel products. If the domestic aluminum, glass or steel products to be supplied or produced in a

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“substantial labor surplus area”, as defined by the United States Department of Labor, the cost of domestic aluminum, glass, or steel products may be unreasonable if the cost is more than thirty percent (30%) of the bid or offered price for foreign made aluminum, glass, or steel products. This preference shall be applied to an item of machinery or equipment, as indicated above, when the item is a single unit of equipment or machinery manufactured primarily of aluminum, glass or steel, is part of a public works contract and has the sole purpose or of being a permanent part of a single public works project. This provision does not apply to equipment or machinery purchased by a spending unit for use by that spending unit and not as part of a single public works project.

All bids and offers including domestic aluminum, glass or steel products that exceed bid or offer prices including foreign aluminum, glass or steel products after application of the preferences provided in this provision may be reduced to a price equal to or lower than the lowest bid or offer price for foreign aluminum, glass or steel products plus the applicable preference. If the reduced bid or offer prices are made in writing and supersede the prior bid or offer prices, all bids or offers, including the reduced bid or offer prices, will be reevaluated in accordance with this rule.

44. INTERESTED PARTY SUPPLEMENTAL DISCLOSURE: W. Va. Code § 6D-1-2 requires that for contracts with an actual or estimated value of at least \$1 million, the vendor must submit to the Agency a supplemental disclosure of interested parties reflecting any new or differing interested parties to the contract, which were not included in the original pre-award interested party disclosure, within 30 days following the completion or termination of the contract. A copy of that form is included with this solicitation or can be obtained from the WV Ethics Commission. This requirement does not apply to publicly traded companies listed on a national or international stock exchange. A more detailed definition of interested parties can be obtained from the form referenced above.

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.

(Name, Title)
Mark Carretta - Senior Account Executive

(Printed Name and Title)
323 North Shore Drive, Suite 350, Pittsburgh, PA 15212

(Address)
412-258-1697

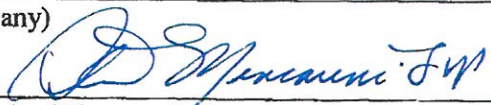
(Phone Number) / (Fax Number)
mcarretta@eplus.com

(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.

ePlus Technology, inc.

(Company)



(Authorized Signature) (Representative Name, Title)

Steve Menclarini, Senior VP

(Printed Name and Title of Authorized Representative)

9/26/2018

(Date)

703-984-8400 703-984-8600

(Phone Number) (Fax Number)

REQUEST FOR QUOTATION
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NetApp or equal Storage Area Network Hardware, Software, Installation, and Support

SPECIFICATIONS

1. **PURPOSE AND SCOPE:** The West Virginia Purchasing Division is soliciting bids on behalf of The Office of the West Virginia Attorney General to establish a contract for the one time purchase of NetApp or equal Storage Area Network (SAN) Hardware, Software, Installation, and Support.

Current Operating Environment:

The Agency currently has primary and secondary SAN sites in Charleston, WV and a disaster recovery SAN site in Sutton, WV. The Agency wishes to keep the storage locations the same but migrate all data from the current Storage Area Network to a completely new Storage Area Network. Current SAN consists of three NetApp DS4243 Storage Arrays. Primary, secondary, and disaster recovery sites must be able to communicate to each other over a wide area network and migration services must be included in the bid. All items and parts bid must be in brand new condition.

Manufacturer components must be listed in the most recently published Gartner Leader tier for general-purpose disk arrays.

IF BIDDING AN ALTERNATE, VENDOR SHOULD INCLUDE A DATA SHEET ON THE BID ITEM(S). THE AGENCY RESERVES THE RIGHT TO REQUEST THIS INFORMATION FOR EVALUATION PURPOSES.

ANY ITEM BID OR RECEIVED THAT DOES NOT MEET THE MANDATORY SPECIFICATIONS WILL BE DISQUALIFIED OR RETURNED AT NO COST TO THE AGENCY.

2. **DEFINITIONS:** The terms listed below shall have the meanings assigned to them below. Additional definitions can be found in section 2 of the General Terms and Conditions.
- 2.1 "Alerts" stands for an email that is sent to notify of an event or alarm occurring.
 - 2.2 "CAT6" stands for Category 6 cabling.
 - 2.3 "CFO" stands for Cluster Fail Over.
 - 2.4 "Contract Item" means NetApp or equal Storage Area Network Hardware, Software, Installation, and Support as more fully described by these specifications. Manufacture components must be listed in the most recently

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NetApp or equal Storage Area Network Hardware, Software, Installation, and Support

published Gartner Leader tier for general-purpose disk arrays. See Exhibit A for a list of components.

- 2.5 **“Data Deduplication”** means a technique for eliminating duplicate copies of repeating data. The technique is used to improve storage utilization and can also be applied to network data transfers to reduce the number of bytes that must be sent.
- 2.6 **“FAS”** stands for Fabric-attached storage.
- 2.7 **“FC”** stands for Fibre Channel.
- 2.8 **“GB”** stands for Gigabyte.
- 2.9 **“Gbps”** stands for Gigabits per Second.
- 2.10 **“HDD”** stands for Hard Disk Drive.
- 2.11 **“iSCSI”** stands for Internet Small Computer System Interface.
- 2.12 **“M”** stands for meter.
- 2.13 **“Pricing Page”** means the pages, contained in wvOASIS or attached as Exhibit A, upon which Vendor should list its proposed price for the Contract Items in the manner requested.
- 2.14 **“RJ-45”** stands for the standard eight position eight contact connector used to terminate Ethernet cables.
- 2.15 **“SAN”** stands for Storage Area Network.
- 2.16 **“SAS”** stands for Serial attached small computer system interface.
- 2.17 **“Solicitation”** means the official notice of an opportunity to supply the State with goods or services that is published by the Purchasing Division.
- 2.18 **“SFP”** stands for Small Form-factor Pluggable
- 2.19 **“SFP +”** stands for Small Form-factor Pluggable at speeds over 4.25Gbps.
- 2.20 **“SSD”** stands for Solid-state disk.

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NetApp or equal Storage Area Network Hardware, Software, Installation, and Support

2.21 "TB" stands for Terabyte.

2.22 "VM" stands for virtual machine.

3. GENERAL REQUIREMENTS:

3.1 Mandatory Contract Item Requirements: Contract Item must meet or exceed the mandatory requirements listed below.

3.1.1 Storage Area Network Hardware, Software, Installation, and Support for primary, secondary, and disaster recovery storage sites.

3.1.1.1 Primary Site Storage must meet the following minimum specifications:

3.1.1.1.1 All Flash FAS with twenty four 960GB SSD for 17TB of space at 1:1.

3.1.1.1.2 Dual Mezzanine Card with 2-port 16GB Fibre Channel connections.

3.1.1.1.3 Must support Data Compression, Deduplication and Thin Provisioning.

3.1.1.1.4 Must have the ability to replace individual drives and power supplies while the system is in production without impacting operation.

3.1.1.1.5 Must be compatible with Agency's existing system that requires Microsoft Hyper V compatible VM Snapshot replication between SAN devices.

3.1.1.1.6 Must provide a minimum of 4 ports of 16 Gigabit Fibre Channel connectivity and a minimum of 1 port 1 Gigabit Ethernet connectivity.

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NetApp or equal Storage Area Network Hardware, Software, Installation, and Support

- 3.1.1.1.7 Must provide a support option for failed hard drives that does not require the Agency to return the failed drive. All hard drives must be able to remain with the Agency.
- 3.1.1.1.8 Primary storage site hardware, software, and services must include the following NetApp or equal components listed by part number in Exhibit A and below:
 - 3.1.1.1.8.1 Quantity Two of AFF-A220A-002-SC or equal All Flash FAS Base Bundle
 - 3.1.1.1.8.2 Quantity One AFF-A220A-EXP-103 or equal twenty four 960GB SSD
 - 3.1.1.1.8.3 Quantity Eight X6596-R6 or equal SFP + FC Optical 16 GB Transceiver
 - 3.1.1.1.8.4 Quantity Eight X66250-5 or equal Cables
 - 3.1.1.1.8.5 Quantity One X-02659-00 or equal Rail Kit
 - 3.1.1.1.8.6 Quantity Two X800E-R6 or equal Power Cables
 - 3.1.1.1.8.7 Quantity Two SW-2-A220A-NVE-C or equal Data at Rest Encryption Enabled Software
 - 3.1.1.1.8.8 Quantity Two DATA-AT-REST-ENCRYPTION or equal Data at Rest Encryption Operating System
 - 3.1.1.1.8.9 Quantity Two Hundred Thirty SW-FLASH-01-P or equal Flash per 0.1TB
 - 3.1.1.1.8.10 Quantity One SW-2CL-BASE or equal License Manager

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NetApp or equal Storage Area Network Hardware, Software, Installation, and Support**

3.1.1.1.8.11 Quantity Two SW-2-A220A-TPM-C or equal Trusted Platform Module Enabled Software

3.1.1.1.8.12 Quantity One CS-INSTALL-AFF or equal Base Installation of All Flash FAS System

3.1.1.1.8.13 Quantity One CS-O2-4HR or equal SupportEdge Premium 4 hour onsite support

3.1.1.1.8.14 Quantity One CS-MV-CI-FLEXPOD or equal Technical Support

3.1.1.1.8.15 Quantity One CS-BASE-SUPPORT or equal Base Software Support

3.1.1.1.8.16 Quantity One CS-NRD2-G or equal Non-Returnable Disk Support

3.1.1.2 Secondary Storage site must meet the following minimum specifications:

3.1.1.2.1 All Flash FAS with twelve 960GB SSD for 6.6 TB of space at 1.5:1.

3.1.1.2.2 Dual Mezzanine Card with 2-port 16GB Fibre Channel connections.

3.1.1.2.3 Must support Data Compression, Deduplication and Thin Provisioning.

3.1.1.2.4 Must have the ability to replace individual drives and power supplies while the system is in production without impacting operation.

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- 3.1.1.2.5** Must be compatible with Agency's existing system that requires Microsoft Hyper V compatible VM Snapshot replication between SAN devices.
- 3.1.1.2.6** Must provide a minimum of 4 ports of 16 Gigabit Fibre Channel connectivity and a minimum of 1 port 1 Gigabit Ethernet connectivity.
- 3.1.1.2.7** Must provide a support option for failed hard drives that does not require the Agency to return the failed drive. All hard drives must be able to remain with the Agency.
- 3.1.1.2.8** Secondary storage site hardware, software, and services must include the following Net App or equal components listed by part number in Exhibit A and below:
 - 3.1.1.2.8.1** Quantity Two of AFF-A220A-002-SC or equal All Flash FAS Base Bundle
 - 3.1.1.2.8.2** Quantity One AFF-A220A-EXP-101 or equal twelve 960GB SSD
 - 3.1.1.2.8.3** Quantity Four X6568-R6 or equal SFP Copper 1GB RJ-45 Transceiver Module
 - 3.1.1.2.8.4** Quantity Four X6562-R6 or equal 5m RJ-45 CAT6 Ethernet cable
 - 3.1.1.2.8.5** Quantity Four X6596-R6 or equal SFP + FC Optical 16GB Transceiver
 - 3.1.1.2.8.6** Quantity Four X66250-5 or equal network cables
 - 3.1.1.2.8.7** Quantity One X-02659-00 or equal rail kit

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3.1.1.2.8.8 Quantity Two X800E-R6 or equal Power Cables

3.1.1.2.8.9 Quantity Two SW-2-A220A-TPM-C or equal Trusted Platform Module Software

3.1.1.2.8.10 Quantity Two DATA-AT-REST-ENCRYPTION or equal Data at Rest Encryption Operating System

3.1.1.2.8.11 Quantity One Hundred Fifteen SW-FLASH-01-P or equal Flash per 0.1TB

3.1.1.2.8.12 Quantity One SW-2-CL-BASE or equal License Manager

3.1.1.2.8.13 Quantity Two SW-2-A220A-NVE-C or equal Data at Rest Encryption Enabled Software

3.1.1.2.8.14 Quantity One CS-INSTALL-AFF or equal Base Installation of All Flash FAS System

3.1.1.2.8.15 Quantity One CS-O2-4HR or equal SupportEdge Premium 4 hour onsite support

3.1.1.2.8.16 Quantity One CS-MV-CI-FLEXPOD or equal Technical Support

3.1.1.2.8.17 Quantity One CS-BASE-SUPPORT or equal Base Software Support

3.1.1.2.8.18 Quantity One CS-NRD2-G or equal Non-Returnable Disk Support

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3.1.1.3 Disaster Recovery Site must meet the following minimum specifications:

3.1.1.3.1 FAS Hybrid Shelf with twelve 4TB HDD for at least 31TB of space.

3.1.1.3.2 Dual Mezzanine Card with 2-port 16GB Fibre Channel connections.

3.1.1.3.3 Must support Data Compression, Deduplication and Thin Provisioning.

3.1.1.3.4 Must have the ability to replace individual drives and power supplies while the system is in production without impacting operation.

3.1.1.3.5 Must be compatible with Agency's existing system that requires Microsoft Hyper V compatible VM Snapshot replication between SAN devices.

3.1.1.3.6 Must provide a minimum of 4 ports of 16 Gigabit Fibre Channel connectivity and a minimum of 1 port 1 Gigabit Ethernet connectivity.

3.1.1.3.7 Must provide a support option for failed hard drives that does not require the Agency to return the failed drive. All hard drives must be able to remain with the Agency.

3.1.1.3.8 Disaster Recovery site hardware, software, and services must include the following Net App or equal components listed by part number in Exhibit A and below:

3.1.1.3.8.1 Quantity Two FAS2620A-001-SC or equal Base Bundle

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- 3.1.1.3.8.2 Quantity One FAS2620A-EXP-100 or equal twelve 4TB SSD
- 3.1.1.3.8.3 Quantity Two X800E-R6 or equal Power Cables
- 3.1.1.3.8.4 Quantity Four X6568-R6 or equal SFP Copper 1GB RJ-45 Transceiver Module
- 3.1.1.3.8.5 Quantity Four X6562-R6 or equal 5m RJ-45 CAT6 Ethernet cable
- 3.1.1.3.8.6 Quantity Four X6596-R6 or equal SFP + FC Optical 16GB Transceiver
- 3.1.1.3.8.7 Quantity Four X66250-5 or equal network cables
- 3.1.1.3.8.8 Quantity One X-02657-00 or equal Rack mount Rail Kit
- 3.1.1.3.8.9 Quantity Two SW-2-2620A-NVE-C or equal Data at Rest Encryption Software
- 3.1.1.3.8.10 Quantity Two SW-2-2620A-TPM-C or equal Trusted Platform Module Software
- 3.1.1.3.8.11 Quantity Four Hundred Eighty OS-ONTAP1-CAP1-BASE-1P-P or equal ONTAP base bundle per 0.1TB
- 3.1.1.3.8.12 Quantity Two DATA-AT-REST-ENCRYPTION or equal Data at Rest Encryption Capable Operating System
- 3.1.1.3.8.13 Quantity One SW-2CL-BASE or equal License Manager

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3.1.1.3.8.14 Quantity One CS-O2-4HR or equal SupportEdge Premium 4 hour onsite support

3.1.1.3.8.15 Quantity One CS-INSTALL or equal base installation service

3.1.1.3.8.16 Quantity One CS-MV-CI-FLEXPOD or equal Technical Support

3.1.1.3.8.17 Quantity One CS-NRD2-E or equal Non-Returnable Disk Support

3.1.1.4 Additional hardware must include the following as listed in Exhibit A and below:

3.1.1.4.1 Quantity Eight X6596-R6 or equal SFP + FC Optical 16GB Transceiver

3.1.1.5 Storage hardware must be compatible with ISCSI and fibre channel protocols.

3.1.1.6 Primary, Secondary, and Disaster Recovery sites must be able to communicate to each other over a wide area network.

3.1.1.7 All items and parts must be in brand new condition.

3.1.1.8 Installation, Maintenance, and Support must meet the following minimum specifications:

3.1.1.8.1 Manufacturer must provide SAN installation and connectivity. Manufacturer must also provide array configuration remote support.

3.1.1.8.2 Manufacturer must provide dedicated representatives in technical support, offering toll-free access and e-mail

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contact references. This will be required before contract award.

3.1.1.8.3 Manufacturer must provide direct, technical access 24x7x365 to support all equipment included in this bid. Vendor must return calls within four hours.

3.1.1.8.4 Manufacturer must be available to assist with data migration.

3.1.1.8.5 Manufacturer must provide consultation services. Consultation services must be at least Quantity Three of NetApp PS-TMS-CONSLT-DAY-TE-ZA or equal as listed in Exhibit A.

3.1.1.8.6 Storage Hardware must include the capability of generating alerts when specific events occur including but not limited to: low free space, errors occurring, or power loss.

3.1.1.8.6.1 Manufacturer must configure alerts as requested by the agency.

3.1.1.8.6.2 Alerts must be able to be sent by email to one or more email addresses provided by the Agency.

3.1.1.8.6.3 If additional software is required to meet specification 3.1.1.8.6 it must be included in the bid total.

3.1.1.9 Manufacturer's Warranty for all storage devices must be on-site and for a period of no less than three years.

4. CONTRACT AWARD:

4.1 Contract Award: The Contract is intended to provide Agencies with a purchase price for the Contract Items. The Contract shall be awarded to

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the Vendor that provides the Contract Items meeting the required specifications for the lowest overall total cost as shown on the Pricing Pages.

- 4.2 Pricing Page:** Vendor should complete the Exhibit A pricing page by entering a unit cost and extended cost for each line on Exhibit A. A total bid amount should be entered at the bottom of the extended cost column. Total pricing should be entered electronically in wvOASIS on commodity line 1 or entered in the Total Bid Amount line on the Exhibit A pricing page if the bid is being hand delivered. Vendor should complete the Pricing Page in full as failure to complete the Pricing Page in its entirety may result in Vendor's bid being disqualified. If the vendor is bidding alternate parts, they must be entered into Exhibit A under the Alternate part number column.

Vendor should type or electronically enter the information into the Pricing Page to prevent errors in the evaluation.

5. PAYMENT:

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

6. DELIVERY AND RETURN:

- 6.1 Shipment and Delivery:** Vendor shall ship the Contract Items immediately after being awarded this Contract and receiving a purchase order or notice to proceed. Vendor shall deliver the Contract Items within fifteen (15) working days after receiving a purchase order or notice to proceed. Contract Items must be delivered to Agency at 1900 Kanawha Blvd, East Building 1, Room E26, Charleston, WV 25305.
- 6.2 Late Delivery:** The Agency placing the order under this Contract must be notified in writing if the shipment of the Contract Items will be delayed for any reason. Any delay in delivery that could cause harm to an Agency will be grounds for cancellation of the Contract, and/or obtaining the Contract Items from a third party.

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

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- 6.3 Delivery Payment/Risk of Loss:** Vendor shall deliver the Contract Items F.O.B. destination to the Agency's location.
- 6.4 Return of Unacceptable Items:** If the Agency deems the Contract Items to be unacceptable, the Contract Items shall be returned to Vendor at Vendor's expense and with no restocking charge. Vendor shall either make arrangements for the return within five (5) days of being notified that items are unacceptable, or permit the Agency to arrange for the return and reimburse Agency for delivery expenses. If the original packaging cannot be utilized for the return, Vendor will supply the Agency with appropriate return packaging upon request. All returns of unacceptable items shall be F.O.B. the Agency's location. The returned product shall either be replaced, or the Agency shall receive a full credit or refund for the purchase price, at the Agency's discretion.
- 6.5 Return Due to Agency Error:** Items ordered in error by the Agency will be returned for credit within 30 days of receipt, F.O.B. Vendor's location. Vendor shall not charge a restocking fee if returned products are in a resalable condition. Items shall be deemed to be in a resalable condition if they are unused and in the original packaging. Any restocking fee for items not in a resalable condition shall be the lower of the Vendor's customary restocking fee or 5% of the total invoiced value of the returned items.

7 VENDOR DEFAULT:

- 7.1 The following shall be considered a vendor default under this Contract.**
- 7.1.1** Failure to provide Contract Items in accordance with the requirements contained herein.
- 7.1.2** Failure to comply with other specifications and requirements contained herein.
- 7.1.3** Failure to comply with any laws, rules, and ordinances applicable to the Contract Services provided under this Contract.
- 7.1.4** Failure to remedy deficient performance upon request.
- 7.2 The following remedies shall be available to Agency upon default.**
- 7.2.1** Immediate cancellation of the Contract.

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

7.2.3 Any other remedies available in law or equity.

Exhibit A Pricing Page

Product Number	Description	Alternate Part # and Description of or equal Products	Unit of Measure	QTY	Unit Cost	Extended Cost
AFF-A220A-002-SC or equal	NetApp AFF-A220A Flash Bundle or equal		ea	2	0.00	0.00
AFF-A220A-EXP-103 or equal	NetApp AFF A220,HA,24X960 GB SSD,Flash Bundle, NVE or equal		ea	1	23,325.01	23,325.01
X6596-R6 or equal	NetApp SFP+ FC Optical 16Gb or equal		ea	8	509.62	4,076.96
X66250-5 or equal	NetApp Cable,LC-LC,OM4,5m or equal		ea	8	125.23	1,001.84
X-02659-00 or equal	NetApp Rail Kit,4-Post,Rnd/Sq-Hole,Adj,24-32 or equal		ea	1	80.42	80.42
X800E-R6 or equal	NetApp Power Cable,North America,R6 or equal		ea	2	0.00	0.00
SW-2-A220A-NVE-C or equal	NetApp SW,Data at Rest Encryption Enabled,A220,-C or equal		ea	2	0.00	0.00
DATA-AT-REST-ENCRYPTION or equal	NetApp Data at Rest Encryption Capable Operating Sys or equal		ea	2	0.00	0.00
SW-FLASH-01-P or equal	NetApp SW,Per-0.1TB,Flash,01,-P or equal		ea	230	144.09	33,140.70
SW-2-CL-BASE or equal	NetApp SW-2.Base,CL,Node or equal		ea	1	0.00	0.00
SW-2-A220A-TPM-C or equal	NetApp SW, Trusted Platform Module Enabled, A220A,-C or equal		ea	2	0.00	0.00
CS-INSTALL-AFF or equal	NetApp Base Installation, All Flash FAS System or equal		ea	1	4,470.34	4,470.34
CS-O2-4HR or equal	NetApp SupportEdge Premium 4hr Onsite or equal		ea	1	7,938.80	7,938.80
CS-MV-CI-FLEXPOD or equal	NetApp FlexPod Support, AFFA220-SYS-SC or equal		ea	1	0.00	0.00
CS-BASE-SUPPORT	NetApp Base Software Support or equal		ea	1	5,128.96	5,128.96
CS-NRD2-G or equal	NetApp Non Returnable Disk Plus,g or equal		ea	1	2,698.28	2,698.28
AFF-A220A-002-SC or equal	NetApp AFF-A220A Flash Bundle or equal		ea	2	0.00	0.00
AFF-A220A-EXP-101 or equal	NetApp AFF A220,HA,12X960 GB SSD,Flash Bundle,NVE or equal		ea	1	15,452.09	15,452.09
X6568-R6 or equal	NetApp SFP Copper 1GB RJ-45 or equal		ea	4	122.91	491.64
X6562-R6 or equal	NetApp Cable.Ethernet,5m RJ45 CAT6 or equal		ea	4	5.81	23.24

Exhibit A Pricing Page

X6596-R6 or equal	NetApp SFP+ FC Optical 16Gb or equal		ea	4	509.62	2,038.48
X66250-5 or equal	NetApp Cable,LC-LC,OM4,5m or equal		ea	4	125.23	500.92
X-02659-00 or equal	NetApp Rail Kit,4-Post,Rnd/Sq-Hole,Adj,24-32 or equal		ea	1	80.68	80.68
X800E-R6 or equal	NetApp Power Cable,North America,R6 or equal		ea	2	0.00	0.00
SW-2-A220A-TPM-C or equal	NetApp SW,Trusted Platform Module Enabled,A220,-C or equal		ea	2	0.00	0.00
DATA-AT-REST-ENCRYPTION or equal	NetApp Data at Rest Encryption Capable Operating Sys or equal		ea	2	0.00	0.00
SW-FLASH-01-P or equal	NetApp SW,Per-0.1TB,Flash,01,-P or equal		ea	115	144.09	16,570.35
SW-2-CL-BASE or equal	NetApp SW-2,Base,CL,Node or equal		ea	1	0.00	0.00
SW-2-A220A-NVE-C or equal	NetApp SW,Data at Rest Encryption Enabled,A220,-C or equal		ea	2	0.00	0.00
CS-INSTALL-AFF or equal	NetApp Base Installation, All Flash FAS System or equal		ea	1	4,470.34	4,470.34
CS-O2-4HR or equal	NetApp SupportEdge Premium 4hr Onsite or equal		ea	1	4,943.93	4,943.93
CS-MV-CI-FLEXPOD or equal	NetApp FlexPod Support, AFFA220 SYS-SC or equal		ea	1	0.00	0.00
CS-BASE-SUPPORT	NetApp Base Software Support or equal		ea	1	2,564.48	2,564.48
CS-NRD2-G or equal	NetApp Non Returnable Disk Plus,g or equal		ea	1	1,444.73	1,444.73
FAS2620A-001-SC or equal	NetApp FAS2620A Base Bundle or equal		ea	2	0.00	0.00
FAS2620A-EXP-100 or equal	NetApp FAS2620,HA,12X4TB,Base Bundle,NVE or equal		ea	1	9,520.47	9,520.47
X800E-R6 or equal	NetApp Power Cable,North America,R6 or equal		ea	2	0.00	0.00
X6568-R6 or equal	NetApp SFP Copper 1GB RJ-45 or equal		ea	4	122.91	491.64
X6562-R6 or equal	NetApp Cable,Ethernet,5m RJ45 CAT6 or equal		ea	4	5.81	23.24
X6596-R6 or equal	NetApp SFP+ FC Optical 16Gb or equal		ea	4	509.62	2,038.48
X66250-5 or equal	NetApp Cable,LC-LC,OM4,5m or equal		ea	4	125.23	500.92
X-02657-00 or equal	NetApp Rackmount Kit,212C,4-post,Adj or equal		ea	1	75.25	75.25
SW-2-2620A-NVE-C or equal	NetApp SW Data at Rest Encryption Enabled 2620A-C or equal		ea	2	0.00	0.00

Exhibit A Pricing Page

SW-2-2620A-TPM-C or equal	NetApp SW,Trusted Platform Module Enabled,2620A,-C or equal		ea	2	0.00	0.00
OS-ONTAP1-CAP1-BASE-1P-P or equal	NetApp ONTAP,Per-0.1TB,BASEBNDL,Capacity,1P,-P or equal		ea	480	9.52	4,569.60
DATA-AT-REST-ENCRYPTION or equal	NetApp Data at Rest Encryption Capable Operating Sys or equal		ea	2	0.00	0.00
SW-2-CL-BASE or equal	NetApp SW-2,Base,CL,Node or equal		ea	1	0.00	0.00
CS-O2-4HR or equal	NetApp SupportEdge Premium 4hr Onsite or equal		ea	1	2,405.64	2,405.64
CS-INSTALL or equal	NetApp Base Installation or equal		ea	1	2,235.18	2,235.18
CS-MV-CI-FLEXPOD or equal	NetApp FlexPod Support, FAS2620-SYS-SC or equal		ea	1	0.00	0.00
CS-NRD2-E or equal	NetApp Non Returnable Disk Plus,e or equal		ea	1	476.31	476.31
X6596-R6 or equal	NetApp SFP+ FC Optical 16Gb or equal		ea	8	509.62	4,076.96
PS-TMS-CONSULT-DAY-TE-ZA or equal	NetApp Prepaid days TE,PO Exp @ 1yr,no refund or equal		ea	3	3,017.48	9,052.44
					TOTAL BID AMOUNT	165,908.32

NOTE: NetApp is also offering a Trade-In discount if the State of WV Office of Attorney General would like to trade in some of their existing NetApp equipment. Please see trade-in quote below.

Product Number	Description	Alternate Part # and Description of or equal Products	Unit of Measure	QTY	Unit Cost	Extended Cost
AFF-A220A-002-SC or equal	NetApp AFF-A220A Flash Bundle or equal		ea	2	0.00	0.00
AFF-A220A-EXP-103 or equal	NetApp AFF A220.HA,24X960 GB SSD,Flash Bundle, NVE or equal		ea	1	23,325.01	23,325.01
X6596-R6 or equal	NetApp SFP+ FC Optical 16Gb or equal		ea	8	509.62	4,076.96
X66250-5 or equal	NetApp Cable,LC-LC,OM4,5m or equal		ea	8	125.23	1,001.84
X-02659-00 or equal	NetApp Rail Kit,4-Post,Rnd/Sq-Hole,Adj,24-32 or equal		ea	1	80.42	80.42
X800E-R6 or equal	NetApp Power Cable,North America,R6 or equal		ea	2	0.00	0.00
SW-2-A220A-NVE-C or equal	NetApp SW,Data at Rest Encryption Enabled,A220,-C or equal		ea	2	0.00	0.00
DATA-AT-REST-ENCRYPTION or equal	NetApp Data at Rest Encryption Capable Operating Sys or equal		ea	2	0.00	0.00
SW-FLASH-01-P or equal	NetApp SW,Per-0.1TB,Flash,01,-P or equal		ea	230	144.09	33,140.70
SW-2-CL-BASE or equal	NetApp SW-2,Base,CL,Node or equal		ea	1	0.00	0.00
SW-2-A220A-TPM-C or equal	NetApp SW, Trusted Platform Module Enabled, A220A,-C or equal		ea	2	0.00	0.00
CS-INSTALL-AFF or equal	NetApp Base Installation, All Flash FAS System or equal		ea	1	4,470.34	4,470.34
CS-O2-4HR or equal	NetApp SupportEdge Premium 4hr Onsite or equal		ea	1	7,938.80	7,938.80
CS-MV-C1-FLEXPOD or equal	NetApp FlexPod Support, AFFA220-SYS-SC or equal		ea	1	0.00	0.00

CS-BASE-SUPPORT	NetApp Base Software Support or equal		ea	1	5,128.96	5,128.96
CS-NRD2-G or equal	NetApp Non Returnable Disk Plus,g or equal		ea	1	2,698.28	2,698.28
AFF-A220A-002-SC or equal	NetApp AFF-A220A Flash Bundle or equal		ea	2	0.00	0.00
AFF-A220A-EXP-101 or equal	NetApp AFF A220,HA, 12X960 GB SSD,Flash Bundle,NVE or equal		ea	1	15,452.09	15,452.09
X6568-R6 or equal	NetApp SFP Copper 1GB RJ-45 or equal		ea	4	122.91	491.64
X6562-R6 or equal	NetApp Cable,Ethernet,5m RJ45 CAT6 or equal		ea	4	5.81	23.24
X6596-R6 or equal	NetApp SFP+ FC Optical 16Gb or equal		ea	4	509.62	2,038.48
X66250-5 or equal	NetApp Cable,L.C-L.C,OM4,5m or equal		ea	4	125.23	500.92
X-02659-00 or equal	NetApp Rail Kit,4-Post,Rnd/Sq-Hole,Adj,24-32 or equal		ea	1	80.68	80.68
X800E-R6 or equal	NetApp Power Cable,North America,R6 or equal		ea	2	0.00	0.00
SW-2-A220A-TPM-C or equal	NetApp SW,Trusted Platform Module Enabled,A220,-C or equal		ea	2	0.00	0.00
DATA-AT-REST-ENCRYPTION or equal	NetApp Data at Rest Encryption Capable Operating Sys or equal		ea	2	0.00	0.00
SW-FLASH-01-P or equal	NetApp SW,Per-0,1TB,Flash,01,-P or equal		ea	115	144.09	16,570.35
SW-2-CL-BASE or equal	NetApp SW-2,Base,CL,Node or equal		ea	1	0.00	0.00

SW-2-A220A-NVE C or equal	NetApp SW,Data at Rest Encryption Enabled,A220,-C or equal		ea	2	0.00	0.00
CS-INSTALL-AFF or equal	NetApp Base Installation, All Flash FAS System or equal		ea	1	4,470.34	4,470.34
CS-O2-4HR or equal	NetApp SupportEdge Premium 4hr Onsite or equal		ea	1	4,943.93	4,943.93
CS-MV-CI- FLEXPOD or equal	NetApp FlexPod Support, AFFA220-SYS-SC or equal		ea	1	0.00	0.00
CS-BASE- SUPPORT	NetApp Base Software Support or equal		ea	1	2,564.48	2,564.48
CS-NRD2-G or equal	NetApp Non Returnable Disk Plus,g or equal		ea	1	1,444.73	1,444.73
FAS2620A-001-SC or equal	NetApp FAS2620A Base Bundle or equal		ea	2	0.00	0.00
FAS2620A-EXP- 100 or equal	NetApp FAS2620.HA,12X4TB.Basc Bundle.NVE or equal		ea	1	9,520.47	9,520.47
X800F-R6 or equal	NetApp Power Cable,North America,R6 or equal		ea	2	0.00	0.00
X6568-R6 or equal	NetApp SFP Copper 1GB RJ-45 or equal		ea	4	122.91	491.64
X6562-R6 or equal	NetApp Cable,Ethernet,5m RJ45 CAT6 or equal		ea	4	5.81	23.24
X6596-R6 or equal	NetApp SFP+ FC Optical 16Gb or equal		ea	4	509.62	2,038.48
X66250-5 or equal	NetApp Cable,L.C-L.C,OM4,5m or equal		ea	4	125.23	500.92
X-02657-00 or equal	NetApp Rackmount Kit,212C,4- post,Adj or equal		ea	1	75.25	75.25
SW-2-2620A-NVE C or equal	NetApp SW Data at Rest Encryption Enabled 2620A-C or equal		ea	2	0.00	0.00

SW-2-2620A-TPM-C or equal	NetApp SW,Trusted Platform Module Enabled,2620A,-C or equal		ea	2	0.00	0.00
OS-ONTAP1-CAP1-BASE-1P-P or equal	NetApp ONTAP,Per-0.1TB,BASEBNDL,Capacity,IP,-P or equal		ea	480	9.52	4,569.60
DATA-AT-REST-ENCRYPTION or equal	NetApp Data at Rest Encryption Capable Operating Sys or equal		ea	2	0.00	0.00
SW-2-CL-BASE or equal	NetApp SW-2,Base,CL,Node or equal		ea	1	0.00	0.00
CS-O2-4HR or equal	NetApp SupportEdge Premium 4hr Onsite or equal		ea	1	2,405.64	2,405.64
CS-INSTALL or equal	NetApp Base Installation or equal		ea	1	2,235.18	2,235.18
CS-MV-CI-FLEXPOD or equal	NetApp FlexPod Support, FAS2620-SYS-SC or equal		ea	1	0.00	0.00
CS-NRD2-E or equal	NetApp Non Returnable Disk Plus, or equal		ea	1	476.31	476.31
X6596-R6 or equal	NetApp SFP- FC Optical 16Gb or equal		ea	8	509.62	4,076.96
PS-TMS-CONSULT-DAY-TE-ZA or equal	NetApp Prepaid days TE,PO Exp @ 1yr,no refund or equal		ea	3	3,017.48	9,052.44
TI-K-SW	Trade-in Credit,K,Software Returns		ea	1	-287.53	-287.53
TI-D-BASE	Trade-in Credit,D,Platform Base		ea	1	-215.71	-215.71
TI-D-STG	Trade-in Credit,D,Storage Returns		ea	1	-307.01	-307.01
TI-K-SW	Trade-in Credit,K,Software Returns		ea	1	-465.41	-465.41

TI-D-BASE	Trade-in Credit,D,Platform Base		ea	1	-260.18	-260.18
TI-D-STG	Trade-in Credit,D,Storage Returns		ea	1	-780.54	-780.54
TI-K-SW	Trade-in Credit,K,Software Returns		ea	1	-930.81	-930.81
TI-D-BASE	Trade-in Credit,D,Platform Base		ea	1	-255.21	-255.21
TI-D-STG	Trade-in Credit,D,Storage Returns		ea	1	-960.48	-960.48
					TOTAL BID AMOUNT	161,445.44

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: ePlus Technology, inc.

Authorized Signature:  (Steve Mencarini, SVP) Date: 9/26/2018

State of Virginia

County of Fairfax, to-wit:

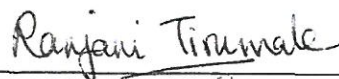
Taken, subscribed, and sworn to before me this 26 day of September, 2018

My Commission expires May 31, 2020

AFFIX SEAL HERE



NOTARY PUBLIC



Purchasing Affidavit (Revised 01/19/2018)



ePlus Exceptions

Early Termination of Prepaid Maintenance Exception:

ePlus is a reseller and we are providing maintenance renewal provided by the manufacturer. We cannot enforce any early termination of maintenance plans without manufacturer approval / consent. ePlus will work with the manufacturer at the time of the request but cannot meet this provision without such consent. Once a maintenance plan is purchased it is valid for the term provided.



NETAPP TRADE-IN & COMPETITIVE TRADE-IN TERMS AND CONDITIONS

NetApp Trade-In and Competitive Trade-In Programs

By participating in the NetApp Trade-In and Competitive Trade-In Programs, the customer has agreed to release the outstanding trade-in equipment listed on the Sales Return Authorization (SRA) at their earliest convenience and within 120 calendar days from the new system ship dates. To help our asset recovery team provide the best assistance, please advise them on the status of the migration or return.

Terms and Conditions (for Customers)

These Trade-In Terms and Conditions shall apply to Customers taking advantage of the Trade-In Programs and shall be incorporated into and become an integral part of the NetApp's General Terms if Customers purchase direct from NetApp, Inc., NetApp B.V. or any of their affiliates ("**NetApp**") or the Channel End User Terms if Customers purchase from an authorized NetApp reseller or the agreement between Customer and NetApp if Customer has entered into a separate agreement with NetApp for the purchase of NetApp Products and Services, as the case may be.

1. Definitions

Used Equipment. Certain storage products used by Customers that are eligible for the Trade-In Programs.

Trade-In Programs. The NetApp Trade-In Program and the NetApp Competitive Trade-In Program offered by NetApp whereby Customer trades in **Used Equipment** against the purchase of certain NetApp storage offerings, the particulars of which are set out in the [Trade-In Product Bulletin](#).

2. For any NetApp storage offerings purchase made pursuant to any of the Trade-In Programs, Customer shall (i) ensure that the Used Equipment be returned to NetApp or (ii) provide NetApp with a certificate of destruction by the timeframe stipulated by NetApp, and Customer agrees that the risks in and title to the Used Equipment shall only pass to NetApp upon NetApp receipt of the returned Used Equipment.
3. In respect of any Used Equipment returned to NetApp, (i) Customer warrants that it is the legal and beneficial owner of the Used Equipment; and that the Used Equipment is unencumbered and is free of any security, lien, equitable or other interest that may exist in or over the Used Equipment; and (ii) Customer agrees that it has the responsibility to retrieve (and delete where necessary) all information (including any personal and/or confidential information), data and applications from the Used Equipment prior to it being returned to NetApp; and that NetApp reserves the right to use or dispose of the Used Equipment at its sole discretion as it deems fit.
4. Customer will indemnify, defend and hold harmless NetApp against all claims (third party or otherwise) made against NetApp arising as a result of any breach of these Terms and Conditions.
5. If Customer purchases direct from NetApp, Customer acknowledges and agrees to return to NetApp the Used Equipment no later than 120 calendar days after the new system has been shipped, failing which, NetApp shall be entitled to invoice Customer the Trade-In Credits NetApp



NetApp®

NETAPP TRADE-IN AND COMPETITIVE TRADE-IN PROGRAMS

granted to Customer in relation to the Used Equipment in the amount appearing on the NetApp's Price Quotation.

Terms and Conditions (for NetApp Partners)

The following terms shall apply to NetApp Partners who resell to Customers participating in the NetApp Trade-In and Competitive Trade-In Programs and shall be incorporated into and become an integral part of the agreement between NetApp Partner and NetApp:

NetApp Partner, when reselling to an End User (referred to as Customers in the above section) who is taking benefit of the NetApp Trade-In and Competitive Trade-In Programs, whether directly or indirectly through a lower-tier NetApp authorized reseller,

- (a) is required to pass through to the End User a copy of the relevant *NetApp Trade-In and Competitive Trade-In Programs Terms and Conditions* by either: (i) providing a full and complete print or electronic copies of the applicable Trade-In Product Bulletin [and SRA Return Instructions]; **OR** (ii) incorporating the applicable Trade-In Product Bulletin [and SRA Return Instructions] into the relevant Order Documentation with the End User; and
- (b) acknowledges and agrees that it shall procure and ensure End User returns to NetApp the Used Equipment in the manner specified in the above *Terms and Conditions for Customers* no later than 120 calendar days after the new system has been shipped, failing which, NetApp shall be entitled to invoice NetApp Partner the Trade-In Credits NetApp granted to NetApp Partner in relation to the Used Equipment in the amount appearing on the NetApp's Price Quotation.

016	1	CS-NRD2-G	NETAPP	NON RETURNABLE DISK PLUSG	2,698.28	2,698.28
017	1	SW-2-CL-BASE	NETAPP	SW-2,BASE,CL,NODE	0.00	0.00
018	1	AFF-A220-SYS-SC	NETAPP	AFF-A220-SYS-SC	0.00	0.00
019	2	AFF-A220A-002-SC	NETAPP	AFF-A220A FLASH BUNDLE	0.00	0.00
020	2	SW-2-A220A-TPM-C	NETAPP	SWTRUSTED PLATFORM MODULE ENABLEDA220-C	0.00	0.00
021	2	SW-2-A220A-NVE-C	NETAPP	SWDATA AT REST ENCRYPTION ENABLEDA220-C	0.00	0.00
022	1	AFF-A220A-EXP-101	NETAPP	AFF A220HA12X960GB SSDFLASH BUNDLENVE	15,452.09	15,452.09
023	2	X1558A-R6	NETAPP	POWER CABLE,IN-CABINET,48-IN,C13-C14	0.00	0.00
024	1	X-02659-00	NETAPP	RAIL KIT,4-POST,RND/SQ-HOLE,ADJ,24-32	80.68	80.68
025	4	X6562-R6	NETAPP	CABLE,ETHERNET,5M RJ45 CAT6	5.81	23.24
026	4	X6568-R6	NETAPP	SFP COPPER 1GB RJ-45	122.91	491.64
027	4	X6596-R6	NETAPP	SFP+ FC OPTICAL 16GB	509.62	2,038.48
028	4	X66250-5	NETAPP	CABLE,LC-LC,OM4,5M	125.23	500.92
029	2	DATA-AT-REST-ENCRYPTION	NETAPP	DATA AT REST ENCRYPTION CAPABLE OPERATING SYS	0.00	0.00
030	115	SW-FLASH-01-P	NETAPP	SW,PER-0.1TB,FLASH,01,-P	144.09	16,570.35
031	1	CS-INSTALL-AFF	NETAPP	BASE INSTALLATION, ALL FLASH FAS SYSTEM	4,470.34	4,470.34
032	1	CS-MV-CI-FLEXPOD	NETAPP	FLEXPOD SUPPORT	0.00	0.00
033	1	CS-BASE-SUPPORT	NETAPP	BASE SOFTWARE SUPPORT	2,564.48	2,564.48
034	1	CS-O2-4HR	NETAPP	SUPPORTEDGE PREMIUM 4HR ONSITE	4,943.93	4,943.93
035	1	CS-NRD2-G	NETAPP	NON RETURNABLE DISK PLUSG	1,444.73	1,444.73
036	1	SW-2-CL-BASE	NETAPP	SW-2,BASE,CL,NODE	0.00	0.00
037	1	SW-2-CL-BASE	NETAPP	SW-2,BASE,CL,NODE	0.00	0.00
038	1	FAS2620-SYS-SC	NETAPP	TITLE	0.00	0.00
039	2	FAS2620A-001-SC	NETAPP	FAS2620A BASE BUNDLE	0.00	0.00
040	2	SW-2-2620A-NVE-C	NETAPP	SW,DATA AT REST ENCRYPTION ENABLED,2620A,-C	0.00	0.00
041	2	SW-2-2620A-TPM-C	NETAPP	SW,TRUSTED PLATFORM MODULE ENABLED,2620A,-C	0.00	0.00

042	1	FAS2620A-EXP-100	NETAPP	FAS2620,HA,12X4TB,BASE BUNDLE,NVE	9,520.47	9,520.47
043	480	OS-ONTAP1-CAP1-BASE-1P-P	NETAPP	ONTAP,PER-0.1TB,BASEBNL,CAPACITY,1P,-P	9.52	4,569.60
044	2	X800E-R6	NETAPP	POWER CABLE NORTH AMERICA,R6	0.00	0.00
045	4	X6562-R6	NETAPP	CABLE,ETHERNET,5M RJ45 CAT6	5.81	23.24
046	4	X6568-R6	NETAPP	SFP COPPER 1GB RJ-45	122.91	491.64
047	4	X6596-R6	NETAPP	SFP+ FC OPTICAL 16GB	509.62	2,038.48
048	4	X66250-5	NETAPP	CABLE,LC-LC,OM4,5M	125.23	500.92
049	2	DATA-AT-REST-ENCRYPTION	NETAPP	DATA AT REST ENCRYPTION CAPABLE OPERATING SYS	0.00	0.00
050	1	X-02657-00	NETAPP	RACKMOUNT KIT,212C,4-POST,ADJ	75.25	75.25
051	1	CS-MV-CI-FLEXPOD	NETAPP	FLEXPOD SUPPORT	0.00	0.00
052	1	CS-O2-4HR	NETAPP	SUPPORTEDGE PREMIUM 4HR ONSITE	2,405.64	2,405.64
053	1	CS-INSTALL	NETAPP	NETAPP INITIAL INSTALLATION	2,235.18	2,235.18
054	1	CS-NRD2-E	NETAPP	NON RETURNABLE DISK PLUS,E	476.31	476.31
055	3	PS-TMS-CONSLT-DAY-TE-ZA	NETAPP	PREPAID <11 DAYS+TE NB,PO EXP @ 1YR,NO REFUND	3,017.48	9,052.44
056	8	X6596-R6	NETAPP	SFP FC OPTICAL 16GB	509.62	4,076.96

By placing an order with ePlus for products or services you agree to comply with the Terms and Conditions for Purchasing Products and Services located at <http://www.eplus.com/terms-and-conditions/Pages/Products-Services-Terms-and-Conditions.aspx> (the 'Order Terms'). Unless there is a separate written agreement signed on behalf of both you and ePlus by a duly authorized officer, the Order Terms shall be the only terms and conditions applicable to transactions between you and ePlus, and no additional or contrary terms referenced in a purchase order, document, or electronic communication shall apply. In no event shall ePlus performance under a purchase order be deemed to constitute acceptance of any terms and conditions set forth therein.

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Thank you for your inquiry. Please note the following about this quotation: It will expire on the date stated above. Unless freight amount is indicated, or is zero, freight will be added to the invoice. Unless Bill-To company is exempt from Sales Tax, it will be added to the invoice. Extended Warranties and Professional Services are available.

Customer Acceptance Signature: _____ Date: _____ Name: _____ PO #: _____ Title: _____ Ship Via: _____		To Place An Order , Please Contact: ePlus Technology Inc Sales: EMILY HARVEY Phone: 610-495-1228 Fax: 610-495-1208 Email: EHARVEY@EPLUS.COM Address: 130 FUTURA DRIVE, POTTSTOWN, PA 19464	Sub Total (USD): 165,908.32 Tax (USD): TBD if Applicable Shp&Hnd (USD): 0.00 Total (USD): 165,908.32
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This quotation is confidential for your internal use only.

This is a solicitation for an offer and is subject to credit approval. No contract is formed unless a purchase order or other offer is received and accepted by our office. If you accept this quotation with the intent to have your chosen leasing company to pay the costs directly, please note that if the Lessor does not pay ePlus for any reason, you will be responsible for payment to ePlus.

Quote Name:



Bill To
STATE OF WEST VIRGINIA 1900 KANAWHA BLVD E BLDG 1
CHARLESTON WV 25305 UNITED STATES GALE GIVEN

Ship To
STATE OF WEST VIRGINIA
UNITED STATES

Quotation #:	22268259
Order #:	
Quotation Date:	09/24/2018
Expiration Date:	10/24/2018
Client Reference:	
Account Rep:	Mark Carretta

Line No.	Quantity	Part Number	MFG	Description	Unit Price	Ext Price
001	1	AFF-A220-SYS-SC	NETAPP	AFF-A220-SYS-SC	0.00	0.00
002	2	AFF-A220A-002-SC	NETAPP	AFF-A220A FLASH BUNDLE	0.00	0.00
003	2	SW-2-A220A-TPM-C	NETAPP	SWTRUSTED PLATFORM MODULE ENABLEDA220-C	0.00	0.00
004	2	SW-2-A220A-NVE-C	NETAPP	SWDATA AT REST ENCRYPTION ENABLEDA220-C	0.00	0.00
005	1	AFF-A220A-EXP-103	NETAPP	AFF A220HA24X960GB SSDFLASH BUNDLE NVE	23,325.01	23,325.01
006	2	X800-42U-R6	NETAPP	POWER CABLE,IN-CABINET,C13-C14	0.00	0.00
007	1	X-02659-00	NETAPP	RAIL KIT,4-POST,RND/SQ-HOLE,ADJ,24-32	80.42	80.42
008	8	X6596-R6	NETAPP	SFP+ FC OPTICAL 16GB	509.62	4,076.96
009	8	X66250-5	NETAPP	CABLE,LC-LC,OM4,5M	125.23	1,001.84
010	2	DATA-AT-REST-ENCRYPTION	NETAPP	DATA AT REST ENCRYPTION CAPABLE OPERATING SYS	0.00	0.00
011	230	SW-FLASH-01-P	NETAPP	SW,PER-0.1TB,FLASH,01,-P	144.09	33,140.70
012	1	CS-INSTALL-AFF	NETAPP	BASE INSTALLATION, ALL FLASH FAS SYSTEM	4,470.34	4,470.34
013	1	CS-MV-CI-FLEXPOD	NETAPP	FLEXPOD SUPPORT	0.00	0.00
014	1	CS-BASE-SUPPORT	NETAPP	BASE SOFTWARE SUPPORT	5,128.96	5,128.96
015	1	CS-O2-4HR	NETAPP	SUPPORTEDGE PREMIUM 4HR ONSITE	7,938.80	7,938.80

016	1	CS-NRD2-G	NETAPP	NON RETURNABLE DISK PLUSG	2,698.28	2,698.28
017	1	SW-2-CL-BASE	NETAPP	SW-2,BASE,CL,NODE	0.00	0.00
018	1	AFF-A220-SYS-SC	NETAPP	AFF-A220-SYS-SC	0.00	0.00
019	2	AFF-A220A-002-SC	NETAPP	AFF-A220A FLASH BUNDLE	0.00	0.00
020	2	SW-2-A220A-TPM-C	NETAPP	SWTRUSTED PLATFORM MODULE ENABLEDA220-C	0.00	0.00
021	2	SW-2-A220A-NVE-C	NETAPP	SWDATA AT REST ENCRYPTION ENABLEDA220-C	0.00	0.00
022	1	AFF-A220A-EXP-101	NETAPP	AFF A220HA12X960GB SSDFLASH BUNDLENVE	15,452.09	15,452.09
023	2	X1558A-R6	NETAPP	POWER CABLE,IN-CABINET,48-IN,C13-C14	0.00	0.00
024	1	X-02659-00	NETAPP	RAIL KIT,4-POST,RND/SQ-HOLE,ADJ,24-32	80.68	80.68
025	4	X6562-R6	NETAPP	CABLE,ETHERNET,5M RJ45 CAT6	5.81	23.24
026	4	X6568-R6	NETAPP	SFP COPPER 1GB RJ-45	122.91	491.64
027	4	X6596-R6	NETAPP	SFP+ FC OPTICAL 16GB	509.62	2,038.48
028	4	X66250-5	NETAPP	CABLE,LC-LC,OM4,5M	125.23	500.92
029	2	DATA-AT-REST-ENCRYPTION	NETAPP	DATA AT REST ENCRYPTION CAPABLE OPERATING SYS	0.00	0.00
030	115	SW-FLASH-01-P	NETAPP	SW,PER-0.1TB,FLASH,01,-P	144.09	16,570.35
031	1	CS-INSTALL-AFF	NETAPP	BASE INSTALLATION, ALL FLASH FAS SYSTEM	4,470.34	4,470.34
032	1	CS-MV-CI-FLEXPOD	NETAPP	FLEXPOD SUPPORT	0.00	0.00
033	1	CS-BASE-SUPPORT	NETAPP	BASE SOFTWARE SUPPORT	2,564.48	2,564.48
034	1	CS-O2-4HR	NETAPP	SUPPORTEDGE PREMIUM 4HR ONSITE	4,943.93	4,943.93
035	1	CS-NRD2-G	NETAPP	NON RETURNABLE DISK PLUSG	1,444.73	1,444.73
036	1	SW-2-CL-BASE	NETAPP	SW-2,BASE,CL,NODE	0.00	0.00
037	1	SW-2-CL-BASE	NETAPP	SW-2,BASE,CL,NODE	0.00	0.00
038	1	FAS2620-SYS-SC	NETAPP	TITLE	0.00	0.00
039	2	FAS2620A-001-SC	NETAPP	FAS2620A BASE BUNDLE	0.00	0.00
040	2	SW-2-2620A-NVE-C	NETAPP	SW,DATA AT REST ENCRYPTION ENABLED,2620A,-C	0.00	0.00
041	2	SW-2-2620A-TPM-C	NETAPP	SW,TRUSTED PLATFORM MODULE ENABLED,2620A,-C	0.00	0.00

QTY	Part Number	Description	Unit	Price	Total Price	
042	1	FAS2620A-EXP-100	NETAPP	FAS2620,HA,12X4TB,BASE BUNDLE,NVE	9,520.47	9,520.47
043	480	OS-ONTAP1-CAP1-BASE-1P-P	NETAPP	ONTAP,PER-0.1TB,BASEBNL,CAPACITY,1P,-P	9.52	4,569.60
044	2	X800E-R6	NETAPP	POWER CABLE NORTH AMERICA,R6	0.00	0.00
045	4	X6562-R6	NETAPP	CABLE,ETHERNET,5M RJ45 CAT6	5.81	23.24
046	4	X6568-R6	NETAPP	SFP COPPER 1GB RJ-45	122.91	491.64
047	4	X6596-R6	NETAPP	SFP+ FC OPTICAL 16GB	509.62	2,038.48
048	4	X66250-5	NETAPP	CABLE,LC-LC,OM4,5M	125.23	500.92
049	2	DATA-AT-REST-ENCRYPTION	NETAPP	DATA AT REST ENCRYPTION CAPABLE OPERATING SYS	0.00	0.00
050	1	X-02657-00	NETAPP	RACKMOUNT KIT,212C,4-POST,ADJ	75.25	75.25
051	1	CS-MV-CI-FLEXPOD	NETAPP	FLEXPOD SUPPORT	0.00	0.00
052	1	CS-Q2-4HR	NETAPP	SUPPORTEDGE PREMIUM 4HR ONSITE	2,405.64	2,405.64
053	1	CS-INSTALL	NETAPP	NETAPP INITIAL INSTALLATION	2,235.18	2,235.18
054	1	CS-NRD2-E	NETAPP	NON RETURNABLE DISK PLUS,E	476.31	476.31
055	3	PS-TMS-CONSLT-DAY-TE-ZA	NETAPP	PREPAID <11 DAYS+TE NB,PO EXP @ 1YR,NO REFUND	3,017.48	9,052.44
056	8	X6596-R6	NETAPP	SFP FC OPTICAL 16GB	509.62	4,076.96
057	1	TI-K-SW	NETAPP	TRADE-IN CREDIT,K,SOFTWARE RETURNS	-287.53	-287.53
058	1	TI-D-BASE	NETAPP	TRADE-IN CREDIT,D,PLATFORM BASE	-215.71	-215.71
059	1	TI-D-STG	NETAPP	TRADE-IN CREDIT,D,STORAGE RETURNS	-307.01	-307.01
060	1	TI-K-SW	NETAPP	TRADE-IN CREDIT,K,SOFTWARE RETURNS	-465.41	-465.41
061	1	TI-D-BASE	NETAPP	TRADE-IN CREDIT,D,PLATFORM BASE	-260.18	-260.18
062	1	TI-D-STG	NETAPP	TRADE-IN CREDIT,D,STORAGE RETURNS	-780.54	-780.54
063	1	TI-K-SW	NETAPP	TRADE-IN CREDIT,K,SOFTWARE RETURNS	-930.81	-930.81
064	1	TI-D-BASE	NETAPP	TRADE-IN CREDIT,D,PLATFORM BASE	-255.21	-255.21
065	1	TI-D-STG	NETAPP	TRADE-IN CREDIT,D,STORAGE RETURNS	-960.48	-960.48



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: 475601

Doc Description: Hardware, Software, Installation, and Support

Proc Type: Central Purchase Order

Date Issued	Solicitation Closes	Solicitation No	Version
2018-09-12	2018-09-26 13:30:00	CRFQ 1500 AGO1900000001	1

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:

ePlus Technology, inc.
 13595 Dulles Technology Drive,
 Herndon, VA 20171
 Tel: 703-984-8400

FOR INFORMATION CONTACT THE BUYER

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

Signature X (Steve Mencarini, SVP) FEIN # 54-1904151

DATE 9/26/2018

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

ADDITIONAL INFORMATION:

The West Virginia Purchasing Division is soliciting bids on behalf of The Office of the West Virginia Attorney General to establish a contract for the one time purchase of NetApp or equal Storage Area Network (SAN) Hardware, Software, Installation, and Support per the terms and conditions and specifications as attached.

INVOICE TO		SHIP TO	
ATTORNEY GENERAL'S OFFICE 1900 KANAWHA BLVD E		ATTORNEY GENERALS OFFICE 1900 KANAWHA BLVD E	
CHARLESTON	WV25305	CHARLESTON	WV 25305
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
1	Please see the attached Exhibit A Pricing Page	1.00000	LS		

Comm Code	Manufacturer	Specification	Model #
71151106			

Extended Description :

Per Specifications in 3.1 of CRFQ AGO1900000001.

AGO1900000001	Document Phase Final	Document Description Hardware, Software, Installation, and Support	Page 3 of 3
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ADDITIONAL TERMS AND CONDITIONS

See attached document(s) for additional Terms and Conditions

Why NetApp?

NetApp is the current market and technology leader in unified storage, and one of the fastest growing SAN vendors. Gartner has ranked NetApp as a leader for mid-range disk and NAS in its *Magic Quadrant*. Gartner also recognizes NetApp's merit in other storage-related markets, including storage resource management, data protection services, storage implementation services, and backup and recovery.

NetApp customers have recognized us as the industry leader in providing flexible, efficient, and future-ready storage architecture.

#1 leading supplier of storage to the US Federal Government

NetApp is the #1 leading supplier of storage to the US Federal Government. NetApp provides more data storage to the US Federal Government than all other storage vendors combined.

#1 IDC Market Share Leader in All Flash Storage

NetApp was also named the IDC #1 market share leader in All Flash Storage, ahead of all other storage vendors and the fastest growing of the Top 5 Flash Storage vendors.

#1 Capacity share leader with Cisco Integration

NetApp is the #1 storage integrated with Cisco with more capacity integrated with Cisco's UCS/Nexus (FlexPod) platform than any other vendor.

ONTAP is the Number One Storage Operating System

International Data Corporation (IDC) 2017 Q4 Storage Hardware and Software Market Share shows that NetApp ONTAP® is the number one storage operating system.¹

¹ Source: IDC, Worldwide Quarterly Enterprise Storage Systems Tracker - Q1 2018, June 5, 2018.

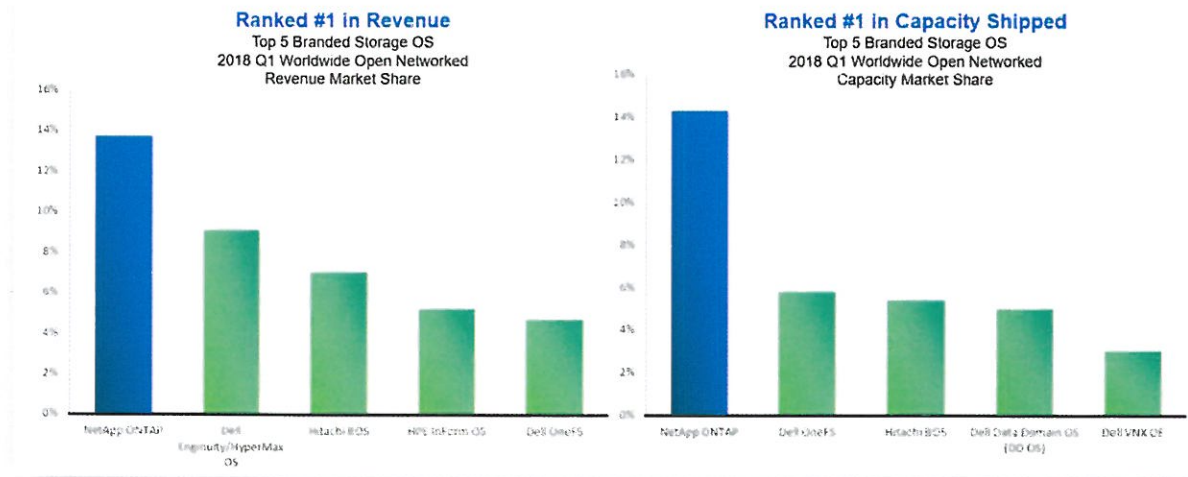


Figure 1: NetApp ONTAP is the #1 Open Networked Branded Storage OS – The latest IDC Enterprise Storage Systems Tracker confirms that NetApp ONTAP was ranked #1 based on sales of Open Networked Enterprise Storage Systems (for both revenue and terabytes).

The following table highlights the features and functions that set NetApp ONTAP solution apart from other storage platforms.

Table 1: NetApp ONTAP features and functions.

NetApp ONTAP	
Universal Data Platform	<ul style="list-style-type: none"> • All protocols: CIFS, FCoE, FCP, iSCSI, NFS • All disk types: SSD, SAS, NL-SAS, SATA • All workload types: Small or large block, random or sequential • Maximum simplicity: One system to learn and support, for all your needs
Flexible Scalability	<ul style="list-style-type: none"> • Expandable performance: Scale up and out, controllers and disk • Expandable capacity: Scale up and out • Operational efficiency: Grow without adding points of management
Integrated Data Protection	<ul style="list-style-type: none"> • Native zero-impact, space-efficient snapshots • Deep application integration (application-consistent snapshots, and so on) • Native disaster recovery replication: SnapMirror[®] • Native optional disk-to-disk backup: SnapVault[®]
Open and Extensible Platform	<ul style="list-style-type: none"> • Robust APIs that support third-party and custom integration • Several supported tools and environments • Designed to scale from small to massive environments
Zero-downtime Lifecycle	<ul style="list-style-type: none"> • Replace all components without downtime or costly migrations

NetApp ONTAP

Maintenance	<ul style="list-style-type: none">• Add performance, connectivity, and capacity without disruption
Secure Multi-tenancy	<ul style="list-style-type: none">• Shared storage to maximize efficiency, while maintaining secure separation• Secure, scalable, and fully-functional multi-tenant solution• Robust QoS and role-based access control to achieve service level success
Business-empowering Efficiency	<ul style="list-style-type: none">• Highly-granular 4KB block-level deduplication of NAS and SAN primary data• Cache amplification with deduplication-aware SSD Flash Pools• Zero-cost near-instantaneous clones revolutionize dev/test and VM build-out
Complete Data Portability	<ul style="list-style-type: none">• The ability to move data anytime, without disruption to any type of disk• The flexibility to move data in and out of private, hybrid, and public clouds• Highly efficient, deduplication-enabled replication

Leading Provider of Storage Efficiency Capabilities

NetApp is a leading provider of storage efficiency capabilities such as thin provisioning and deduplication. Our unique approach delivers a universal platform, which provides a challenge to the legacy unified storage offered by competitors. The flexibility and efficiency of NetApp architecture directly translates into better operation and significantly improves total cost of ownership.

NetApp is differentiated by our ability to:

- Enable automation that matches pre-defined service levels
- Unify heterogeneous environments under a single, highly capable, management umbrella
- Deliver application-consistent point-in-time copies, as well as integrate storage operations into the application environments
- Provide functional, capable data protection and disaster recovery with our disk arrays—not just deliver what amounts to checkmark boxes for such functionality
- Deliver capabilities such as secure multi-tenancy and a comprehensive SRM environment that easily plugs into existing system frameworks



Speed Performance Across Flash, Disk and Cloud with FAS

West Virginia Attorney General's

Products

NetApp FAS9000

NetApp FAS8200

NetApp FAS2600

Key Benefits

- **Reduce TCO and extend system lifecycle with fully upgradable modular design**
- **Simplify operations with enhanced serviceability**
- **Accelerate SAN and NAS workloads with up to 50% more performance**
- **Deliver nondisruptive operations and greater than 99.9999% availability**
- **Build a flexible Data Fabric to manage your hybrid cloud environment**

In a world where technology is changing our everyday lives, digital transformation remains top of mind for executives. In order to successfully transform, data must become the lifeblood of an organization and seen as a business accelerator. However, the complex infrastructure to achieve these goals can drive up management costs, require specialized training, and increase the chances of costly errors.

The NetApp® FAS series hybrid storage systems are engineered specifically to address these needs. Powered by NetApp ONTAP® data management software, the FAS series unifies your SAN and NAS infrastructure, accelerates business-critical applications and delivers on crucial IT demands for flexibility, scalability and uptime.

Boost Reliability, Availability and Serviceability

The intelligent modular design of the NetApp FAS series hybrid storage system is designed for high performance and to enhance reliability, availability, and serviceability (RAS).

The superior serviceability of the FAS series makes it possible to perform updates during regular work hours. Scaling occurs without maintenance windows or the challenge of coordinating downtime across teams.

All FAS models are designed to deliver the most demanding availability requirements—99.9999% availability or greater—through a comprehensive approach that combines highly reliable hardware, innovative software, and sophisticated service analytics.

The FAS9000, for example, is the most powerful FAS system that NetApp has ever created, built to take full advantage of 40GbE and 32Gb FC. Service operations are greatly simplified, minimizing the risk of errors and reducing the time needed to accomplish the operations.

Deliver High Performance and Superior TCO

The fully upgradable modular design of the FAS series increases flexibility, streamlines maintenance and extends the life of the platform, reducing the disruption and expense that come with tech refreshes. Simplify West Virginia Attorney General's Office's operations with a powerful, hybrid storage based on a modular design to extend system life, increase utilization and improve long-term ROI.

Integrated NVMe flash accelerates workloads and drives price-to-performance value. **Reduce latency and speed your operations with up to 50% higher performance.**

You can leverage existing investments in third-party storage arrays using NetApp storage virtualization software to consolidate them behind the FAS series.

Consolidate and Respond to Change

Each of the NetApp FAS systems can be clustered with flash as you build the foundation for a Data Fabric. The FAS9000 can easily be clustered with NetApp All Flash FAS (AFF) arrays to be integrated with the cloud, scale up to 172PB, and integrate existing third-party storage arrays. AFF combines leading data management with submillisecond latency, so you can move your data where it's needed to deliver the optimal combination of performance, storage capacity, and cost-efficiency.

Optimize Hybrid Cloud Deployment

The FAS system running ONTAP is optimized for private and hybrid cloud with secure multitenancy, quality of service (QoS), nondisruptive operations, and easily defined tiers of service. When tightly integrated with



NetApp®

infrastructure, FAS enables West Virginia Attorney General's Office to build a private cloud that delivers a simple service-oriented IT architecture and meets the demands of enterprise applications. For organizations that need an enterprise-class hybrid cloud with predictable performance and availability FAS can be used in a NetApp Private Storage (NPS) for Cloud solution. With NPS for Cloud, you can directly connect to multiple clouds by using a private, high-bandwidth, low-latency connection.

You can connect to industry-leading clouds such as Amazon Web Services (AWS), Microsoft Azure, or IBM Cloud and switch between them at any time, while maintaining complete control of your data on your dedicated, private FAS. You get the elasticity of the public cloud and protect your data with NetApp technologies that you understand and trust. For maximum flexibility, Cloud Volumes ONTAP is a version of ONTAP software that runs in AWS and Azure, providing the storage efficiency, availability, and scalability of

ONTAP. It allows quick and easy movement of data between your on-premises FAS and AWS or Azure environment with NetApp SnapMirror® data replication software.

The NetApp FAS series has the proven agility and data management capabilities that enables you to maintain control of your data as you grow—on premises and in the cloud.

Table 1: FAS9000 technical specifications.

FAS9000	
NAS scale-out: 1–24 nodes (12 HA pairs)	
Maximum drives (HDD/SSD)	17,280/5,760
Maximum raw capacity	172PB
Maximum onboard Flash Cache based on NVMe technology	192TB
Maximum Flash Pool	1728TB
Maximum memory	12,288GB
SAN scale-out: 1–12 nodes (6 HA pairs)	
Maximum drives (HDD/SSD)	8,640/2,880
Maximum raw capacity	86PB
Maximum onboard Flash Cache based on NVMe technology	96TB
Maximum Flash Pool	864TB
Maximum memory	6144GB
Cluster interconnect	2 x 40GbE
Specifications per HA Pair (Active-Active Dual Controller)	
Maximum drives (HDD/SSD)	1,440/480
Maximum raw capacity	14.4PB
Maximum onboard Flash Cache based on NVMe technology	16TB
Maximum Flash Pool	144TB
Controller form factor	8U
ECC memory	1024GB
NVRAM	64GB
PCIe expansion slots	20

OS version ONTAP 9.1 RC1 and later

FAS9000

Shelves and media	See the Shelves and Media page ¹ 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, Oracle Solaris, AIX, HP-UX, Mac OS, VMware, ESX

Table 2: FAS9000 series software.

FAS9000 Series Software

Software included in ONTAP 9 Base Bundle	<p>The Base Bundle includes the following NetApp technologies:</p> <p>Storage protocols: All supported data protocol licenses are included (FC, FCoE, iSCSI, NFS, pNFS, CIFS/SMB)</p> <p>Efficiency: NetApp FlexVol[®] technology, deduplication, compression, compaction, and thin provisioning</p> <p>Availability: Multipath I/O</p> <p>Data protection: NetApp RAID-TEC[™], RAID DP, and Snapshot[™] technologies</p> <p>Performance: NetApp storage QoS</p> <p>Scalable NAS container: FlexGroup</p> <p>Automated tiering of cold data to the cloud: FabricPool (on all-SSD aggregates for FAS)</p> <p>Management: OnCommand System Manager and OnCommand Unified Manager</p>
Software included in ONTAP 9 Premium Bundle (optional)	<p>To add capabilities to the Base Bundle, the optional Premium Bundle includes the following NetApp technologies:</p> <p>FlexClone[®] technology: data replication technology for instant virtual copies of databases or virtual machines</p> <p>SnapMirror: simple, efficient, flexible disaster recovery</p> <p>SnapVault[®] software: disk-based backup software for complete backups and online archiving to primary or secondary storage in minutes instead of hours or days</p> <p>SnapRestore[®] software: data-recovery software to restore entire Snapshot copies in seconds</p> <p>SnapCenter[®] technology: unified, scalable platform and plug-in suite for application-consistent data protection and clone management</p> <p>SnapManager[®] software: suite for application- and virtual machine-aware backup, recovery, and cloning</p>
Extended-value software (optional)	<p>Separate optional software, beyond the Base Bundle and Premium Bundle, is also available:</p> <p>OnCommand suite of management software: provides the visibility and control to help maximize system usage, meet storage SLAs, minimize risks, and boost performance</p> <p>NetApp SnapLock[®] technology: compliance software for write once, read many (WORM)-protected data</p> <p>NetApp Volume Encryption: granular, volume-level data-at-rest encryption</p> <p>FlexArray: virtualization of existing third-party storage arrays into an ONTAP environment to leverage the array storage capacity behind a NetApp FAS system</p>

¹ netapp.com/us/products/storage-systems/disk-shelves-and-storage-media/index.aspx.

Table 3: FAS8200 technical specifications.

FAS8200	
NAS scale-out: 1–24 nodes (12 HA pairs)	
Maximum drives (HDD/SSD)	5,760/2,880
Maximum raw capacity	57PB
Maximum onboard Flash Cache™ based on NVMe technology	48TB
Maximum Flash Pool	576TB
Maximum memory	3072GB
SAN scale-out: 1–12 nodes (6HA pairs)	
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	210GbE
Specifications per HA Pair (Active-Active Dual Controller)	
Maximum drives (HDD/SSD)	480/480
Maximum raw capacity	4800TB
Maximum onboard Flash Cache based on NVMe technology	4TB
Maximum Flash Pool	48TB
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 page ² on NetApp.com for the most current information

² netapp.com/us/products/storage-systems/disk-shelves-and-storage-media/index.aspx.

FAS8200

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, Oracle Solaris, AIX, HP-UX, Mac OS, VMware, ESX

Table 4: FAS8200 series software.

FAS8200 Series Software

Software included in ONTAP 9 Base Bundle	<p>The Base Bundle includes the following NetApp technologies:</p> <p>Storage protocols: All supported data protocol licenses are included (FC, FCoE, iSCSI, NFS, pNFS, CIFS/SMB)</p> <p>Efficiency: NetApp FlexVol[®] technology, deduplication, compression, compaction, and thin provisioning</p> <p>Availability: Multipath I/O</p> <p>Data protection: NetApp RAID-TEC[™], RAID DP, and Snapshot[™] technologies</p> <p>Performance: NetApp storage QoS</p> <p>Scalable NAS container: FlexGroup</p> <p>Management: OnCommand System Manager and OnCommand Unified Manager</p>
Software included in ONTAP 9 Premium Bundle (optional)	<p>To add capabilities to the Base Bundle, the optional Premium Bundle includes the following NetApp technologies:</p> <p>FlexClone[®] technology: data replication technology for instant virtual copies of databases or virtual machines</p> <p>SnapMirror: simple, efficient, flexible disaster recovery</p> <p>SnapVault[®] software: disk-based backup software for complete backups and online archiving to primary or secondary storage in minutes instead of hours or days</p> <p>SnapRestore[®] software: data-recovery software to restore entire Snapshot copies in seconds</p> <p>SnapCenter[®] technology: unified, scalable platform and plug-in suite for application-consistent data protection and clone management</p> <p>SnapManager[®] software: suite for application- and virtual machine-aware backup, recovery, and cloning</p>
Extended-value software (optional)	<p>Separate optional software, beyond the Base Bundle and Premium Bundle, is also available:</p> <p>OnCommand suite of management software: provides the visibility and control to help maximize system usage, meet storage SLAs, minimize risks, and boost performance</p> <p>NetApp SnapLock[®] technology: compliance software for write once, read many (WORM)-protected data</p> <p>FlexArray: virtualization of existing third-party storage arrays into an ONTAP environment to leverage the array storage capacity behind a NetApp FAS system</p>

Table 5: FAS2600 technical specifications.

Specifications per HA Pair	FAS2650	FAS2620
Maximum raw capacity ³	1243TB	1440TB
Maximum disk drives	144	144

³ Maximum raw capacity depends on the drive offerings. See the Shelves and Media page on NetApp.com (netapp.com/us/products/storage-systems/disk-shelves-and-storage-media/index.aspx) for the most current information.

Specifications per HA Pair	FAS2650	FAS2620
Controller form factor	2U/24 drives (SFF)	2U/12 drives (LFF)
ECC memory	64GB	64GB
Onboard NetApp Flash Cache based on NVMe technology	1TB	1TB
Maximum Flash Pool™	24TB	24TB
NVMEM/NVRAM	8GB	8GB
Onboard I/O: UTA2 (8Gb FC/16Gb FC/FCoE/10GbE/1GbE ⁴)	8 ⁴	8 ⁴
Onboard I/O: 10GbE	4	4
Onboard I/O: 12Gb SAS	4	4
OS version	ONTAP 9.1 and later	
Shelves and media	See the Shelves and Media page ³ 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, Oracle Solaris, IBM AIX, HP-UX, Apple Mac OS, VMware ESX	

Note: All specifications are for dual-controller, active-active configurations.

Table 6: Specifications for scale-out configurations (hybrid and disk-only configurations).

	FAS2650	FAS2620
NAS/SAN scale-out	1–8 nodes (4 HA pairs)	1–8 nodes (4 HA pairs)
Maximum drives	576	576
Maximum raw capacity	5.0PB	5.7PB
Maximum onboard Flash Cache based on NVMe technology	4TB	4TB
Maximum Flash Pool	96TB	96TB
Maximum ECC memory	256GB	256GB
Cluster interconnect	10GbE: Supported using either 10GbE or UTA2 ports for maximum flexibility	

Table 7: FAS2600 series software.

FAS2600 Series Software

Software included in ONTAP 9 Base Bundle The Base Bundle includes the following NetApp technologies:

- Storage protocols:** All supported data protocol licenses are included with licenses (FC, FCoE, iSCSI, NFS, pNFS, CIFS/SMB)
- Efficiency:** NetApp FlexVol®, deduplication, compression, compaction, and thin provisioning
- Availability:** Multipath I/O
- Data protection:** NetApp RAID-TEC, RAID-DP, and Snapshot technologies
- Performance:** NetApp storage QoS
- Scalable NAS container:** FlexGroup
- Automated tiering of cold data to the cloud:** FabricPool (on all-SSD aggregates for FAS)

⁴ Onboard UTA2 ports for FAS2650 and FAS2620 can be configured as either an 8Gb/16Gb FC port pair or a 10GbE port pair and mixed combinations. Also, GbE supported with SFP+ modules X6567-R6 for optical and X6568-R6 for RJ45.

Management: OnCommand System Manager and OnCommand Unified Manager

Software included in ONTAP 9 Premium

To add capabilities onto the Base Bundle, the optional Premium Bundle includes the following NetApp technologies:

FlexClone[®]: instant virtual copies of databases or virtual machines

SnapMirror[®]: simple, efficient, flexible disaster recovery

SnapVault[®]: disk-based backup software for complete backups and online archives to primary or secondary storage in minutes instead of hours or days

SnapRestore[®]: restore entire Snapshot copies in seconds

SnapCenter[®]: unified, scalable platform and plug-in suite for application-consistent data protection and clone management

SnapManager[®] suite: application- and virtual machine-aware backup, recovery, and cloning

For descriptions of these products and information about additional software available from NetApp, go to NetApp.com.

Extended value software (optional)

Separate optional software, beyond the Base Bundle and Premium Bundle, is also available:

OnCommand suite of management software: Provides the visibility and control to help maximize system utilization, meet storage SLAs, minimize risks, and boost performance

SnapLock[®]: Compliance software for write once, read many (WORM) protected data

Volume Encryption: Granular, volume-level data-at-rest encryption

Future-Proof Your Data and Applications

Data management is more than a technology choice today—it positions how successfully West Virginia Attorney General's Office will do business in the future. Hybrid cloud deployment models, combinations of private and public cloud resources, are becoming the new normal for IT organizations of all sizes. They offer a wide choice of application environments with a seemingly limitless pool for compute, network, and storage resources balanced against the high levels of privacy and control that already exist within West Virginia Attorney General's Offices on-premise infrastructure.

Mixed environments, however, create new challenges for data management. Organizations must have the freedom to move applications and workloads to the optimal environment as needs change and new technologies are presented by the market.

Managing data in hybrid cloud architectures that have evolved into incompatible data silos brings additional challenges, including:

- Protecting data and addressing security issues
- Inability to move data
- Difficulty managing data consistently
- Limited choice
- Lack of control

To overcome these challenges, IT needs a secure, seamless way to manage applications and data across clouds, regardless of their underlying storage systems. When clouds are connected, IT is able to draw from the resources of each, move data and applications to new cloud services, and put every workload in the most appropriate place.

NetApp Data Fabric Delivers Data Management Solutions

NetApp's vision for data management is a data fabric that seamlessly connects different clouds, whether they are private, public, or hybrid environments. A data fabric unifies data management across distributed resources to allow consistency and control of data mobility, security, visibility, protection, and access.

Customers who leverage the Data Fabric enabled by NetApp use it to position any cloud as simply another tier of storage within their organization; to better understand the workloads they run for their business; deliver new applications faster; automate operations and bring a level of control over IT service provision that is difficult to achieve any other way.

"Now of course the Data Fabric isn't a simple SKU—but then neither is it simply PowerPoint-ware; it is one of the most compelling and comprehensive 'data anywhere and everywhere, single management, cloud-inclusive' constructs you'll find."

— Mark Peters, Senior Analyst at ESG

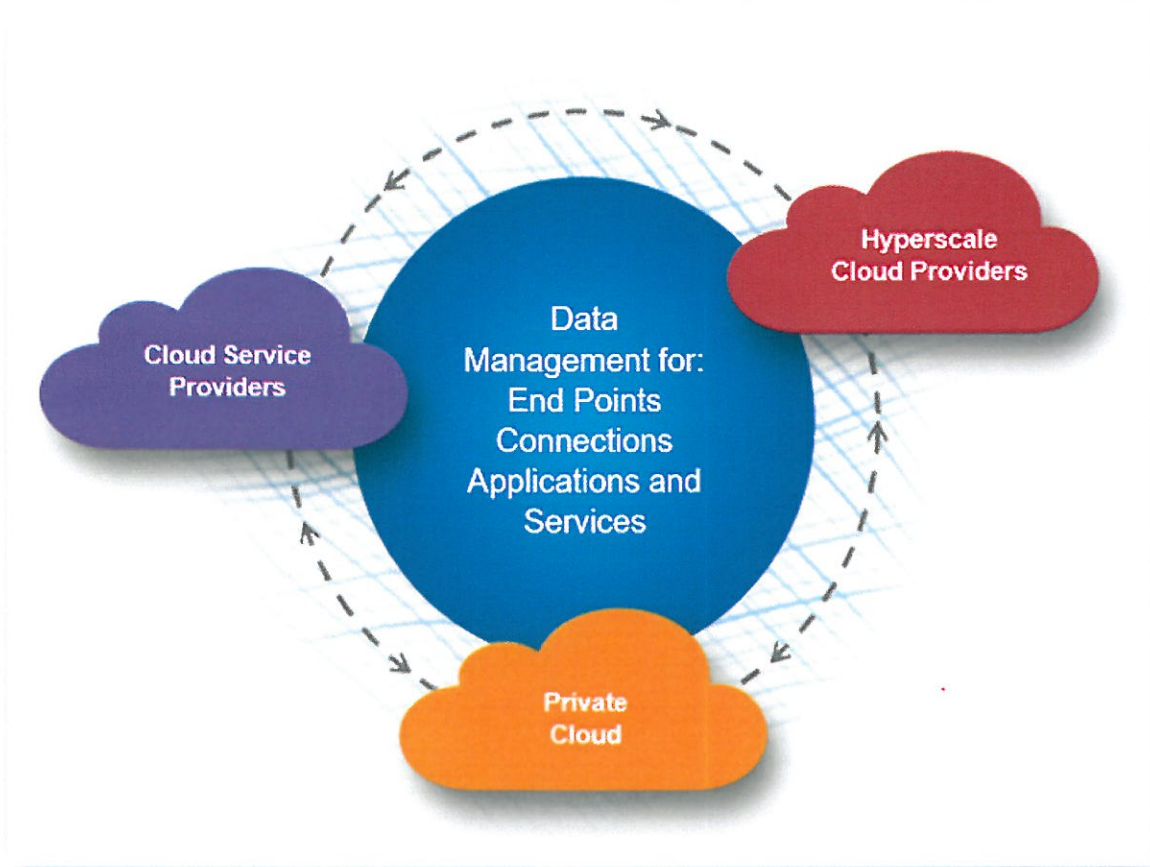


Figure 1: Data Fabric connectivity through hybrid cloud architectures – *Data Fabric connects everything, across diverse platforms and incompatible data silos with no down time.*

A true data fabric delivers five design principles essential for businesses to achieve a unified, consistent hybrid cloud environment:

- **Control.** Securely retain control and governance of data regardless of its location: on premises, near the cloud, or in the cloud.
- **Choice.** Choose cloud, application ecosystem, delivery methods, storage platforms, and deployment models with freedom to change.
- **Integration.** Enable each component of the architecture to operate in synch while extracting the full value of each.
- **Access.** Easily move data to where applications need it, when they need it, in a way they can use it.
- **Consistency.** Manage data across multiple environments using standard tools and processes, regardless of where it resides.

Data Fabric answers West Virginia Attorney General's Offices requirements for future-proof data management.

Who Needs a Data Fabric?

NetApp Data Fabric provides the products and solutions—the threads—that connect you to your data so you can accelerate efficiency, IT responsiveness, and innovation across flash, disk, and cloud.

Enterprise CEOs

NetApp's Data Fabric enables enterprise CEOs to foster an environment that stimulates innovation. They can improve the use of business resources through agility. Agility enables an organization to move at the speed of smaller companies without sacrificing the ability to meet the business and compliance requirements of their industry. They can have confidence that their data is secure.

Enterprise CIOs

To address business requirements, CIOs must maintain their existing environments and security posture while adopting promising technologies. With NetApp's Data Fabric, CIOs gain the freedom to make the best decisions for the business by assuring secure access to data wherever it is needed and accelerating innovation with fewer resources. As hybrid cloud becomes the new normal for IT, CIOs need to protect, manage, and retain compliance of their organizations' data no matter where it resides.

IT Architects

Heads of IT infrastructure must satisfy diverse service-level objectives (SLOs). Workloads require different availability, performance, cost, security, and access. With NetApp's Data Fabric, IT architects have flexibility in their design of hybrid cloud architectures. They can control access by providing the security that the organization requires with the access to data users need.

Application Owners

The need for secure, rapid software development is driving fast adoption of hybrid cloud by application development teams. Setting up infrastructure for new projects in the cloud is fast and affordable. Application owners can adopt a DevOps paradigm and allow pilot projects the freedom to fail. When costs outweigh advantages, application owners can bring development and/or production environments back to their data centers.

Storage Architects

The Data Fabric extends the reach of storage architects and administrators into cloud architectures. It gives them the opportunity to leverage their existing skills and operational experience to take advantage of new leading-edge deployment models. With new tools at their disposal, they have more freedom to enable their users to be more productive and innovate in new ways.

Cloud Service Providers

Cloud service providers (SPs) seek to scale their business up, drive costs down, and onboard customers quickly and easily. With NetApp's Data Fabric, SPs can build an efficient and dependable infrastructure that scales with demand. Operations are completely automatable, whether the cloud orchestration framework is commercial, open source, or custom built. Customers can be onboarded by enabling them to extend their data fabrics to the SP cloud, giving them control of their data while they utilize cloud services.

How Does the Data Fabric Work?

The Data Fabric enabled by NetApp is a collection of integrated technologies and services that deliver high-value data management solutions to West Virginia Attorney General's Office which are much greater than the sum of their parts. Platforms (physical and software-defined) establish the data store endpoints in various environments. Our SnapMirror® data transport links them together. Management tools, APIs, and wide-ranging storage system integration make them easy to use collectively. Layered services provide overall visibility and control of business operations. The multicloud capabilities of the data fabric provide organizations with a choice of environments for running their applications.

We begin by laying the foundation with the NetApp® ONTAP® operating system and growing the capabilities and endpoints of your data fabric from there. A wide variety of deployment models are available, ranging from FlexPod® converged infrastructure for data centers to Cloud Volumes ONTAP and NetApp Private Storage for clouds. NetApp is committed to evolving the Data Fabric to fulfill our vision of delivering the ultimate data management layer.

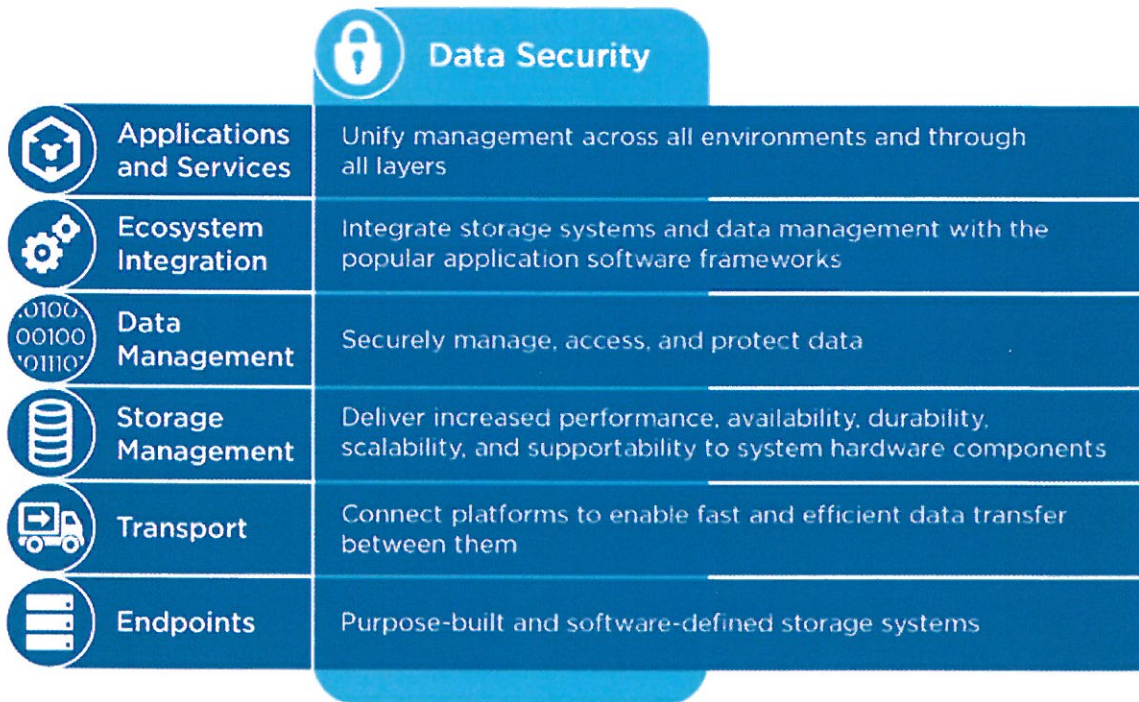


Figure 2: Data Fabric layers.

NetApp Data Fabric will continue to offer deeper product and ecosystem integration and wider endpoint coverage, to give you more choice over application environments and delivery models.

NetApp also actively works with partners to leverage their offerings to jointly bring solutions to market. NetApp has the right technology, business model, and vision to place us at the forefront of delivering unified data management across clouds, both public and private.

NetApp is different from our competitors in that our products and solutions have in-built flexibility that constantly evolves to maximize other vendors' innovations. West Virginia Attorney General's Office may expand your data fabric to take advantage of new capabilities and meet new business needs as technologies and solutions continue to evolve. Over time, the Data

Fabric enabled by NetApp becomes more textured, more expansive, and more capable. This is true Data Fabric.

How is the Data Fabric Deployed?

An organization may choose a combination of cloud deployment models to define the topology and span of its data fabric. IT has a wide variety of deployment models at its disposal, including:

- Private cloud in the data center
- Public cloud offerings from service providers
- Hybrid cloud that combines private and public resources
- Multiple clouds composed of two or more combinations of private or public clouds

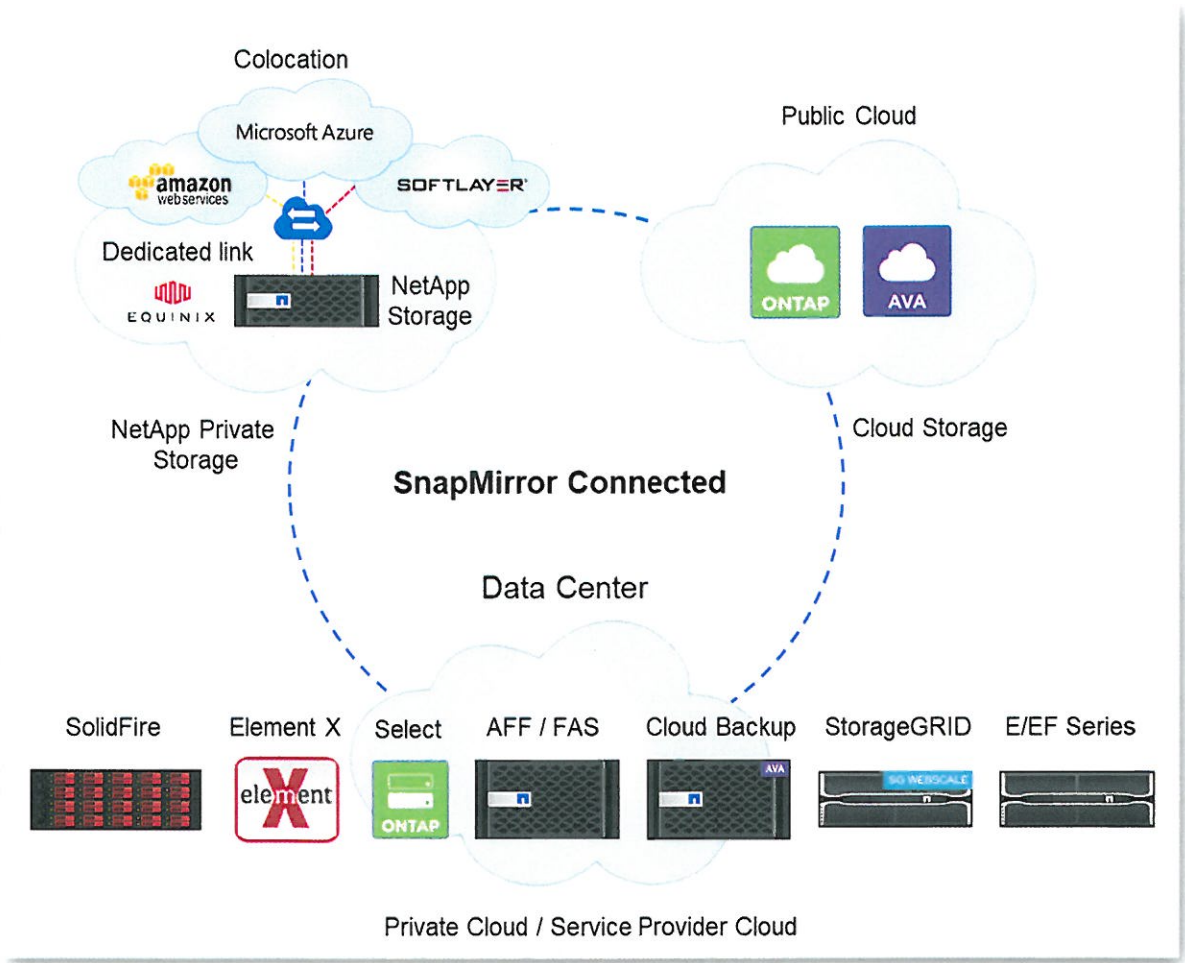


Figure 3: NetApp Data Fabric deployment models.

Data requirements differ between each cloud model, and everyone's cloud is different—so how will NetApp tailor data management in the cloud to West Virginia Attorney General's Offices specifications?

Private Cloud

Private clouds may reside in West Virginia Attorney General's Offices own data center or be hosted in remote facilities. NetApp products integrate data management capabilities across all commercial or open-source hypervisor and cloud orchestration frameworks. NetApp products tightly integrate data management capabilities with these ecosystems. The storage solution choices range from purpose-built to software-defined storage.

Public Cloud

Public clouds are resources made available by service providers who offer their own data centers and infrastructure for public use. Although the largest cloud providers operate at a scale at which they can design proprietary architectures, service providers typically choose from the same options used by enterprises architecting private clouds. Doing so enables the service providers to focus less on infrastructure and more on their core business of service innovation.

Service providers utilizing NetApp infrastructure give West Virginia Attorney General's Office the ability to expand your data fabrics to the cloud by offering SnapMirror or SnapVault® services. This allows the service provider's customer base to efficiently onboard data into the cloud for use with the service provider's services, paving the way for hybrid cloud architectures.

Cloud Volumes ONTAP can be used to quickly create an ONTAP endpoint in Amazon Web Services (AWS), Google, and Azure. This brings the value of ONTAP data management to cloud storage by using snapshots to ship data in and out.

Hybrid Cloud

Hybrid cloud leverages both on-premises and public cloud resources so that West Virginia Attorney General's Office can build the cloud on your terms: multi-cloud and multidirectional, integrating any combination of resources that are on premises, near the cloud and in the cloud. For example, a hybrid cloud deployment may consist of a FAS array in the corporate data center and Cloud Volumes ONTAP in AWS, connected using the SnapMirror transport to replicate data from one location to the other. This simple architecture establishes a data fabric that enables application data to be served and managed the same way for all locations.

A hybrid cloud may also connect colocation managed and/or dedicated services with cloud resources. For example, with NetApp Private Storage (NPS), organizations may deploy a private FAS cluster in a colocation facility and use a network exchange to achieve lower latency when connecting to public cloud compute. IT departments retain control of their data, from its physical location to retention policies and SLOs, and gain the benefit of data mobility across environments through the connectivity that the data fabric provides.

Your Path to the Cloud

The benefits of the Data Fabric are tangible and we have numerous real-world examples to illustrate how service providers and enterprises are using a NetApp Data Fabric today. Service providers and enterprises across the globe are currently using NetApp's Data Fabric to transform their business in new ways.

One principle guides our innovation: enabling our customers to fully realize the value to their business of data across the cloud, whether private, public or hybrid.



AFF Speeds Your Data Between Local and Cloud

West Virginia Attorney General's
Office
Address

Technical Benefits

- Simplify management of SAN/NAS and data protection
- Boost your storage efficiency by 5:1
- Enable consistent sub-millisecond latency with Flash Essentials to 7million IOPS

Products and Services

NetApp All-Flash FAS (AFF)

NetApp Snapshot™ and
SnapRestore® technologies

NetApp SnapMirror® technology

NetApp Deduplication

Estimated Costs for West
Virginia Attorney General's
Office



NetApp®

Companies are faced with the contradicting requirements of boosting the performance of your system while cutting management and operation costs. All-flash storage is an efficient way to address this challenge.

Why is Flash Storage Compelling?

Flash is simpler than conventional storage because it uses electricity to store data in addressable locations on a fixed, thin layer of oxide, rather than on spinning disks. There are no moving parts and data is retained when the power is turned off. Flash storage reads ~ 100 x faster than a traditional spinning hard drive, yet consumes ~20% of the power.

Flash can reduce overall costs compared to using conventional storage alone.

The Benefits of NetApp

NetApp flash-based solutions can create an architecture that meets West Virginia Attorney General's Office's requirements for price, performance, reliability and scalability.

All-Flash FAS (AFF) built on the NetApp® ONTAP® data management software accelerates the performance of your solution and optimizes it with high availability and scalability.

NetApp all-flash converged infrastructure with FlexPod

is the world's leading converged product

- Excellent performance at the 1ms latency point
- The most data management features of any storage platform in the world
- Extensive cloud integration, live data movement between different node types (AFF to hybrid and back, and to cloud for instance)
- Single storage platform for all data management needs, optimized for mixed workloads and applications
- Comprehensive automation, replication, storage efficiency mechanisms
- Application-aware automation for cloning and backups for most major Enterprise apps
- Multiprotocol support (FC, iSCSI, NFS 3,4, pNFS, SMB 1,2,3)
- 6-nines proven availability, robust data integrity, no single failure domain
- Scale-up (up to 480 SSDs per 2 controllers) and scale out (up to 24 controllers)
- Non-disruptive everything, including changing controller types

Proposed NetApp Products

- NetApp AFF220 with ONTAP

Table 1: All Flash FAS technical specifications.

AFF Technical Specifications					
	AFF A800	AFF A700s	AFF A700	AFF A300	AFF A220
NAS Scale-Out	2–24 nodes (12 HA pairs)				
Maximum SSD	2,880	2,529	5,760	4,608	1,728
Maximum raw capacity: all flash	79.0PB/70.2PiB	79.0PB/70.2PiB	175.7PB/156.0PiB	140.5PB/124.8PiB	48.3PB/42.9PiB
Effective capacity ¹	316.3PB/280.8PiB	316.3PB/280.8PiB	702.7PB/623.8PiB	562.2PB/499PiB	193.3PB/171.6PiB
Maximum memory	15,360GB	12,288GB	12,288GB	3,072GB	768GB
SAN Scale-Out	2-12 nodes (6 HA pairs)				
Maximum SSD	1440	1,296	2,880	2,304	864
Maximum raw capacity	39.6PB/35.1PiB	39.6PB/35.1PiB	87.8PB/78.0PiB	70.3PB/62.4PiB	24.2PB/21.4PiB
Effective capacity	158.2PB/140.4PiB	158.2PB/140.4PiB	351.4PB/311.9PiB	281.1PB/249.5PiB	96.7PB/85.5PiB
Maximum memory	7680GB	6144GB	6144GB	1536GB	384GB
Cluster interconnect	4 x 100GbE	4 x 40GbE	4 x 40GbE	4 x 10GbE	4 x 10GbE
Per HA Pair Specifications (Active-Active Dual Controller)					
Maximum SSD	240	216	480	384	144
Maximum raw capacity: all flash	6.6PB/5.8PiB	6.6PB/5.8PiB	14.6PB/13.0PiB	11.7PB/10.4PiB	4.0PB/3.6PiB
Effective capacity	26.4PB/23.4PiB	26.4PB/23.4PiB	58.6PB/52PiB	46.9PB/41.6PiB	16.6PB/14.3PiB
Controller form factor	4U chassis with two HA controllers and 48 SSD slots	4U chassis with two HA controllers and 24 SSD slots	8U chassis with two HA controllers	3U chassis with two HA controllers	2U chassis with two HA controllers and 24 SSD slots
Memory	1280GB	1024GB	1024GB	256GB	64GB
NVRAM	64GB	32GB	64GB	16GB	8GB
PCIe expansion slots	8	8	20	6	N/A
FC target ports (32Gb autoranging)	32	8	32	8	N/A
FC target ports (16Gb autoranging)	32	8	64	24	0-8
FCoE target ports,	N/A	12	64	24	0-8

¹ Effective capacity is based on 5:1 storage efficiency ratios with the maximum number of SSDs installed. The actual ratio can be higher depending on workloads and use cases.

AFF Technical Specifications

	AFF A800	AFF A700s	AFF A700	AFF A300	AFF A220
UTA2					
100GbE/40GbE ports	16	8	N/A	N/A	N/A
40GbE ports	16	24	32	8	N/A
10GbE ports	32	N/A	64	28	0-8
10GbE Base-T ports (1GbE autoranging)	N/A	8	64	12	N/A
12Gb/6Gb SAS ports	N/A	8	64	24	4
Storage networking supported	NVMe/FC; FC; iSCSI; NFS; pNFS; CIFS/SMB	NVMe/FC, FC, iSCSI, NFS, pNFS, CIFS/SMB	NVMe/FC, FC, FCoE, iSCSI, NFS, pNFS, SMB	NVMe/FC, FC, FCoE, iSCSI, NFS, pNFS, SMB	FC, FCoE, iSCSI, NFS, pNFS, SMB
OS version	ONTAP 9.4 RC1 or later		ONTAP 9.1 GA or later		ONTAP 9.4 RC1 or later
Shelves and media	NVMe Drive Packs	DS224C (2U; 24 drives, 2.5" SFF); DS2246 (2U; 24 drives, 2.5" SFF) See NetApp All Flash FAS Tech Specs page ² for more details about supported drive types.			
Host/client OSs supported	Windows [®] 2000, Windows Server [®] 2003, Windows Server 2008, Windows Server 2012, Windows Server 2016, Linux [®] , Oracle [®] Solaris, AIX, HP-UX, Mac [®] OS, VMware [®] , ESX [®]				

Table 2: AFF A-Series software.

AFF A-Series Software

Features and software Included with ONTAP software	<p>Efficiency: NetApp FlexVol[®], inline deduplication, inline compression, inline compaction, and thin provisioning</p> <p>Availability: Multipath I/O and active-active HA pair</p> <p>Data protection: NetApp RAID DP[®], NetApp RAID TEC[®], and Snapshot technology</p> <p>Synchronous replication for disaster recovery: MetroCluster</p> <p>Performance control: Adaptive QoS and balanced replacement</p> <p>Management: OnCommand Workflow Automation, System Manager, Performance Manager, and Unified Manager</p> <p>Scalable NAS container: FlexGroup</p>
Flash bundle	<ul style="list-style-type: none"> All storage protocols supported (FC, FCoE, iSCSI, NFS, pNFS, SMB) NetApp SnapRestore[®] software: Restore entire Snapshot copies in seconds NetApp SnapMirror software: Simple, flexible backup and replication

² See <http://www.netapp.com/us/products/storage-systems/all-flash-fas/model-a-tech-specs.aspx>.

AFF A-Series Software

for disaster recovery

- NetApp **FlexClone**[®] technology: Instant virtual copies of files, LUNs, and volumes
- NetApp **SnapCenter**[®]: Unified, scalable platform and plug-in suite for application-consistent data protection and clone management
- NetApp **SnapManager** software: Application-consistent backup/recovery for enterprise applications

Go to NetApp.com for information on additional software available from NetApp.

Extended-value software
(optional)

NVMe over FC (NVMe/FC) protocol: Faster and more efficient host connection than with original FC

NetApp OnCommand Insight: Flexible, efficient resource management for heterogeneous environments

NetApp SnapLock: Compliance software for write once, read many (WORM) protected data

NetApp Volume Encryption (free license): Granular, volume-level, data-at-rest encryption

NetApp FabricPool feature: Automatic data tiering to the cloud

ONTAP 9: Harness the Power of the Hybrid Cloud

NetApp ONTAP 9 simplifies data management for any application, anywhere; accelerate and protect data across the hybrid cloud; and future-proof your data infrastructure. ONTAP 9 is the next generation of data management software, combining new levels of simplicity and flexibility with powerful data management capabilities and storage efficiencies. The latest version, ONTAP 9.4, delivers the NVMe support.

West Virginia Attorney General's Offices transformation into a digital business brings with it complexities in the short term. Your new priorities might require adding all-flash arrays for business-critical workloads, while integrating new applications into your existing environment, and managing data on premises as well as in the cloud—yet operations must be simplified, costs reduced, and budgets stretched.

NetApp® ONTAP 9® provides West Virginia Attorney General's Office with next-generation data management capabilities and storage efficiencies, fueled by simplicity and flexibility. ONTAP 9 enables West Virginia Attorney General's Office to deploy storage across your choice of architectures: engineered systems, software-defined storage (SDS), and the cloud, while unifying data management across each of them.

West Virginia Attorney General's Office can leverage ONTAP 9 to:

- Simplify deployment and data management
- Adapt to changing business needs
- Power your enterprise applications

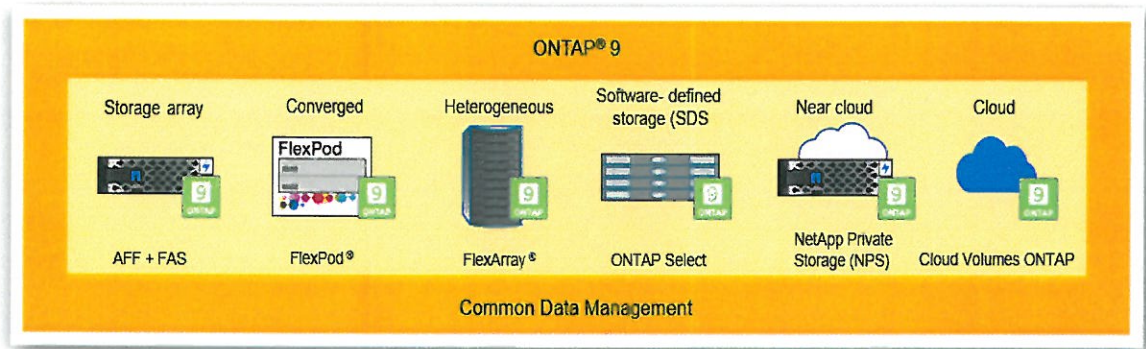


Figure 1: Standardize data management across architectures with a rich set of enterprise data services.

Simplify Deployment and Management

Although West Virginia Attorney General's Offices storage might double in size, it no longer means there is twice as much work to manage. ONTAP has a common set of features across deployment architectures that simplify complex tasks so West Virginia Attorney General's Offices staff can be more productive.

Deploy New Workloads in Less Than 10 Minutes

New, fast provisioning workflows enable the deployment of key workloads such as Oracle, SQL Server, SAP-HANA, VDI, and VMware in less than 10 minutes from power-on to serving data. Years of NetApp experience and best practices are integrated into the system manager wizard and factory configurations, enabling West Virginia Attorney General's Office to quickly set up new configurations by answering a few questions. As new workloads are deployed, ONTAP 9 gives you the visibility to know which node has the most performance capacity available for optimal deployment.

Unified Data Management

Simplify your operations by unifying data management across a hybrid cloud that can span flash, disk, and cloud running SAN and NAS workloads. West Virginia Attorney General's Office can increase the efficiency of your staff and easily move data between nodes to where it is most needed. ONTAP is the foundation for a Data Fabric that gives freedom, choice, and control across your storage environment.

Simplified, Powerful Management Capabilities

The NetApp OnCommand® software portfolio includes management products that manage virtualized private and hybrid cloud environments. West Virginia Attorney General's Office can centrally monitor capacity, availability, performance, and data protection. You can take advantage of storage service analytics to make better informed decisions about your storage.

OnCommand management platform automates your storage processes by integrating into your data center orchestration platform for end-to-end service delivery for your private and hybrid cloud services.

Adapt to Changing Business Needs

ONTAP 9 provides the flexibility West Virginia Attorney General's Office needs to design and deploy your storage environment across the widest range of architectures, so you can match the approach that is best for your evolving business needs:

- NetApp arrays: All Flash FAS (AFF) systems and hybrid-flash FAS systems
- Converged infrastructure: FlexPod®
- On commodity servers as SDS: ONTAP Select
- In front of third-party arrays: NetApp FlexArray® software
- Next to the cloud: NetApp Private Storage (NPS) for Cloud
- In the cloud: ONTAP Cloud

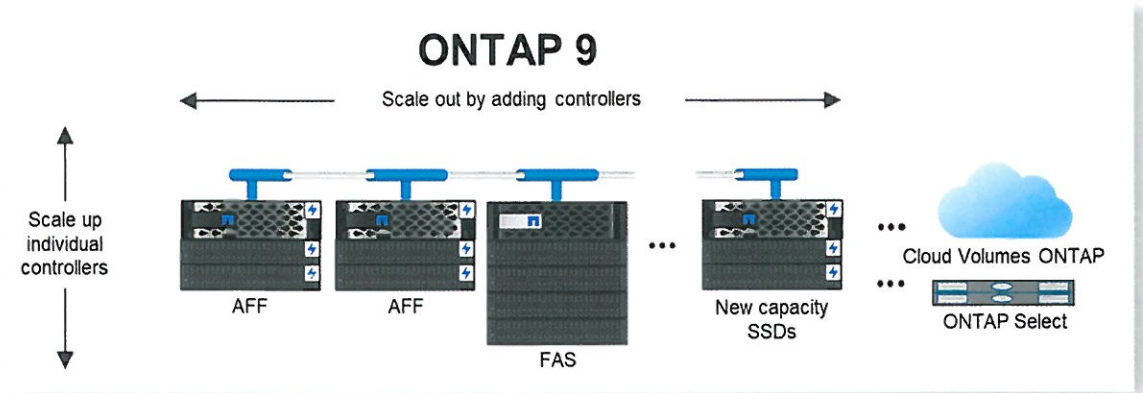


Figure 2: Scale seamlessly – West Virginia Attorney General's Office can scale out by intermixing your choice of flash and hybrid-flash nodes, upgrade hardware/software or scale up without disrupting users, incorporate software-defined, cloud, and future-generation flash.

West Virginia Attorney General's Office can flexibly consolidate both NAS and SAN workloads onto any ONTAP environment while delivering consistent data services. You can also seamlessly move your data between each deployment model to get your data onto the optimal environment for performance, capacity, and cost efficiency.

West Virginia Attorney General's Office can add capacity as your business grows across both SAN and NAS environments. You can combine all-flash and hybrid-flash storage nodes into a larger storage cluster and connect them to the cloud. And ONTAP FabricPool technology can deliver up to 50% storage TCO savings by automatically tiering cold data from AFF/FAS systems, ONTAP Cloud, and ONTAP Select to the cloud, including Azure, AWS, and StorageGRID.

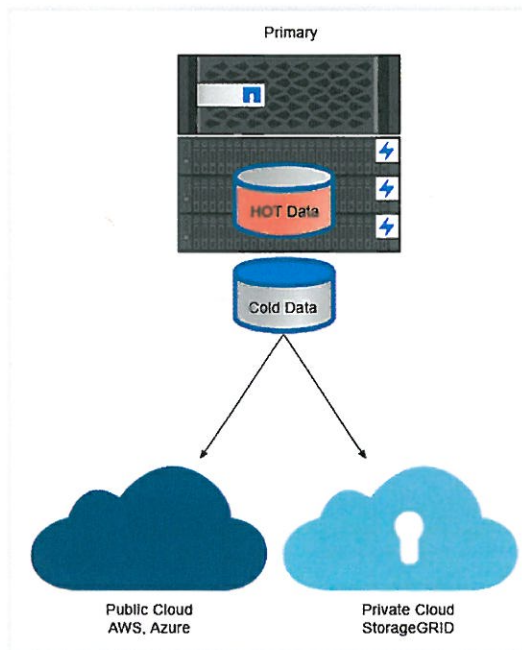


Figure 3: Automated cloud tiering of cold data.

Power Enterprise Applications

To support your critical applications West Virginia Attorney General's Office needs a storage environment that cost-effectively delivers high performance and availability that can also scale with business growth and protect your valuable data. ONTAP 9 delivers on all these requirements with highly efficient flash performance for scalable, nondisruptive operations.

Optimized for Flash

ONTAP 9 delivers the horsepower that critical applications require without compromising on rich data services. AFF systems running ONTAP 9 are optimized specifically for flash, including new NVMe technologies, providing up to twice the performance compared to the same workloads running on recent ONTAP 8 releases, while still delivering consistent submillisecond latency.

ONTAP 9 also enables FAS hybrid-flash storage systems to deliver flash-accelerated performance that is balanced with hard disk drives (HDD) economies. Hot data is automatically cached in flash to accelerate application performance.

Nondisruptive Operations

ONTAP gives West Virginia Attorney General's Office the ability to perform critical tasks without interrupting your business. You can dynamically assign, promote, and retire storage resources without downtime over the lifecycle of an application. Data can be moved between controllers without application interruption. Storage controllers and disk shelves can be replaced without disruption, and with ONTAP you can mix models and generations of hardware to extend the life of existing investments.

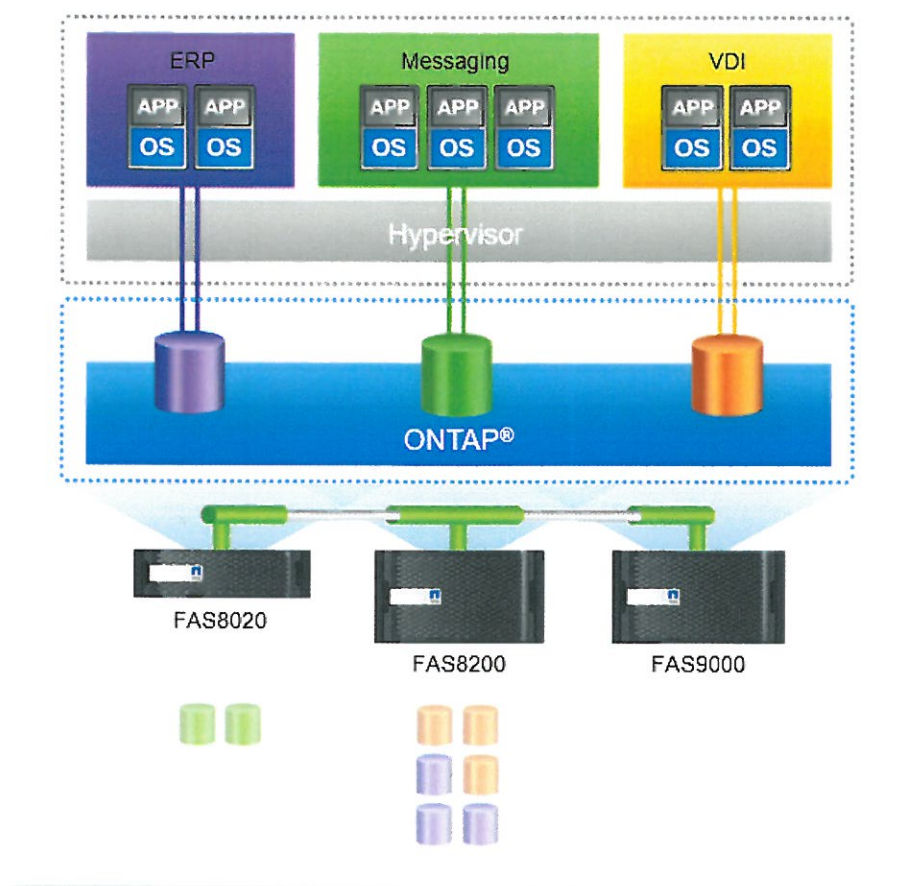


Figure 4: Nondisruptive operations – West Virginia Attorney General’s Office can move data to available nodes and retire existing hardware.

We can now provide access to our systems 24 hours a day. That’s important to us and for our patients needing immediate care.”

— Tony Beard, Director, Infrastructure and Security, DuPage Medical Group

Integrated Data Protection

NetApp offers a complete suite of Integrated Data Protection (IDP) and replication features to support backup and disaster recovery requirements. ONTAP provides IDP to safeguard West Virginia Attorney General’s Offices operations and keep them running smoothly. Technologies include space-efficient Snapshot® technology, near-instant backup and recovery with SnapMirror®, and synchronous replication with MetroCluster™, which can meet your requirements for business continuity and disaster recovery.

NetApp also provides superior integration with enterprise backup vendors and leading applications. Our IDP solutions include integrated and unified disk-to-disk backup and disaster recovery in a single process for VMware and Microsoft virtualization.

Security and Compliance

West Virginia Attorney General’s Office can simplify and strengthen your security posture by integrating data security throughout your hybrid cloud. You can help meet governance, risk, and compliance (GRC) requirements such as HIPAA, PCI-DSS, and GDPR and cost

effectively secure your NetApp ONTAP environment by incorporating industry-standard, built-in security that meets FIPS 140-2 compliance.

West Virginia Attorney General's Office can easily and efficiently protect at-rest data with NetApp Storage Encryption (NSE)—that uses self-encrypting drives. Or encrypt any volume across FAS, AFF, and ONTAP Select deployments with NetApp Volume Encryption (NVE)—that does not require special encrypting disks. Key management can be delivered in a self-contained encryption solution using Onboard Key Manager (OKM), included with ONTAP, or with external key management solutions that provide separation of duties and a centralized key repository.

To meet stringent compliance and data retention policies, NetApp SnapLock® software enables write once, ready many (WORM) protected data for your ONTAP environment.

Superior Storage Efficiency

With ONTAP, West Virginia Attorney General's Office can reduce costs with one of the most comprehensive storage efficiency offerings in the industry. You get NetApp Snapshot copies, thin provisioning, and replication and cloning technologies. You also get inline data compression, inline deduplication, and inline compaction that work together to reduce storage costs and maximize effective capacity. In addition, FabricPool automates the cost-efficient tiering of cold data to both public and private clouds.

Maximized Shared Storage Investments

ONTAP gives West Virginia Attorney General's Office the ability to save time and money by sharing the same consolidated infrastructure for workloads or tenants that have different performance, capacity, and security requirements without fear that the activity in one tenant partition will affect another. With multitenancy, a storage cluster can be subdivided into secure partitions governed by rights and permissions. And quality of service (QoS) workload management allows you to control the resources that each workload can consume, to better manage performance spikes and improve customer satisfaction. Adaptive QoS can be used to set both maximum and minimum resource levels, which is especially important for business-critical workloads, and it automatically adjusts storage resource levels to respond to changes in workloads and deliver consistent performance.

Seamless Scalability

Storage systems that run ONTAP can transparently scale from a few terabytes up to 172PB. Scale up by adding solid-state drive (SSD) and HDD capacity. Or scale out by adding additional storage controllers to seamlessly expand your cluster up to 24 nodes as your business needs grow. West Virginia Attorney General's Office can also rebalance capacity to improve service levels by redeploying workloads dynamically and avoiding hot spots. You also have the ability to isolate workloads and offer levels of service by using different controller technologies, storage tiers, and QoS policies.

In addition, ONTAP supports massive NAS containers that are easy to manage. With FlexGroup, a single namespace can grow to 20PB and 400 billion files while maintaining consistent high performance and resiliency.

Maximize Investment Protection

ONTAP gives West Virginia Attorney General's Office the flexibility to create an integrated, scalable storage environment by clustering storage controllers from different families—AFF and FAS—as well as from different generations. Grow with the latest hardware and continue

to use your older hardware. When it is time to retire a storage system, simply upgrade the controllers and keep data in place on the existing disk shelves. West Virginia Attorney General's Office will get more value from existing investments in third-party arrays by virtualizing them with NetApp FlexArray virtualization and using the storage capacity in your ONTAP environment.

Simple, Straightforward Transition to ONTAP 9

No matter what your starting point, NetApp streamlines West Virginia Attorney General's Offices move to ONTAP 9. You can:

- Upgrade from ONTAP 8.3 with a simple update of your ONTAP software—no disruption and zero downtime.
- Make a smooth transition from ONTAP 7-Mode with proven tools and best practices, including 7-Mode Transition Tool (7MTT) and Copy Free Transition (CFT).
- Use straightforward import processes from third-party storage to ONTAP 9.

Consult our experts to plan and implement your transition and gain the latest ONTAP advantages from day one. You can use either NetApp Services or NetApp Certified Services Partners, do it yourself using our proven tools and processes, or choose a combination of approaches.

ONTAP Technical Highlights

The building blocks for ONTAP scale-out storage configurations are high-availability (HA) pairs in which two storage controllers are interconnected to the same set of disks. If one controller fails, the other takes over its storage and continues serving data.

With ONTAP, each storage controller is referred to as a cluster node. Nodes can be different models and sizes of AFF and FAS systems. In addition, nodes can be FAS systems running FlexArray storage virtualization, leveraging third-party and NetApp E-Series arrays as the storage capacity behind the FAS system. Disks are made into aggregates, which are groups of disks of a particular type that are composed of one or more RAID groups protected by using NetApp RAID DP® and RAID TEC technology.

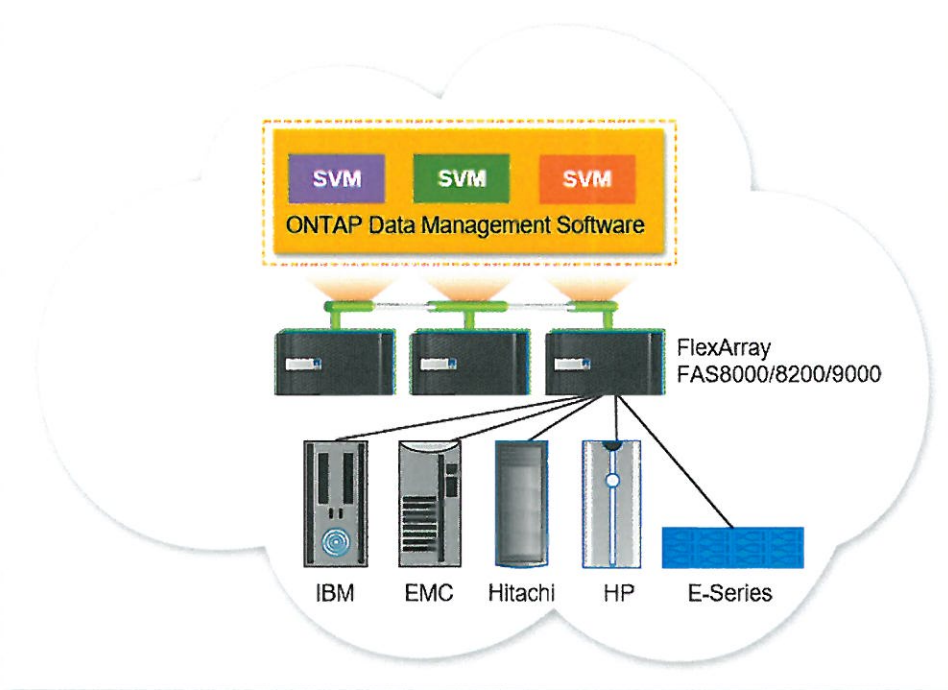


Figure 5: Investment protection – West Virginia Attorney General's Office can integrate your existing storage arrays into your private cloud with ONTAP and FlexArray.

A key differentiator in an ONTAP environment is that numerous HA pairs are combined into a cluster to form a shared pool of physical resources that are available to applications, SAN hosts, and NAS clients. The shared pool appears as a single system image for management purposes. This means that there is a single common point of management, whether through the graphical user interface or command-line interface tools, for the entire cluster.

Although the members of each HA pair must be the same controller type, the cluster can consist of heterogeneous HA pairs of AFF all-flash arrays as well as FAS hybrid-flash arrays. Over time, as the cluster grows and new controllers are released, it is likely to evolve into a combination of several different node types. All cluster capabilities are supported, regardless of the underlying controllers in the cluster.

To improve data access in NAS applications, NetApp virtualizes storage at the file-system level. This enables all client nodes to mount a single file system, access all stored data, and automatically accommodate physical storage changes that are fully transparent to the clients. Each client or server can access a huge pool of data residing across the ONTAP system through a single mount point.

Meet High-Availability Requirements

The proven reliability features in NetApp hardware and software result in data availability of more than 99.9999% as measured across the NetApp installed base. Backup and replication technologies integrated in the NetApp ONTAP data management software help keep West Virginia Attorney General's Office applications and data continuously available to users.

Nondisruptive Operations to Eliminate Downtime

Nondisruptive operations (NDO) are fundamental to the superior scale-out architecture of NetApp ONTAP. NDO is achieved as the storage infrastructure remains up and serving data throughout the execution of hardware and software maintenance operations as well as during other IT lifecycle operations. The goal of NDO is to eliminate downtime—whether it is preventable, planned, or unplanned—and to allow changes to West Virginia Attorney General’s Offices systems to occur at any time.

ONTAP allows you to transparently move data and network connections anywhere within the storage cluster. The capability to move individual data volumes or LUNs allows you to redistribute across a cluster at any time and for any reason. It’s transparent and nondisruptive to NAS and SAN hosts, and it enables the storage infrastructure to continue to serve data throughout these changes. This is helpful to rebalance capacity usage, to optimize for changing performance requirements, or to isolate one or more controllers or storage components when it becomes necessary to execute maintenance or lifecycle operations.

Table 1: Hardware and software maintenance operations can be performed nondisruptively with ONTAP.

Operation	Details
Upgrade software	Upgrade from one version of ONTAP to another
Upgrade firmware	System, disk, switch firmware upgrade
Replace failed controller or component within a controller	Network interface cards (NICs), host bus adapters (HBAs), and power supplies
Replace failed storage components	Cables, drives, shelves, and I/O modules

Table 2: Lifecycle operations can be performed nondisruptively with ONTAP.

Operation	Details
Scale storage	Add storage (shelves or controllers) to a cluster and redistribute volumes for future growth
Scale hardware	Add hardware to controllers to increase scalability, performance, or capability (HBAs, NICs, NetApp Flash Cache™ or Flash Pool™ caching)
Refresh technology	Upgrade storage shelves, storage controllers, back-end switch
Rebalance controller performance and storage utilization	Redistribute data across controllers to improve performance
Rebalance capacity	Redistribute data across controllers to account for future capacity growth
Rebalance disk performance and utilization	Redistribute data across storage tiers within a cluster to optimize disk performance

On-Demand Scalability—Expand as you Build

The ONTAP architecture is key to delivering maximum on-demand scalability for West Virginia Attorney General's Offices shared IT infrastructure, offering performance, price, and capacity options.

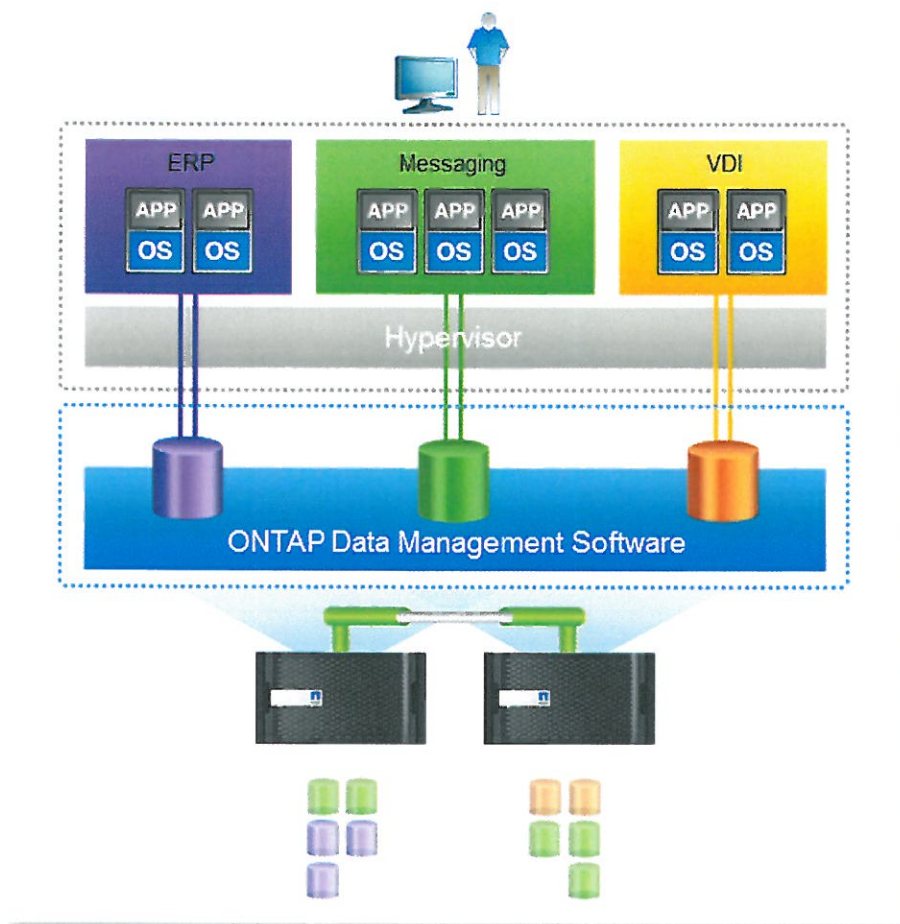


Figure 6: Expand as you build – Start with a two-node cluster and expand controllers and capacity when you need to, nondisruptively.

There are several approaches for leveraging flash in NetApp FAS hybrid-flash systems to accelerate workloads and reduce latency. Flash Cache can increase read performance for frequently accessed data. Plus, Flash Pool aggregates combine SSDs with traditional hard drives for delivering optimal performance and efficiency.

NetApp AFF all-flash systems offer the advantage of scalable performance with low latency for SAN and NAS workloads. Customers can start with deploying AFF in an HA pair configuration to deliver enterprise-grade data management and high performance for a dedicated workload. If additional performance is required, AFF can scale out in a cluster—up to 24 nodes, delivering millions of IOPS at submillisecond latency and a total of over 88PB of SSD capacity.

The extra value of AFF shines when it is used as a high-performance node combined with hybrid-flash FAS systems in an ONTAP environment. This becomes a single storage

repository for all workloads. And it enables nondisruptive movement of workloads to the node that best meets West Virginia Attorney General's Offices performance and price/performance requirements at different points in time.

Multiprotocol Unified Architecture

A multiprotocol unified architecture provides the capability to support several data access protocols concurrently in the same overall storage system across a range of controller and disk storage types. ONTAP protocol support includes:

- CIFS/SMB
- NFS, pNFS
- iSCSI
- FC
- FCoE
- NVMe

Data replication and storage efficiency features in ONTAP are seamlessly supported across all protocols.

SAN Data Services

With the supported SAN protocols (FC, FCoE, iSCSI, and NVMe/FC), ONTAP provides LUN services. This is the capability to create LUNs and make them available to attached hosts. Because the cluster consists of numerous controllers, there are several logical paths to any individual LUN. A best practice is to configure at least one path per node in the cluster. Asymmetric Logical Unit Access is used on the hosts so that the optimized path to a LUN is selected and made active for data transfer. Support for multipath I/O is also available from leading OS and third-party driver vendors.

NAS Data Services

ONTAP can provide a single namespace with the supported NAS protocols such as SMB [CIFS] and NFS (NAS clients can access a very large data container by using a single NFS mount point or CIFS share). Each client, therefore, needs only to mount a single NFS file system mount point or access a single CIFS share, requiring only the standard NFS and CIFS client code for each operating system.

The namespace of ONTAP is composed of potentially thousands of volumes joined together by the cluster administrator. To the NAS clients, each volume appears as a folder or subdirectory, nested off the root of the NFS file system mount point or CIFS share. Volumes can be added at any time and are immediately available to the clients, with no remount required for visibility to the new storage.

The clients have no awareness that they are crossing volume boundaries as they move about in the file system, because the underlying structure is completely transparent.

ONTAP can be architected to provide a single namespace, yet it also supports the concept of several securely partitioned namespaces, called Storage Virtual Machines or SVMs. This accommodates the requirement for multi-tenancy or isolation of particular sets of clients or applications.

Opex and Capex Efficiency—Grow Your Business, Not IT Expense

NetApp storage solutions operating with ONTAP 9 deliver the industry's leading storage efficiency capabilities with features such as inline compression, inline deduplication, inline data compaction, thin provisioning, and thin clones. With these features coupled with space-efficient NetApp Snapshot copies, RAID DP, and RAID TEC, West Virginia Attorney General's Office can enjoy significant reductions in required disk capacity (varies by workload) when compared with traditional storage technologies.

Table 3: ONTAP 9 offers a robust set of standard and optional features.

NetApp Software and Features		
	Function	Benefits
Balance placement	Automates loading of new workloads onto a cluster	Increases cluster utilization and performance by adding a new workload to the optimal node
Data compaction	Packs more data into each storage block for greater data reduction	Works with compression to reduce the amount of storage that you need to purchase and operate
Data compression	Provides transparent inline and postprocess data compression for data reduction	Reduces the amount of storage that you need to purchase and maintain
Deduplication	Performs general-purpose deduplication for removal of redundant data	Reduces the amount of storage that you need to purchase and maintain
FabricPool	Automates data tiering to the cloud (public and private)	Decreases storage costs for cold data
Flash Pool™ Caching	Creates a mixed-media storage pool by using SSDs and HDDs	Increases the performance and efficiency of HDD pools with flash acceleration
FlexClone®	Instantaneously creates file, LUN, and volume clones without requiring additional storage	Saves you time in testing and development and increases your storage capacity
FlexGroup	Enables a single namespace to scale up to 20PB and 400 billion files	Supports compute-intensive workloads and data repositories that require a massive NAS container while maintaining consistent high performance and resiliency
FlexVol®	Creates flexibly sized volumes across a large pool of disks and one or more RAID groups	Enables storage systems to be used at maximum efficiency and reduces hardware investment
Headroom	Provides visibility of performance capacity that is available for deploying new workloads on storage nodes	Simplifies management and enables more effective provisioning of new workloads to the optimal node

NetApp Software and Features

	Function	Benefits
Infinite Volume	Creates a volume that can scale up to 20PB with one file system	Provides a large container for content repositories; a single cluster can contain multiple Infinite Volume volumes
MetroCluster	Combines array-based clustering with synchronous mirroring to deliver continuous availability and zero data loss; up to 300km distance between nodes	Maintains business continuity for critical enterprise applications and workloads if a data center disaster occurs
QoS (adaptive)	Simplifies setup of QoS policies and automatically adjusts storage resources to respond to workload changes (number of TB of data, priority of the workload, etc.)	Simplifies operations and maintains consistent workload performance within your prescribed minimum and maximum IOPS boundaries
RAID-TEC™ and RAID DP® technologies	Provides triple parity or double-parity RAID 6 implementation that prevents data loss when three or two drives fail	Protect your data without the performance impact of other RAID implementations; reduce risks during long rebuilds of large-capacity HDDs
SnapCenter® and SnapManager®	Provides host-based data management of NetApp storage for databases and business applications	Offers application-aware backup and clone management; automates error-free data restores
SnapDrive®	Provides host-based data management of NetApp storage from Microsoft Windows, UNIX, and Linux servers	You can automate OS-consistent backup, restore, cloning, and other operations, taking full advantage of NetApp capabilities
SnapLock	Provides WORM file-level locking	Supports regulatory compliance and organizational data retention requirements
SnapMirror	Enables automatic, incremental asynchronous data replication between NetApp systems; preserves storage efficiency from primary (deduplication, compression, compaction) without rehydration	Provides flexibility and efficiency when replicating data to support backup, data distribution, and disaster recovery; recover from or fail over to any point in time
SnapRestore®	Rapidly restores single files, directories, or entire LUNs and volumes from any Snapshot copy backup	Instantaneously recovers files, databases, and complete volumes from your backup
Snapshot	Makes incremental data-in-place, point-in-time copies of a LUN or a volume with minimal	Enables you to create frequent space-efficient backups with no disruption to

NetApp Software and Features		
	Function	Benefits
SnapVault	performance impact Exports space-efficient Snapshot copies, preserving compression and deduplication savings, to another NetApp system, providing an incremental backup solution	data traffic Provides you with cost-effective, long-term backups of disk-based data
Volume encryption	Provides data-at-rest encryption that is built into ONTAP	Let's you easily and efficiently protect your at-rest data by encrypting any volume on an AFF or FAS system; no special encrypting disks are required

NetApp OnCommand Data Management Software

The more information you have about your storage infrastructure, the better equipped you are to effectively manage it. NetApp OnCommand® management software can help West Virginia Attorney General's Office improve storage and service efficiency. It offers functions that help you control, automate, and analyze your shared storage infrastructure. OnCommand tools offer simplified, effective, cost-efficient management of your shared storage infrastructure so that you can optimize utilization, meet SLAs, reduce risk, and boost performance.

Table 4: OnCommand management software product portfolio.

OnCommand Management Software	
OnCommand Area/Product	Primary Use Cases
System Manager	Provides simple yet powerful out-of-the box management of NetApp storage systems and clusters. Included with ONTAP 8.3 and beyond.
Unified Manager	Enables centralized management of physical and virtual storage environments through a unified interface. Used to deploy, automate, protect, and monitor the entire NetApp storage environment. Must be downloaded separately.
Performance Manager	Integrated component of Unified Manager that provides performance monitoring and root-cause analysis of ONTAP. Must be downloaded separately.
Workflow Automation	Eliminates manual, error-prone storage administration by automating provisioning, setup, migration, and decommissioning tasks. Must be downloaded separately.
Cloud Manager	Provides management for hybrid clouds, including ONTAP Cloud and NetApp Private Storage, easing configuration, provisioning, and monitoring across all virtual and hardware cloud storage nodes. Must be downloaded separately. If Cloud Manager is deployed on the cloud, the provider will charge a cost for the compute resource that ONTAP Cloud

OnCommand Management Software

OnCommand Area/Product	Primary Use Cases
NetApp Service Level Manager (Basic)	runs. Enables customers to build, maintain, and simplify the integration of NetApp platforms with the IT ecosystem of tools. With Service Level Manager, IT can deliver storage-as-a-service or private cloud more easily because they are able to build a framework that simplifies how storage is consumed.
OnCommand API Services	Allows integration of disparate software tools to simplify management of on-premises and cloud storage. Using REST APIs, you can access events from OnCommand Unified Manager and historical performance metrics from OnCommand Performance Manager.
Insight	Offers multivendor performance, configuration, and capacity management for on-premises and hybrid cloud storage environments. Provides advanced cost analysis and reporting for showback and chargeback. This is a licensed product that must be purchased separately.

ONTAP 9 Security Features

NetApp® ONTAP® storage management software continues to evolve, with security as an integral part of the solution. West Virginia Attorney General's Office can simplify and strengthen your security posture by integrating data security throughout your hybrid cloud. You can help meet governance, risk, and compliance requirements such as HIPAA, PCI-DSS, and GDPR and cost effectively secure your NetApp ONTAP environment by incorporating industry-standard, built-in security that meets FIPS 140-2 compliance.

The latest release, ONTAP 9, contains many new security features and functions that are invaluable for protecting your security posture and helping your organization adhere to industry best practices. These new features make data confidentiality, integrity, and availability top priorities. As an example, West Virginia Attorney General's Office can easily and efficiently protect at-rest data with NetApp Storage Encryption (NSE)—that uses self-encrypting drives. Or encrypt any volume and any disk across FAS, AFF, and ONTAP Select deployments with NetApp Volume Encryption (NVE)—that does not require special encrypting disks. Key management can be delivered in a self-contained encryption solution using Onboard Key Manager, included with ONTAP, or with external key management solutions that provide separation of duties and a centralized key repository. The new and existing security features and functions in the ONTAP 9 solution give West Virginia Attorney General's Office the ability to:

- **Enhance data confidentiality, integrity, and availability.** Apply the NetApp ONTAP 9 Data Fabric security constructs to solidify the confidentiality, integrity, and availability of your West Virginia Attorney General's Office's most important resource: data.
- **Create a security posture for your environment.** Establish a secure foundation in your organization's data fabric and understand the visibility and security functions that create a secure infrastructure.
- **Apply NetApp and industry best practices for security.** Establish a vetted security footprint with help from NetApp expertise, industry knowledge, and common practices.
- **Satisfy governance and compliance requirements.** Apply established security best practices to adhere to and support industry regulation and security compliance.

The following table outlines the function and impact of ONTAP security features.

Table 1: ONTAP security features.

New Security Features in ONTAP 9		
Software or Feature	Function	Impact
NetApp Volume Encryption	NVE is a software-based encryption mechanism that enables West Virginia Attorney General's Office to encrypt data on any type of disk.	Data encryption at rest continues to be an industry focus. NVE maintains a strong security posture across the full breadth of the NetApp Data Fabric.
SMB encryption uses Advanced Encryption Standard (AES)-New Instructions (NI) acceleration	Intel AES NI improves on the AES algorithm and accelerates data encryption with supported processor families.	Accelerating security functions provides efficiency. Efficient use of resources is pivotal to providing successful security solutions.
NetApp Cryptographic	NCSM provides FIPS 140-2–	Dedicated security modules improve

New Security Features in ONTAP 9

Security Module (NCSM)	compliant cryptographic operations for select SSL-based management services.	resource efficiency. In addition, FIPS 140-2 is the recognized industry standard for cryptography products and solutions,
SHA-2 (SHA-512) support	To enhance password security, ONTAP 9 supports the SHA-2 password hash function and defaults to using SHA-512 for hashing newly created or changed passwords.	SHA-2 has become the industry standard for hash functions because of its improved security posture relative to the often-infiltrated SHA-1 standard.
Secure Log Forwarding (Syslog over Transport Layer Security [TLS])	The log forwarding function enables administrators to provision targets or destinations so that they can receive syslog and audit information. Because of the secure nature of syslog and audit information, ONTAP can send this information securely through TLS using the TCP-encrypted parameter.	Log and audit information is invaluable to an organization for support and availability. In addition, the information contained in logs (syslogs) and audit reports and outputs is typically sensitive in nature. To maintain security controls and posture, you must manage log and audit data in a secure manner.
TLS v1.1 and TLS v1.2	ONTAP applies TLS v1.1 and TLS v1.2 for secure communication and administration functions.	NetApp does not recommend using TLS v1.0 because its significant vulnerabilities make it incompatible with compliance standards such as PCI-DSS. NetApp recommends using TLS v1.1 and TLS v1.2 because of their strength and integrity.
Onboard Key Manager (OKM)	OKM in ONTAP 9 provides a self-contained encryption solution for data at rest. OKM works with NVE, which offers a software-based encryption mechanism that enables West Virginia Attorney General's Office to encrypt data and use any type of disk. OKM also works with NSE, which performs full-disk encryption by using self-encrypting drives.	OKM provides key management for NSE and NVE. The use of this encryption technology in ONTAP enables West Virginia Attorney General's Office to secure data at rest, which is critical for any security solution.
Enhanced file system auditing	ONTAP 9 increases the number of auditing events and details that are reported across the solution. The following key details are logged with the creation of events: <ul style="list-style-type: none">• File• Folder	NAS file systems have increased their footprint in today's threat landscape. Therefore, the visibility provided by audit functions remains critically important and the increased audit capability in ONTAP 9 provides more CIFS audit details than ever before.

New Security Features in ONTAP 9

- Share access
- Files created, modified, or deleted
- Successful file read access
- Failed attempts to read fields or write files
- Folder permission changes

CIFS SMB signing and sealing	SMB signing helps protect the security of West Virginia Attorney General's Office's data fabric by protecting the traffic between storage systems and clients from replay or man-in-the-middle attacks. SMB signing also makes sure that SMB messages have valid signatures. In addition, ONTAP supports SMB encryption, also known as sealing.	A common threat vector for file systems and architectures lies within the SMB protocol. Signing and sealing enables unadulterated validation of traffic in addition to secure data transport on a share-by-share basis.
Kerberos 5 and Krb5p support	ONTAP supports 128-bit and 256-bit AES encryption for Kerberos. The privacy service includes the verification of received data integrity, user authentication, and data encryption before transmission.	Krb5p authentication protects against data tampering and snooping by using checksums to encrypt all traffic between client and server.
Lightweight Directory Access Protocol (LDAP) SMB signing and sealing	ONTAP 9 supports signing and sealing to protect session security on queries to an LDAP server.	Signing confirms the integrity of the LDAP payload data using secret-key technology. Sealing encrypts the LDAP payload data to avoid transmitting sensitive information in clear text.
Ed25519 and NIST curves in SSH (updated algorithms and hmacs)	ONTAP 9 provides updated SSH ciphers and key exchanges, including AES, 3DES, SHA-256, and SHA-512.	As the threat landscape evolves, the strength of the protocol algorithm, cipher, and key exchanges is vital to the integrity of the protocol and product function.
NetApp SnapLock® technology with NSE	ONTAP 9 supports NSE with the SnapLock feature, which provides administration and storage for write once, read many (WORM) data.	SnapLock technology creates special-purpose volumes in which files can be stored and committed to a nonerasable, nonrewritable state. This state can be preserved indefinitely or for a designated retention period while maintaining the secure posture (encryption) of the NSE solution.

Table 2: ONTAP security features.

Existing ONTAP Security Features		
Software or Feature	Function	Impact
NetApp Storage Encryption	NSE is the NetApp implementation of full-disk encryption using self-encrypting drives. NSE provides a nondisruptive encryption implementation that supports the entire suite of NetApp storage efficiency technologies.	Data encryption at rest continues to be an industry focus. NSE provides full-disk encryption and makes sure that the full breadth of the NetApp Data Fabric maintains a strong security posture from end to end.
Role-based access control (RBAC)	RBAC in ONTAP gives administrators the ability to limit or restrict users' administrative access to the level granted for their defined role. It allows administrators to manage users by their assigned role.	Access control is a foundational element for creating a security posture. Functions such as RBAC give West Virginia Attorney General's Office the ability to determine who has data access and to what extent they have such access. This capability limits vulnerabilities and exploits, including data exfiltration and escalation of privileges.
Aggregate encryption for Cloud Volumes ONTAP	Cloud Volumes ONTAP creates an encryption key for each aggregate on the system and sends it to the key managers. Administrators can view the ID for these keys from Cloud Manager. Keys must be deleted by the administrator because they are not automatically deleted.	The individual encryption keys for each aggregate improve secure-key management, which is critical for a secure solution.
Antivirus connector (virus scanning)	Virus scanning is performed on Vscan servers that run the antivirus connector and antivirus software. Typically, the system running ONTAP is configured to scan files when they are modified or accessed by a client.	Threat and attack vectors continue to grow. Inline virus scanning of accessed or modified files protects the integrity of an organization's files.
Login and message of the day banners	Login banners are printed in the output prior to authentication. These banners allow organizations and administrators to communicate with system users.	Login banners enable organizations to present operators, administrators, and even miscreants with terms and conditions of acceptable use for a system. The banners also indicate who has permission to access the system.
Logging	Log and audit information is	The offloading of syslog information

Existing ONTAP Security Features

	<p>invaluable to an organization for support and availability. In addition, the information and details contained within logs (syslogs) and audit reports or outputs are generally of a sensitive nature. Organizations must manage log and audit data in a secure manner to maintain security controls and posture</p>	<p>is necessary to limit the scope or footprint of a breach to a single system or solution.</p>
External key management	<p>External key management is handled with a 3rd party system in the storage environment that securely manages authentication keys used by encryption features in the storage system, such as NSE. The storage system uses an SSL connection to contact the external key-management server and store and retrieve authentication keys with the Key Management Interoperability Protocol.</p>	<p>External key management centralizes an organization's key management functions and also stores keys away from system assets, reducing the likelihood of compromise.</p>
KRB5i	<p>The krbp5 authentication mode is secure and protects against data tampering and snooping by using checksums to encrypt all traffic between the client and server. ONTAP supports 128-bit and 256-bit AES encryption for Kerberos. This privacy service verifies the integrity of received data, authenticates users, and encrypts data before transmission.</p>	<p>Krbp5 integrity checksums are an evolution in Kerberos authentication. These checksums verify that authentication communications were not edited or altered.</p>
SMBv3 signing and sealing	<p>ONTAP 9 supports signing and sealing to enable session security on traffic between the storage system and the client.</p>	<p>Signing confirms the integrity of the SMB payload data using secret-key technology. Sealing encrypts the SMB payload data to avoid transmitting sensitive information in clear text.</p>
Sanitizing a disk	<p>Disk sanitization enables West Virginia Attorney General's Office to remove data from a disk or set of disks so that the data can never be recovered.</p>	<p>Security protocols often require you to make data unrecoverable from a disk. The sanitize disk function provides this capability.</p>

Existing ONTAP Security Features

NetApp FPolicy® technology

FPolicy is an infrastructure component of ONTAP that enables partner applications to monitor and set file access permissions. File policies can be set based on file type. FPolicy determines how the storage system handles requests from individual client systems for operations such as create, open, rename, and delete. Note: Beginning with ONTAP 9, the FPolicy file access notification framework is enhanced with filtering controls and resiliency against short network outages.

Access control is a key security construct. As such, visibility and the ability to respond to file access and file operations is critical for maintaining your security posture. To provide visibility and access control to files, the ONTAP solution uses the FPolicy feature.
