



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

Header @ 5

[List View](#)

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

Procurement Folder: 1587922

Procurement Type: Central Purchase Order

Vendor ID: VS0000022620

Legal Name: COMPUGOV INC

Alias/DBA:

Total Bid: \$0.00

Response Date: 05/06/2025

Response Time: 7:09

Responded By User ID: CompuGov

First Name: Wayne

Last Name: Hwang

Email: wayne@compugov.com

Phone: 8054035984

SO Doc Code: CRFQ

SO Dept: 0323

SO Doc ID: WWV2500000005

Published Date: 4/25/25

Close Date: 5/6/25

Close Time: 13:30

Status: Closed

Solicitation Description: Server and Networking Equipment

Total of Header Attachments: 5

Total of All Attachments: 5



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

State of West Virginia  
Solicitation Response

**Proc Folder:** 1587922  
**Solicitation Description:** Server and Networking Equipment  
**Proc Type:** Central Purchase Order

Solicitation Closes	Solicitation Response	Version
2025-05-06 13:30	SR 0323 ESR05062500000006737	1

**VENDOR**  
VS0000022620  
COMPUGOV INC

**Solicitation Number:** CRFQ 0323 WWV2500000005  
**Total Bid:** 0  
**Response Date:** 2025-05-06  
**Response Time:** 07:09:16  
**Comments:**

**FOR INFORMATION CONTACT THE BUYER**  
Brandon L Barr  
304-558-2652  
brandon.l.barr@wv.gov

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

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

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	Server and Networking Equipment	0.00000	LS	237342.370000	0.00

Comm Code	Manufacturer	Specification	Model #
43222600			

**Commodity Line Comments:** This response is to update our previous submission, to provide more competitive pricing. And like the previous submission, we provided an Optional Alternate for "Contract Item #1 Quantity 6 Servers for virtual hosts", which offers a lower cost while meeting all bid specifications using a Dual-Processor server model. We offered it this way because we are unsure if "CPU Count: 2" would be considered by the customer to "meet or exceed" "CPU Count: 1" as specified in the bid requirements.

**Extended Description:**  
Please see Exhibit A pricing page



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

State of West Virginia  
Centralized Request for Quote  
Info Technology

<b>Proc Folder:</b> 1587922			<b>Reason for Modification:</b>
<b>Doc Description:</b> Server and Networking Equipment			
<b>Proc Type:</b> Central Purchase Order			
<b>Date Issued</b>	<b>Solicitation Closes</b>	<b>Solicitation No</b>	<b>Version</b>
2025-04-10	2025-05-06 13:30	CRFQ 0323 WWV2500000005	1

BID RECEIVING LOCATION

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

VENDOR

**Vendor Customer Code:** VS0000022620

**Vendor Name :** CompuGov Inc.

**Address :**

**Street :** 10 Peppertree

**City :** Aliso Viejo

**State :** CA **Country :** USA **Zip :** 92656

**Principal Contact :** Wayne Hwang

**Vendor Contact Phone:** 805-403-5984 **Extension:**

FOR INFORMATION CONTACT THE BUYER

Brandon L Barr  
304-558-2652  
brandon.l.barr@wv.gov

**Vendor Signature X** **FEIN#** 26-2001071 **DATE** 5/6/2025

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

<b>ADDITIONAL INFORMATION</b>
The West Virginia Purchasing Division is soliciting bids on behalf of WorkForce West Virginia, herein referred to as the "Agency" to establish a contract for a qualified vendor to provide Server and Networking Equipment per the attached documentation.

<b>INVOICE TO</b>	<b>SHIP TO</b>
WORKFORCE WEST VIRGINIA 1900 KANAWHA BLVD, EAST BLDG 3, 3RD FLOOR, SUITE 300 CHARLESTON WV US	WORKFORCE WEST VIRGINIA 1900 KANAWHA BLVD E BLDG 3, 8TH FLOOR CHARLESTON WV US

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
1	Server and Networking Equipment	0.00000	LS		

<b>Comm Code</b>	<b>Manufacturer</b>	<b>Specification</b>	<b>Model #</b>
43222600			

**Extended Description:**  
Please see Exhibit A pricing page

SCHEDULE OF EVENTS		
<u>Line</u>	<u>Event</u>	<u>Event Date</u>
1	Questions due by April 24th	2025-04-24

	Document Phase	Document Description	Page 3
WWV2500000005	Final	Server and Networking Equipment	

**ADDITIONAL TERMS AND CONDITIONS**

See attached document(s) for additional Terms and Conditions



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

State of West Virginia  
Centralized Request for Quote  
Info Technology

<b>Proc Folder:</b> 1587922			<b>Reason for Modification:</b> Addendum No. 1 published to provide answers to vendor questions and correct errors with the specifications
<b>Doc Description:</b> Server and Networking Equipment			
<b>Proc Type:</b> Central Purchase Order			
<b>Date Issued</b>	<b>Solicitation Closes</b>	<b>Solicitation No</b>	<b>Version</b>
2025-04-25	2025-05-06 13:30	CRFQ 0323 WWV2500000005	2

BID RECEIVING LOCATION

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

VENDOR

**Vendor Customer Code:** VS0000022620  
**Vendor Name :** CompuGov Inc.  
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**State :** CA **Country :** USA **Zip :** 92656  
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All offers subject to all terms and conditions contained in this solicitation



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WORKFORCE WEST VIRGINIA 1900 KANAWHA BLVD, EAST BLDG 3, 3RD FLOOR, SUITE 300 CHARLESTON WV US	WORKFORCE WEST VIRGINIA 1900 KANAWHA BLVD E BLDG 3, 8TH FLOOR CHARLESTON WV US

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
1	Server and Networking Equipment	0.00000	LS		

<b>Comm Code</b>	<b>Manufacturer</b>	<b>Specification</b>	<b>Model #</b>
43222600			

**Extended Description:**  
Please see Exhibit A pricing page

SCHEDULE OF EVENTS		
<u>Line</u>	<u>Event</u>	<u>Event Date</u>
1	Questions due by April 24th	2025-04-24

## SOLICITATION NUMBER: Addendum Number:

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The purpose of this addendum is to modify the solicitation identified as (“Solicitation”) to reflect the change(s) identified and described below.

### **Applicable Addendum Category:**

- ☐ Modify bid opening date and time
- ☐ Modify specifications of product or service being sought
- ☐ Attachment of vendor questions and responses
- ☐ Attachment of pre-bid sign-in sheet
- ☐ Correction of error
- ☐ Other

### **Description of Modification to Solicitation:**

**Additional Documentation:** Documentation related to this Addendum (if any) has been included herewith as Attachment A and is specifically incorporated herein by reference.

### **Terms and Conditions:**

1. All provisions of the Solicitation and other addenda not modified herein shall remain in full force and effect.
2. Vendor should acknowledge receipt of all addenda issued for this Solicitation by completing an Addendum Acknowledgment, 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.

# ATTACHMENT A

## Addendum # 1

### CRFQ WWV2500000005

**Q1.** What vendor solution and hardware is used by the state now?

- I.E Cisco X Series, Meraki, Fortinet, Juniper, etc.
- Most vendor solutions have multiple family lines please clarify what is in use now.

**A1.** This information isn't necessary to bid on equipment specified in the RFQ.

**Q2.** Specs call out for (6) hosts, pricing sheet shows (8), please clarify.

**A2.** The agency is bidding (6) hosts. Updated Exhibit A, Pricing Page, is attached.

**Q3.** AI Servers pricing sheet shows (2) servers, but specs have (1), please clarify.

**A3.** The agency is bidding (1) AI Server. Updated Exhibit A, Pricing Page, is attached.

**Q4.** AI Servers do not mention OS as where Hosts show No OS. Do AI Servers need OS?

**A4.** AI Servers do not need OS.

**Q5.** Do you need VMWare?

**A5.** VMWare is not needed.

**Q6.** Is the ship to address

- Workforce West Virginia 1900 Kanwha Blvs E Bldg 3, 8th Floor Charleston, WV
- Office of Technology, 908 Bullitt Street, Charleston, WV 25301

**A6.** Please ship to WorkForce West Virginia, 1900 Kanawha Blvd. E, Bldg.3, 8<sup>th</sup> Floor, Charleston, WV 25305.

**Q7.** The quantities on the spec page are not matching the quantities on the pricing page. Which is correct?

**A7.** The spec page is correct. Updated Exhibit A, Pricing Page, is attached.

**Q8.** Do you need 4x SFP28 (25GbE) or 10GbE uplinks? SFP28 is 25GbE.

**A8.** Specification 3.1.4.2 should read a minimum of 4 X 10GB SFP ports.

**Q9.** For items 3.1.1.13 and 3.1.1.14 (M2 SSDs for hosts) – Do the SSDs have to be 1.92 TB each or is that a total capacity of the M2 drives?

**A9.** Each individual M.2 SSD pertaining to 3.1.1.13 needs to have a capacity of 1.92TB

**Q10.** For item 3.1.2 – Do you intend to use hardware RAID with the NVMe drives or is a RAID card unnecessary?

**A10.** Servers will not be using hardware RAID, as such a RAID card is not needed.

**Q11.** For item 3.1.4 – All the servers have 10Gb RJ45 ports, do you need 10Gb RJ45 ports in the network switches? The requirement is for 1Gb but it seems like 10Gb is the intent.

**A11.** For item 3.1.4, 1Gb RJ45 switch ports are acceptable.

**Q12.** For 3.1.4.2, Are they SFP28 or SFP+ ports? SFP+ is 10Gb, SFP28 is 25/10.

**A12.** Specification 3.1.4.2 should read a minimum of 4 X 10GB SFP ports.

**Q13.** Is the “minimum of 8 core processor” a requirement if all other performance and product specifications are met for the storage network switches (3.1.3) Contract Item #3?

- a. In modern network switch architectures, the number of CPU cores in fixed form-factor switches does not directly impact how the system is able to forward traffic, this is something that is directly determined by the underlying interface/hardware ASICs.

**A13.** Equipment must meet or exceed all listed requirements on the RFQ.

**Q14.** Is 3.2GHz a required clock speed? Using 16G we can reach 3.1GHz clock speed for the virtual host, which is just shy of the targeted 3.2GHz

**A14.** All equipment must meet or exceed mandatory specifications.

**Q15.** Is a hardware PERC required?

**A15.** No

**Q16.** Is an 8 Core Switch required?

**A16.** All equipment must meet or exceed mandatory specifications.

REQUEST FOR QUOTATION  
Server and Networking Equipment

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- 3.1.2.18 Minimum hot swap SSDs equipped 4
- 3.1.2.19 Minimum hot swap SSD Capacity 3.84 TB
- 3.1.2.20 Minimum number of RJ45 10Gbps ethernet ports, 2
- 3.1.2.21 Minimum number of SFP28 25Gbps ports 4
- 3.1.2.22 3000W or higher AC/DC Power supplies, quantity 2
- 3.1.2.23 Fully redundant hot swappable power supplies
- 3.1.2.24 TPM 2.0
- 3.1.2.25 Minimum warranty period 5 years
- 3.1.2.26 Next Business Day onsite support
- 3.1.2.27 Support IPMI on onboard network interface
- 3.1.2.28 Chassis Size 2U
- 3.1.2.29 COTS replicable or upgradable parts not requiring vendor authorization for use or installation
- 3.1.2.30 Rack mountable with rails supporting standard 4 post racks.

**3.1.3 Contract Item #3 – Quantity 2 – Switches for storage network must meet or exceed the following:**

- 3.1.3.1 Minimum of 24 25GB SFP28 ports
- 3.1.3.2 Minimum of 4 100GB QSFP28 ports
- 3.1.3.3 User replaceable fan modules
- 3.1.3.4 Redundant Hot swappable power supplies
- 3.1.3.5 Minimum of two power supplies
- 3.1.3.6 Minimum of 4 Tbps Switching Capacity (2 Tbps ingress, 2 Tbps egress)
- 3.1.3.7 Minimum of 16Gb of ddr4 ECC memory
- 3.1.3.8 Minimum of 8 core processor

**3.1.4 Contract Item #4 – Quantity 2 – Switches for host network traffic must meet or exceed the following:**

- 3.1.4.1 Minimum of 24 x 10/100/1000BASE-T RJ45 Ethernet ports
- ~~3.1.4.2 Minimum of 4 10GB SFP28 ports~~ Minimum of 4 X 10Gb SFP ports.
- 3.1.4.3 Minimum of 256Gbps of Aggregate switching bandwidth
- 3.1.4.4 Maximum Frame Forwarding Rate of 190.5Mpps
- 3.1.4.5 Redundant hot swap power supplies
- 3.1.4.6 Minimum of 2 power supplies

REQUEST FOR QUOTATION  
Server and Networking Equipment

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**3.1.5** Vendor must be an authorized reseller of the equipment being bid and be authorized to provide after sales/warranty support for the period specified. All equipment must be new, and factory sealed. Refurbished equipment will not be accepted. Proof of authorization is required with bid submission.

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

**4.1 Pricing Page:** Vendor should complete the Pricing Page by providing a total cost for the Contract Items being requested. 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.

**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 thirty (30) working days after receiving a purchase order or notice to proceed. Contract items should be delivered to the ~~Office of Technology, 908 Bullitt Street, Charleston, WV 25301.~~ **Workforce West Virginia, 1900 Kanawha Blvd. E, Bldg.3, 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.

**Exhibit A - Pricing Page (REVISED)**

**Server and Networking Equipment**

Item #	Description	Unit of Measure	Quantity *	Unit Price	Extended Amount
3.1.1	Servers for Virtual Hosts	Each	6	\$0.00	\$0.00
3.1.2	Servers for AI	Each	1	\$0.00	\$0.00
3.1.3	Switches for Storage Network	Each	2	\$0.00	\$0.00
3.1.4	Switches for Host Network	Each	2	\$0.00	\$0.00
Overall Total Cost					\$0.00

***Vendor must complete the Price Page in full as failure to complete the Pricing Page in its entirety may result in Vendor's bid being disqualified. A no bid will result in Vendor's bid being disqualified.***

---

Vendor Signature



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

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

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

**Addendum Numbers Received:**

(Check the box next to each addendum received)

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

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

\_\_\_\_\_  
CompuGov Inc.  
Company

\_\_\_\_\_  
Authorized Signature

\_\_\_\_\_  
5/6/2025  
Date

NOTE: This addendum acknowledgment should be submitted with the bid to expedite document processing.  
Revised 6/8/2012



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

State of West Virginia  
Centralized Request for Quote  
Info Technology

<b>Proc Folder:</b> 1587922			<b>Reason for Modification:</b>
<b>Doc Description:</b> Server and Networking Equipment			
<b>Proc Type:</b> Central Purchase Order			
<b>Date Issued</b>	<b>Solicitation Closes</b>	<b>Solicitation No</b>	<b>Version</b>
2025-04-10	2025-05-06 13:30	CRFQ 0323 WWV2500000005	1

BID RECEIVING LOCATION

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

VENDOR

**Vendor Customer Code:** VS0000022620  
**Vendor Name :** CompuGov Inc.  
**Address :**  
**Street :** 10 Peppertree  
**City :** Aliso Viejo  
**State :** CA **Country :** USA **Zip :** 92656  
**Principal Contact :** Wayne Hwang  
**Vendor Contact Phone:** 805-403-5984 **Extension:**

FOR INFORMATION CONTACT THE BUYER

Brandon L Barr  
304-558-2652  
brandon.l.barr@wv.gov

**Vendor Signature X** **FEIN#** 26-2001071 **DATE** 5/6/2025

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

<b>ADDITIONAL INFORMATION</b>
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<b>INVOICE TO</b>	<b>SHIP TO</b>
WORKFORCE WEST VIRGINIA 1900 KANAWHA BLVD, EAST BLDG 3, 3RD FLOOR, SUITE 300 CHARLESTON WV US	WORKFORCE WEST VIRGINIA 1900 KANAWHA BLVD E BLDG 3, 8TH FLOOR CHARLESTON WV US

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
1	Server and Networking Equipment	0.00000	LS		

<b>Comm Code</b>	<b>Manufacturer</b>	<b>Specification</b>	<b>Model #</b>
43222600			

**Extended Description:**  
Please see Exhibit A pricing page

SCHEDULE OF EVENTS		
<u>Line</u>	<u>Event</u>	<u>Event Date</u>
1	Questions due by April 24th	2025-04-24

## 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. **PRE-BID MEETING:** The item identified below shall apply to this Solicitation.

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

☐ 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 individual is permitted to represent more than one vendor at the pre-bid meeting. Any individual that does attempt to represent two or more vendors will be required to select one vendor to which the individual's attendance will be attributed. The vendors not selected will be deemed to have not attended the pre-bid meeting unless another individual attended on their behalf.

An attendance sheet provided at the pre-bid meeting shall serve as the official document verifying 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. 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.

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.

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 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 non-binding.

Submitted emails should have the solicitation number in the subject line. Question

Submission Deadline:

Submit Questions to:

2019 Washington Street, East Charleston, WV 25305

Fax: (304) 558-3970

Email:

**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 on or before the date and time of the bid opening listed in section 7 below. Vendors can submit bids electronically through wvOASIS, in paper form delivered to the Purchasing Division at the address listed below either in person or by courier, or in facsimile form by faxing to the Purchasing Division at the number listed below. Notwithstanding the foregoing, 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. The Purchasing Division will not accept bids or modification of bids via email.

**Bids submitted in paper, facsimile, or via wvOASIS must contain a signature. Failure to submit a bid in any form without a signature will result in rejection of your bid.**

A bid submitted in paper or facsimile form should contain the information listed below on the face of the submission envelope or fax cover sheet. Otherwise, the bid may be rejected by the Purchasing Division.

VENDOR NAME:

BUYER:

SOLICITATION NO.:

BID OPENING DATE:

BID OPENING TIME:

FAX NUMBER:

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.

**Bid Delivery Address and Fax Number:**

Department of Administration, Purchasing Division 2019 Washington Street East

Charleston, WV 25305-0130

Fax: 304-558-3970

**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 or via delivery by mail).

Bid Opening Date and Time:

Bid Opening Location:

Department of Administration, Purchasing Division

2019 Washington Street East

Charleston, WV 25305-0130

**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 Acknowledgement Form. 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 **shall** 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. **COMMUNICATION LIMITATIONS:** In accordance with West Virginia Code of State Rules §148-1-6.6.2, 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.

12. **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.

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

14. **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 must 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: [www.state.wv.us/admin/purchase/vrc/Venpref.pdf](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. Any request for reciprocal preference must include with the bid any information necessary to evaluate and confirm the applicability of the preference. A request form to help facilitate the request can be found at: [www.state.wv.us/admin/purchase/vrc/Venpref.pdf](http://www.state.wv.us/admin/purchase/vrc/Venpref.pdf).

**15. SMALL, WOMEN-OWNED, OR MINORITY-OWNED BUSINESSES:**

For any solicitations publicly advertised for bid, in accordance with West Virginia Code §5A-3-37 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.

**16. 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 § 148-1-4.7.

**17. 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.

**18. 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.”

**19. ACCEPTANCE/REJECTION:** The State may accept or reject any bid in whole, or in part in accordance with W. Va. Code of State Rules § 148-1-4.6. and § 148-1-6.3.”



20. **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 § 148-1-4.7. This authority does not apply to instances where state law mandates receipt with the bid.

21. **EMAIL NOTIFICATION OF AWARD:** The Purchasing Division will attempt to provide bidders with e-mail notification of contract award when a solicitation that the bidder participated in has been awarded. For notification purposes, bidders must provide the Purchasing Division with a valid email address in the bid response. Bidders may also monitor wvOASIS or the Purchasing Division's website to determine when a contract has been awarded.

22. **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.

## **GENERAL TERMS AND CONDITIONS:**

**1. CONTRACTUAL AGREEMENT:** Issuance of an Award Document signed by the Purchasing Division Director, or his designee, and approved as to form by the Attorney General's office constitutes acceptance by the State of this Contract made by and between the State of West Virginia and the Vendor. Vendor's signature on its bid, or on the Contract if the Contract is not the result of a bid solicitation, 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:** The Initial Contract Term will be for a period of \_\_\_\_\_. The Initial Contract Term becomes effective on the effective start date listed on the first page of this Contract, identified as the State of West Virginia contract cover page containing the signatures of the Purchasing Division, Attorney General, and Encumbrance clerk (or another page identified as \_\_\_\_\_), and the Initial Contract Term ends on the effective end date also shown on the first page of this Contract.

**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:

☐ the contract will continue for \_\_\_\_\_ years;

☐ the 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).

☐ **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.

☐ **Construction/Project Oversight:** This Contract becomes effective on the effective start date listed on the first page of this Contract, identified as the State of West Virginia contract cover page containing the signatures of the Purchasing Division, Attorney General, and Encumbrance clerk (or another page identified as \_\_\_\_\_), and continues until the project for which the vendor is providing oversight is complete.

☐ **Other:** Contract Term specified in \_\_\_\_\_

**4. AUTHORITY TO PROCEED:** Vendor is authorized to begin performance of this contract on the date of encumbrance listed on the front page of the Award Document unless either the box for "Fixed Period Contract" or "Fixed Period Contract with Renewals" has been checked in Section 3 above. If either "Fixed Period Contract" or "Fixed Period Contract with Renewals" has been checked, Vendor must not begin work until it receives a separate notice to proceed from the State. The notice to proceed will then be incorporated into the Contract via change order to memorialize the official date that work commenced.

**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/Award Document 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.

☐ **Construction:** This Contract is for construction activity more fully defined in the specifications.

**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 in this section must be provided to the Purchasing Division by the Vendor as specified:

☐ **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 upon request and in a form acceptable to the State. The request may be prior to or after contract award at the State's sole discretion.

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

**8. INSURANCE:** The apparent successful Vendor shall furnish proof of the insurance identified by a checkmark below 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 cancelation, 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 that insurance requirement is listed in this section.

Vendor must maintain:

☐ **Commercial General Liability Insurance** in at least an amount of: \_\_\_\_\_ per occurrence.

☐ **Automobile Liability Insurance** in at least an amount of: \_\_\_\_\_ per occurrence.

☐ **Professional/Malpractice/Errors and Omission Insurance** in at least an amount of: \_\_\_\_\_ per occurrence. Notwithstanding the forgoing, Vendor's are not required to list the State as an additional insured for this type of policy.

☐ **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.

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**9. WORKERS' COMPENSATION INSURANCE:** 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. VENUE:** All legal actions for damages brought by Vendor against the State shall be brought in the West Virginia Claims Commission. Other causes of action must be brought in the West Virginia court authorized by statute to exercise jurisdiction over it.

**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.

☐ Liquidated Damages Are Not Included in this Contract.

**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. Notwithstanding the foregoing, Vendor must extend any publicly advertised sale price to the State and invoice at the lower of the contract price or the publicly advertised sale price.

**14. PAYMENT IN ARREARS:** Payments for goods/services will be made in arrears only upon receipt of a proper invoice, detailing the goods/services provided or receipt of the goods/services, whichever is later. Notwithstanding the foregoing, payments for software maintenance, licenses, or subscriptions may be paid annually in advance.

**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, included in the Contract, 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. If that occurs, the State may notify the Vendor that an alternative source of funding has been obtained and thereby avoid the automatic termination. Non-appropriation or non-funding shall not be considered an event of default.

**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 regarding 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 [www.state.wv.us/admin/purchase/privacy](http://www.state.wv.us/admin/purchase/privacy).

**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 NON-CONFLICT:** Neither Vendor nor its representatives are permitted to have any interest, nor shall they 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.

**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. NO DEBT CERTIFICATION:** 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. By submitting a bid, or entering into a contract with the State, Vendor is affirming 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, neither the Vendor nor any related party owe a debt as defined above, and neither the Vendor nor any related party are in employer default as defined in the statute cited above unless the debt or employer default is permitted under the statute.

**38. 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.

**39. 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.division@wv.gov](mailto:purchasing.division@wv.gov).

**40. BACKGROUND CHECK:** In accordance with W. Va. Code § 15-2D-3, 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. Service providers should contact the West Virginia Division of Protective Services by phone at (304) 558-9911 for more information.

**41. 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 hearth, basic oxygen, electric furnace, Bessemer or other steel making process.
- c. The Purchasing Division Director may, in writing, authorize the use of foreign steel products if:
  1. 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
  2. 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.

**42. 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 “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.

**43. 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 disclosure of interested parties prior to beginning work under this Contract. Additionally, the Vendor must submit a supplemental disclosure of interested parties reflecting any new or differing interested parties to the contract, which were not included in the original pre-work 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.

**44. PROHIBITION AGAINST USED OR REFURBISHED:** Unless expressly permitted in the solicitation published by the State, Vendor must provide new, unused commodities, and is prohibited from supplying used or refurbished commodities, in fulfilling its responsibilities under this Contract.

**45. VOID CONTRACT CLAUSES:** This Contract is subject to the provisions of West Virginia Code § 5A-3-62, which automatically voids certain contract clauses that violate State law.

**46. ISRAEL BOYCOTT:** Bidder understands and agrees that, pursuant to W. Va. Code § 5A-3-63, it is prohibited from engaging in a boycott of Israel during the term of this contract.

**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.

(Printed Name and Title) \_\_\_\_\_

(Address) \_\_\_\_\_

(Phone Number) / (Fax Number) \_\_\_\_\_

(email address) \_\_\_\_\_

**CERTIFICATION AND SIGNATURE:** By signing below, or submitting documentation through wvOASIS, I certify that: I have reviewed this Solicitation/Contract 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/Contract 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 this bid or offer was made without prior understanding, agreement, or connection with any entity submitting a bid or offer for the same material, supplies, equipment or services; that this bid or offer is in all respects fair and without collusion or fraud; 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; 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.

By signing below, I further certify that I understand this Contract is subject to the provisions of West Virginia Code § 5A-3-62, which automatically voids certain contract clauses that violate State law; and that pursuant to W. Va. Code 5A-3-63, the entity entering into this contract is prohibited from engaging in a boycott against Israel.

\_\_\_\_\_  
(Company)

\_\_\_\_\_  
(Signature of Authorized Representative)

\_\_\_\_\_  
(Printed Name and Title of Authorized Representative) (Date)

\_\_\_\_\_  
(Phone Number) (Fax Number)

\_\_\_\_\_  
(Email Address)

REQUEST FOR QUOTATION  
Server and Networking Equipment

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**SPECIFICATIONS**

1. **PURPOSE AND SCOPE:** The West Virginia Purchasing Division is soliciting bids on behalf of WorkForce West Virginia hereafter known as WFWV to establish a contract for the one-time purchase of networking supplies.
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 **“Contract Item”** means server equipment as more fully described by these specifications.
  - 2.2 **“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.
  - 2.3 **“GHz/MHz”** means Giga or Mega hertz, respectively.”
  - 2.4 **“Tbps,Gbps or Mbps”** means terabits, gigabits or megabits per second, respectively.
  - 2.5 **“GB/TB”** means gigabyte and terabyte, respectively.
  - 2.6 **“MPPS”** means million packets per second.
  - 2.7 **“CPU/GPU”** Means Central Processing Unit, Graphics processing unit, respectively.
  - 2.8 **“IPMI”** Means Intelligent Platform Management Interface
  - 2.9 **“SSD”** means Solid State Disk
  - 2.10 **“COTS”** means consumer off the shelf
  - 2.11 **“RAM/DRAM”** means Random Access Memory, Dynamic Random Access Memory, respectively.
  - 2.12 **“PCIE”** means Peripheral Component Interconnect Express, is a standard interface for connecting a computer to peripheral devices, such as graphics cards, memory, and storage, at high speeds.
  - 2.13 **“ECC”** Means error-correcting code



REQUEST FOR QUOTATION  
Server and Networking Equipment

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- 2.14 " NVME U.3"** Means a storage technology that uses the Non-Volatile Memory Express (NVMe) interface to provide fast data transfer speeds and low latency. U.3 is a tri-mode standard that combines NVMe, SATA, and SAS support into a single controller. It's an upgrade from U.2 and uses the same SFF-8639 connector to support these drives in the same server slot
- 2.15 "RJ45"** Means Registered Jack 45, a standard physical connector size in wired networking
- 2.16 "U"** Means rack Unit, a unit of measurement that describes the amount of physical space equipment takes up in industry standard racks. Equipment will be specified with the maximum number of rack units they can use.
- 2.17 "TPM "** Means Trusted Platform Module, an industry standard embedded security technology residing on a computer's motherboard or in its processor.
- 2.18 "Solicitation"** means the official notice of an opportunity to supply the State with goods or services that is published by the Purchasing Division.

**3. GENERAL REQUIREMENTS:**

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

**3.1.1 Contract Item #1 – Quantity 6 – Servers for virtual hosts must meet or exceed the following:**

- 3.1.1.1 CPU Count:** 1
- 3.1.1.2 CPU minimum speed** 3.2 GHz
- 3.1.1.3 CPU minimum core count** 64
- 3.1.1.4 CPU minimum thread count** 128
- 3.1.1.5 CPU minimum cache** 256 MB
- 3.1.1.6 PCIE version minimum** Gen 5
- 3.1.1.7 RAM minimum channels** 12
- 3.1.1.8 RAM minimum slots** 12
- 3.1.1.9 RAM minimum capacity** 1.125 TB
- 3.1.1.10 ECC RAM**
- 3.1.1.11 RAM Minimum frequency** 4800 MHz
- 3.1.1.12 RAM Type** DDR5
- 3.1.1.13 Minimum M.2 SSDs** 2
- 3.1.1.14 Minimum M.2 Capacity** 1.92TB

**REQUEST FOR QUOTATION**  
**Server and Networking Equipment**

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- 3.1.1.15** Hot Swap SSD form factor NVME U.3
- 3.1.1.16** Minimum Hot Swap SSDs installed 8
- 3.1.1.17** Minimum Hot Swap SSD Capacity 3.84 TB
- 3.1.1.18** Minimum number of RJ45 10Gbps ethernet ports, 2
- 3.1.1.19** Minimum number of SFP28 25Gbps ports 4
- 3.1.1.20** 1300w-2000w AC/DC Power supplies, quantity 2
- 3.1.1.21** Fully redundant hot swappable power supplies
- 3.1.1.22** Minimum warranty period 5 years
- 3.1.1.23** Next business day onsite support
- 3.1.1.24** Support IPMI on onboard network interface
- 3.1.1.25** Chassis size no greater than 2U
- 3.1.1.26** COTS replicable or upgradable parts not requiring vendor authorization for use or installation.
- 3.1.1.27** No included operating system
- 3.1.1.28** TPM 2.0
- 3.1.1.29** Rack mountable with rails supporting standard 4 post racks.

**3.1.2 Contract Item #2 – Quantity 1 – Servers for AI must meet or exceed the following:**

- 3.1.2.1** Minimum CPU Count 1
- 3.1.2.2** Minimum CPU Speed 3.25Ghz
- 3.1.2.3** CPU minimum core count 32
- 3.1.2.4** CPU minimum thread count 64
- 3.1.2.5** CPU minimum cache 256 MB
- 3.1.2.6** PCIE version minimum Gen 5
- 3.1.2.7** GPU minimum count 2
- 3.1.2.8** GPU VRAM Type HBM2e
- 3.1.2.10** GPU VRAM Capacity 94 GB, per GPU
- 3.1.2.9** GPU VRAM Capacity 94 GB, per GPU
- 3.1.2.10** GPU Supports PCIE 5.0 using 16 lanes
- 3.1.2.11** RAM minimum channels 12
- 3.1.2.12** RAM minimum slots 12
- 3.1.2.13** RAM minimum capacity 1.125 TB
- 3.1.2.14** ECC RAM
- 3.1.2.15** RAM Minimum frequency 4800 MHz
- 3.1.2.16** RAM Type DDR5
- 3.1.2.17** Hot swap SSD form factor NVME U.3

REQUEST FOR QUOTATION  
Server and Networking Equipment

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- 3.1.2.18 Minimum hot swap SSDs equipped 4
- 3.1.2.19 Minimum hot swap SSD Capacity 3.84 TB
- 3.1.2.20 Minimum number of RJ45 10Gbps ethernet ports, 2
- 3.1.2.21 Minimum number of SFP28 25Gbps ports 4
- 3.1.2.22 3000W or higher AC/DC Power supplies, quantity 2
- 3.1.2.23 Fully redundant hot swappable power supplies
- 3.1.2.24 TPM 2.0
- 3.1.2.25 Minimum warranty period 5 years
- 3.1.2.26 Next Business Day onsite support
- 3.1.2.27 Support IPMI on onboard network interface
- 3.1.2.28 Chassis Size 2U
- 3.1.2.29 COTS replicable or upgradable parts not requiring vendor authorization for use or installation
- 3.1.2.30 Rack mountable with rails supporting standard 4 post racks.

**3.1.3 Contract Item #3 – Quantity 2 – Switches for storage network must meet or exceed the following:**

- 3.1.3.1 Minimum of 24 25GB SFP28 ports
- 3.1.3.2 Minimum of 4 100GB QSFP28 ports
- 3.1.3.3 User replaceable fan modules
- 3.1.3.4 Redundant Hot swappable power supplies
- 3.1.3.5 Minimum of two power supplies
- 3.1.3.6 Minimum of 4 Tbps Switching Capacity (2 Tbps ingress, 2 Tbps egress)
- 3.1.3.7 Minimum of 16Gb of ddr4 ECC memory
- 3.1.3.8 Minimum of 8 core processor

**3.1.4 Contract Item #4 – Quantity 2 – Switches for host network traffic must meet or exceed the following:**

- 3.1.4.1 Minimum of 24 x 10/100/1000BASE-T RJ45 Ethernet ports
- 3.1.4.2 Minimum of 4 10GB SFP28 ports
- 3.1.4.3 Minimum of 256Gbps of Aggregate switching bandwidth
- 3.1.4.4 Maximum Frame Forwarding Rate of 190.5Mpps
- 3.1.4.5 Redundant hot swap power supplies
- 3.1.4.6 Minimum of 2 power supplies

REQUEST FOR QUOTATION  
Server and Networking Equipment

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**3.1.5** Vendor must be an authorized reseller of the equipment being bid and be authorized to provide after sales/warranty support for the period specified. All equipment must be new, and factory sealed. Refurbished equipment will not be accepted. Proof of authorization is required with bid submission.

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

**4.1 Pricing Page:** Vendor should complete the Pricing Page by providing a total cost for the Contract Items being requested. 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.

**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 thirty (30) working days after receiving a purchase order or notice to proceed. Contract items should be delivered to the Office of Technology, 908 Bullitt Street, Charleston, WV 25301.

**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.

REQUEST FOR QUOTATION  
Server and Networking Equipment

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

REQUEST FOR QUOTATION  
**Server and Networking Equipment**

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7.2.3 Any other remedies available in law or equity.

**Exhibit A - Pricing Page (REVISED)**

**Server and Networking Equipment**

Item #	Description	Unit of Measure	Quantity *	Unit Price	Extended Amount
3.1.1	Servers for Virtual Hosts	Each	6	\$18,663.75	\$111,982.50
3.1.2	Servers for AI	Each	1	\$79,459.99	\$79,459.99
3.1.3	Switches for Storage Network	Each	2	\$20,821.94	\$41,643.88
3.1.4	Switches for Host Network	Each	2	\$2,128.00	\$4,256.00
Overall Total Cost					\$237,342.37

***Vendor must complete the Price Page in full as failure to complete the Pricing Page in its entirety may result in Vendor's bid being disqualified. A no bid will result in Vendor's bid being disqualified.***

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Vendor Signature



# Quotation

DATE 5/6/2025

Quote # WH1621

Valid Until: 6/5/2025

Account Rep: Wayne Hwang

[wayne@compugov.com](mailto:wayne@compugov.com)

CompuGov  
10 Peppertree  
Aliso Viejo, CA 92656  
Phone (949) 204-0886

## CompuGov is a SBA Certified Small Disadvantaged Business (SDB)

### Customer:

Brandon L Barr  
DEPARTMENT OF ADMINISTRATION  
State of West Virginia  
2019 WASHINGTON ST E  
CHARLESTON, WV 25305  
304-558-2652  
[brandon.l.barr@wv.gov](mailto:brandon.l.barr@wv.gov)

Fed Tax ID: 26-2001071

DUNS: 962404500

Cage Code: 868R0

SAM Unique Entity ID: KPTHL6ASXP47

CA Small Business Certification: 1327880

Version	Quote for RFQ #:	FOB	Terms	Delivery
1	CRFQ 0323 WWV2500000005	Dest.	Net 30	8-12 Weeks ARO

Part Number	DESCRIPTION	Qty	Price	AMOUNT
			-	
	<b>Contract Item #1 - Quantity 6 - Servers for virtual hosts</b>			
<b>Server / Chassis</b>	<b>GIGABYTE R163-Z35 Single-CPU Rack Server - AMD EPYC™ 9004/9005 - 1U UP 12-Bay U.3 (Gen5 NVMe/SATA/SAS-4) Platinum PSU</b> - Single AMD EPYC™ 9004/9005 Series Processors - 12-Channel DDR5 RDIMM, 12 x DIMMs - Dual ROM Architecture - 1 x 1Gb/s LAN port via Intel® I210-AT - 12 x 2.5" U.3 Gen5 NVMe/SATA/SAS-4 hot-swap bays - 1 x M.2 slot with PCIe Gen3 x4 interface - 2 x FHHL PCIe Gen5 x16 slots - 2 x OCP NIC 3.0 PCIe Gen5 x16 slots - Compatible with SupremeRAID™ by Graid Technology - 1+1 1300W 80 PLUS Platinum redundant power supplies			
<b>Processor</b>	AMD EPYC 9555 64 Core/128 Thread 3.20 GHz Processor - 256 MB L3 Cache - 4.40 GHz Overclocking Speed - Socket SP5 - 360 W			
<b>Memory</b>	1125GB (12x 96GB) DDR5 4800MHz ECC RDIMM Memory			
<b>M.2 Internal SSD</b>	2x 1.92TB M.2 NVMe Enterprise Class SSD in AOC			
<b>U.3 Hot Swap SSD</b>	8x 3.84TB U.3 NVMe Enterprise Class SSD			
<b>Networking OCP AOC</b>	Dual Port 10G RJ-45 Adapter OCP 3.0 Gen3 x8 Marvell® FastLinQ® 41000			
<b>Networking PCIe AOC</b>	Quad Port 25/10GbE SFP28 Adapter PCIe 3.0 Gen3 x8 Marvell® FastLinQ® 41000			
<b>TPM</b>	TPM 2.0 Module Installed			
<b>Server Management</b>	Gigabyte Server Manager (GSM) (included)			
<b>Operating System</b>	No OS Installed			
<b>Rack Rails</b>	Gigabyte Standard Rail Kit for 1U/2U Servers (Square Hole) (Included)			
<b>Power Cords</b>	2x AC Power Cord (North America), C13, NEMA 5-15P, 3 ft.			



<b>Warranty</b>	5 Year Advanced Parts Replacement Warranty and NBD Onsite Service			
<b>TOTAL</b>	<b>GIGABYTE R163-Z35 Single-CPU Rack Server</b> <b>- Fully Configured and Tested</b> <b>- TAA Compliant, Built in USA</b>	<b>6</b>	<b>18,663.75</b>	<b>111,982.50</b>
<b>Alternate</b>	<b><u>Alternate Contract Item #1 – Quantity 6 – Servers for virtual hosts</u></b> <b>- Dual-Processor Server meeting all specifications.</b>			
<b>Server / Chassis</b>	<b>GIGABYTE R183-Z94 Dual-CPU Rack Server - AMD EPYC™ 9004/9005 - 1U DP 12-Bay U.3 (Gen5 NVMe/SATA/SAS-4) Platinum PSU</b> - Dual AMD EPYC™ 9004/9005 Series Processors - 12-Channel DDR5 RDIMM, 24 x DIMMs - Dual ROM Architecture - 2 x 1Gb/s LAN ports via Intel® I350-AM2 - 12 x 2.5" U.3 Gen5 NVMe/SATA/SAS-4 hot-swap bays - 3 x M.2 slots with PCIe Gen3 x4 and x2 interface - 2 x FHHL PCIe Gen5 x16 slots - 2 x OCP NIC 3.0 PCIe Gen5 x16 slots - Compatible with SupremeRAID™ by Graid Technology - Dual 1600W 80 PLUS Platinum redundant power supply			
<b>Processors</b>	2x AMD EPYC 9354 32 Core/64 Thread 3.25 GHz Processor - 256 MB L3 Cache - 64-bit Processing - 3.80 GHz Overclocking Speed - Socket SP5 - 280 W *TOTAL 64 Core/128 Thread 3.25 GHz Processor - 512 MB L3 Cache. Meets CPU Requirement using Dual-CPU design.			
<b>Memory</b>	1125GB (24x 48GB) DDR5 4800MHz ECC RDIMM Memory			
<b>M.2 Internal SSD</b>	2x 1.92TB M.2 NVMe Enterprise Class SSD			
<b>U.3 Hot Swap SSD</b>	8x 3.84TB U.3 NVMe Enterprise Class SSD			
<b>Networking OCP AOC</b>	Dual Port 10G RJ-45 Adapter OCP 3.0 Gen3 x8 Marvell® FastLinQ® 41000			
<b>Networking PCIe AOC</b>	Quad Port 25/10GbE SFP28 Adapter PCIe 3.0 Gen3 x8 Marvell® FastLinQ® 41000			
<b>TPM</b>	TPM 2.0 Module Installed			
<b>Server Management</b>	Gigabyte Server Manager (GSM) (included)			
<b>Operating System</b>	No OS Installed			
<b>Rack Rails</b>	Gigabyte Standard Rail Kit for 1U/2U Servers (Square Hole) (Included)			
<b>Power Cords</b>	2x AC Power Cord (North America), C13, NEMA 5-15P, 3 ft.			
<b>Warranty</b>	5 Year Advanced Parts Replacement Warranty and NBD Onsite Service			
<b>*Optional Alternate TOTAL</b>	<b>GIGABYTE R183-Z94 Dual-CPU Rack Server</b> <b>- Fully Configured and Tested</b> <b>- TAA Compliant, Built in USA</b>	<b>6</b>	<b>17,737.57</b>	<b>106,425.42</b>
	* Price of Optional Alternate is not calculated into the quote total. It is meant as an optional alternate choice for Contract Item #1 available to the customer.			
	<b>Contract Item #2 – Quantity 1 – Servers for AI</b>			

<b>Server / Chassis</b>	<b>GIGABYTE G293-Z21 Single-CPU HPC/AI Rack Server - AMD EPYC™ 9005/9004 - 2U UP 4 x PCIe Gen5 GPUs Platinum PSU</b> - Supports up to 4 x Dual slot Gen5 GPUs - Supports 4 x NVIDIA H200 NVL PCIe GPUs - Single AMD EPYC™ 9005/9004 Series Processors - 12-Channel DDR5 RDIMM, 12 x DIMMs - Dual ROM Architecture - 2 x 10Gb/s LAN ports via Broadcom® BCM57416 - 4 x 2.5" U.3 Gen5 NVMe/SATA/SAS-4 hot-swap bays - 4 x 2.5" SATA/SAS-4 hot-swap bays - 2 x M.2 slots with PCIe Gen5 x4 interface - 4 x FHFL PCIe Gen5 x16 or 8 x FHFL PCIe Gen5 x8 slots for GPUs - 2 x LP PCIe Gen5 x16 slots for add-in cards - Dual 3000W 80 PLUS Titanium redundant power supply			
<b>Processor</b>	AMD EPYC 9354 32 Core/64 Thread 3.25 GHz Processor - 256 MB L3 Cache - 64-bit Processing - 3.80 GHz Overclocking Speed - Socket SP5 - 280 W			
<b>Memory</b>	1125GB (12x 96GB) DDR5 4800MHz ECC RDIMM Memory			
<b>GPUs</b>	2x NVIDIA® H100 NVL GPU Computing Accelerator - 96GB HBM3 - PCIe 5.0 x16 - Passive Cooling *Note: NVIDIA has upgraded the HMB2e VRAM to HMB3 for the H100 NVL			
<b>M.2 Internal SSD</b>	None			
<b>U.3 Hot Swap SSD</b>	4x 3.84TB U.3 NVMe Enterprise Class SSD			
<b>Networking PCIe AOC</b>	Quad Port 25/10GbE SFP28 Adapter PCIe 3.0 Gen3 x8 Marvell® FastLinQ® 41000			
<b>TPM</b>	TPM 2.0 Module Installed			
<b>Server Management</b>	Gigabyte Server Manager (GSM) (included)			
<b>Operating System</b>	No OS Installed			
<b>Rack Rails</b>	Gigabyte Standard Rail Kit for 1U/2U Servers (Square Hole) (Included)			
<b>Power Cords</b>	2x IEC320 C19 to C20 Power Cable, 12AWG, 250V/20A, Black - 6ft			
<b>Warranty</b>	5 Year Advanced Parts Replacement Warranty and NBD Onsite Service			
<b>TOTAL</b>	<b>GIGABYTE G293-Z21 Single-CPU HPC/AI Rack Server</b> - Fully Configured and Tested - TAA Compliant, Built in USA	<b>1</b>	<b>79,459.99</b>	<b>79,459.99</b>
	<b>Contract Item #3 – Quantity 2 – Switches for storage network</b>			
<b>Switich 7520-48Y-8C-AC-F</b>	<b>Extreme Networks 7520-48Y Switch</b> - 48x 1/10/25GbE SFP28 ports - 8x 40/100GbE QSFP28 ports - 6x User replacable fan modules - 2x Hot Swap Redundant Modular 800W AC power supply, front-to-back airflow - 4 Tbps Switching Capacity (2 Tbps ingress, 2 Tbps egress) - 16GB DDR4 ECC memory - 8-core Processor	<b>2</b>	<b>20,821.94</b>	<b>41,643.88</b>
	<b>Contract Item #4 – Quantity 2 – Switches for host network traffic</b>			

Switich EX3400-24T w/ JPSU-150-AC-AFO	Juniper EX3400-24T Ethernet Switch - 24x 10/100/1000 BASE-T Ports - 4x 10GbE/GbE SFP+/SFP ports - 2x 40GbE QSFP+ ports - 288 Gbps (bidirectional) Aggregate switching bandwidth - 214 Mpps Layer 2/Layer 3 Forwarding Throughput/Rate - 2x Hot Swap Redundant Modular 150W AC power supply, front-to-back airflow	2	2,128.00	4,256.00
	FREE Shipping is Included			
	Product Spec Sheets are attached			
	*Note: Due to the reality of the current tariff uncertainties, we are estimating a delivery window of 8 to 12 weeks. However, every attempt to deliver AS SOON AS POSSIBLE will be made.			

CompuGov is a Small Disadvantaged Business.

Ordering/Remit to address:

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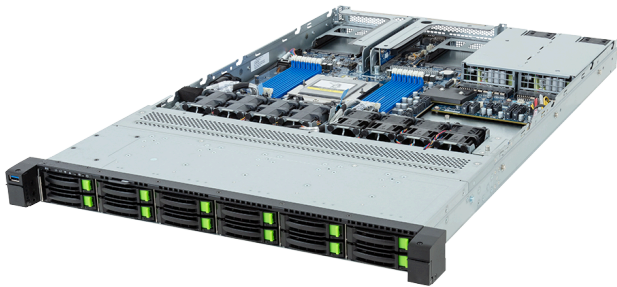
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SUBTOTAL	\$ 237,342.37
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<b>TOTAL</b>	<b>\$ 237,342.37</b>

# R163-Z35-AAC1

Rack Server - 1U UP 12-Bay Gen5 NVMe/SATA/SAS-4 Platinum



### Key Features

- Single AMD EPYC™ 9004 Series Processors
- 12-Channel DDR5 RDIMM, 12 x DIMMs
- Dual ROM Architecture
- 1 x 1Gb/s LAN port via Intel® I210-AT
- 12 x 2.5" Gen5 NVMe/SATA/SAS-4 hot-swap bays
- 1 x M.2 slot with PCIe Gen3 x4 interface
- 2 x FHHL PCIe Gen5 x16 slots
- 2 x OCP NIC 3.0 PCIe Gen5 x16 slots
- Compatible with SupremeRAID™ by Graid Technology
- 1+1 1300W 80 PLUS Platinum redundant power supplies

### Applications

Networks Server, Servers for Hybrid/Private Cloud...

### Specification

Dimensions	1U (W438 x H43.5 x D710 mm)	PCIe Expansion Slots	2 x FHHL PCIe Gen5 x16 2 x OCP NIC 3.0 PCIe Gen5 x16, Support NCSI
Motherboard	MZ33-DC1	I/O Ports	<b>Front:</b> 1 x USB 3.2 Gen1 <b>Rear:</b> 2 x USB 3.2 Gen1, 1 x Mini-DP, 1 x RJ45, 1 x MLAN
CPU	AMD EPYC™ 9005 Series Processors AMD EPYC™ 9004 Series Processors Single processor, cTDP up to 300W <sup>[1]</sup> <sup>[1]</sup> cTDP supported up to 400W under limited thermal conditions.	Backplane Board	PCIe Gen5 x4 or SATA 6Gb/s or SAS-4 24Gb/s
OS Compatibility	<a href="#">OS Support List</a>	TPM	1 x TPM header (SPI), Optional TPM2.0 kit: CTM010
Socket	1 x LGA 6096 (Socket SP5)	Power Supply	1+1 1300W 80 PLUS Platinum redundant power supplies AC Input: 100-240V
Chipset	System on Chip	System Management	ASPEED® AST2600 Baseboard Management Controller GIGABYTE Management Console web interface
Memory	12-Channel DDR5 RDIMM, 12 x DIMMs Up to 4800 MT/s	System Fans	4 x 40x40x28mm (25,000rpm) 4 x 40x40x56mm (29,700rpm)
LAN	1 x 1Gb/s LAN (1 x Intel® I210-AT), Support NCSI 1 x 10/100/1000 Mbps Management LAN	Operating Properties	Operating: 10°C~35°C, 8%~80% (non-condensing) Non-operating: -40°C~60°C, 20%~95% (non-condensing)
Video	Integrated in ASPEED® AST2600 - 1 x Mini-DP	Packaging Content	1 x R163-Z35-AAC1 1 x CPU heatsink 1 x Mini-DP to D-Sub cable 1 x 2-Section Rail kit
Storage	<b>Front hot-swap:</b> 12 x 2.5" Gen5 NVMe/SATA/SAS-4 <sup>[1]</sup> <b>Internal M.2:</b> 1 x M.2 (2280/22110), PCIe Gen3 x4 <sup>[1]</sup> SAS card is required to support SAS drives.	Ordering Part Numbers	6NR163Z35DR000ABC1*
RAID	Require RAID add-in cards <b>Optional compatible RAID Cards:</b> NVMe/NVMe-oF RAID Cards with SupremeRAID™ by Graid Technology RAID Card models: SR-1000-FD32 Support RAID 0/1/5/6/10	Optional Parts	- RAID card (SR-1000-FD32): 25FC1-SRBUN0-AFS - 3-Section Rail kit (Supports CMA): 25HB2-A56120-K0R - Cable Management Arm: 25HBZ-R18100-K0R



Learn more at: <https://www.gigabyte.com/Enterprise>

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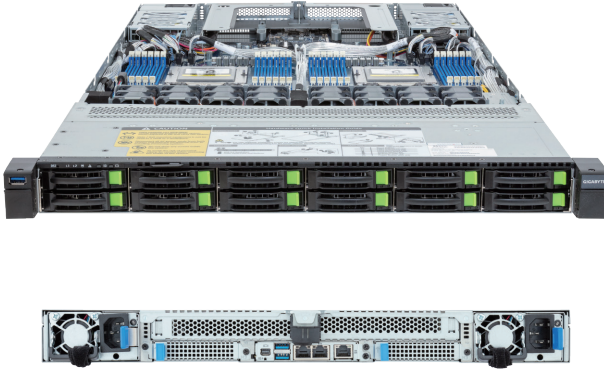
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Designed by



# R183-Z94-AAD1

Rack Server - 1U DP 12-Bay NVMe/SATA



## Key Features

- Dual AMD EPYC™ 9004 Series Processors
- 12-Channel DDR5 RDIMM, 24 x DIMMs
- Dual ROM Architecture
- 2 x 1Gb/s LAN ports via Intel® I350-AM2
- 12 x 2.5" Gen5 NVMe/SATA/SAS-4 hot-swap bays
- 3 x M.2 slots with PCIe Gen3 x4 and x2 interface
- 2 x FHHL PCIe Gen5 x16 slots
- 2 x OCP NIC 3.0 PCIe Gen5 x16 slots
- Dual 1600W 80 PLUS Platinum redundant power supply

## Application

Networking, Hybrid/Private Cloud Server...

## Specification

<b>Dimensions</b>	1U (W438 x H43.5 x D815 mm)	<b>I/O Ports</b>	Front: 1 x USB 3.2 Gen1 Rear: 2 x USB 3.2 Gen1, 1 x Mini-DP, 2 x RJ45, 1 x MLAN
<b>Motherboard</b>	MZ93-FS1	<b>Backplane Board</b>	Speed and bandwidth: PCIe Gen5 x4 or SATA 6Gb/s or SAS-4 24Gb/s
<b>CPU</b>	AMD EPYC™ 9005 Series Processors AMD EPYC™ 9004 Series Processors Dual processors, cTDP up to 300W - OCP NIC 3.0 ≤ 21W at 30°C ambient, EPYC 9654 cTDP up to 400W	<b>Security Modules</b>	1 x TPM header with SPI interface - Optional TPM2.0 kit: CTM010
<b>Sock</b>	2 x LGA 6096 (Socket SP5)	<b>Power Supply</b>	Dual 1600W 80 PLUS Platinum redundant power supply AC Input: 100-240V
<b>Chipset</b>	System on Chip	<b>System Management</b>	ASPEED® AST2600 Baseboard Management Controller GIGABYTE Management Console web interface
<b>Memory</b>	24 x DIMM slots DDR5 memory supported 12-Channel memory architecture RDIMM: Up to 4800 MT/s	<b>OS Support</b>	Windows Server, Red Hat Enterprise Linux server, Ubuntu, SUSE Linux Enterprise server, VMware ESXi, Citrix Hypervisor
<b>LAN</b>	2 x 1Gb/s LAN (1 x Intel® I350-AM2) - Supports NCSI function 1 x 10/100/1000 Mbps Management LAN	<b>System Fans</b>	8 x 40x40x56mm (32,000rpm)
<b>Video</b>	Integrated in ASPEED® AST2600 - 1 x Mini-DP	<b>Operating Properties</b>	Operating temperature: 10°C to 35°C Operating humidity: 8%-80% (non-condensing) Non-operating temperature: -40°C to 60°C Non-operating humidity: 20%-95% (non-condensing)
<b>Storage</b>	Front hot-swap: 12 x 2.5" Gen5 NVMe/SATA/SAS-4 *SAS card is required to support SAS drives.  Internal M.2: 2 x M.2 (2280/22110), PCIe Gen3 x4 1 x M.2 (2280/22110), PCIe Gen3 x2	<b>Packaging Content</b>	1 x R183-Z94-AAD1, 2 x CPU heatsinks, 1 x Mini-DP to D-Sub cable, 1 x 2-Section Rail kit Packaging Dimensions: 1045 x 595 x 249 mm
<b>RAID</b>	Require RAID add-in cards	<b>Part Numbers</b>	Barebone package (EPYC 9005/9004): 6NR183Z94DR000ABD1* Barebone package (EPYC 9004): 6NR183Z94DR000AAD1* Optional parts: - 3-Section Rail kit (Supports CMA): 25HB2-A56121-K0R - Cable Management Arm: 25HB1-R18300-K0R - RMA packaging: 6NR183Z94SR-RMA-A100
<b>Expansion Slots</b>	2 x FHHL PCIe Gen5 x16 slots 2 x OCP NIC 3.0 PCIe Gen5 x16 slots - Supports NCSI function		



Learn more at <https://www.GIGABYTE.com/enterprise>

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Designed by



# G293-Z21-AAP1

HPC/AI Server - 2U UP 4 x PCIe Gen5 GPUs



## Key Features

- Supports up to 4 x Dual slot Gen5 GPUs
- Single AMD EPYC™ 9005/9004 Series Processors
- 12-Channel DDR5 RDIMM, 12 x DIMMs
- Dual ROM Architecture
- 2 x 10Gb/s LAN ports via Broadcom® BCM57416
- 4 x 2.5" Gen5 NVMe/SATA/SAS hot-swap bays
- 4 x 2.5" SATA/SAS hot-swap bays
- 2 x M.2 slots with PCIe Gen5 x4 interface
- 4 x FHFL PCIe Gen5 x16 slots or 8 x FHFL PCIe Gen5 x8 slots for GPUs
- 2 x LP PCIe Gen5 x16 slots for add-in cards
- Dual 3000W 80 PLUS Titanium redundant power supply

## Applications

AI Platform, AI Training Server, AI Inference Server, High-Performance Computing Server...

## Specification

Dimensions	2U (W448 x H87.5 x D800 mm)	PCIe Expansion Slots	4 x FHFL PCIe Gen5 x16 or 8 x FHFL PCIe Gen5 x8, for GPUs 2 x LP PCIe Gen5 x16
Motherboard	MZ23-G20	I/O Ports	<b>Rear:</b> 2 x USB 3.2 Gen1, 1 x VGA, 2 x RJ45, 1 x MLAN
CPU	AMD EPYC™ 9005 Series Processors AMD EPYC™ 9004 Series Processors Single processor, cTDP up to 300W <sup>[1]</sup> <sup>[1]</sup> The EPYC 9005 series processors with a cTDP of 300W are supported only under ambient temperatures of 30°C.	Backplane Board	PCIe Gen5 x4 or SATA 6Gb/s or SAS 12Gb/s
OS Compatibility	<a href="#">OS Support List</a>	TPM	1 x TPM header (SPI), Optional TPM2.0 kit: CTM010
Socket	1 x LGA 6096 (Socket SP5)	Power Supply	Dual 3000W 80 PLUS Titanium redundant power supply AC Input: 100-240V *The system power supply requires C19 power cord.
Chipset	System on Chip	System Management	ASPEED® AST2600 Baseboard Management Controller GIGABYTE Management Console web interface
Memory	12-Channel DDR5 RDIMM, 12 x DIMMs [EPYC 9005] Up to 6400 MT/s [EPYC 9004] Up to 4800 MT/s	System Fans	8 x 80x80x38mm (18,300rpm)
LAN	2 x 10Gb/s LAN (1 x Broadcom® BCM57416), Support NCSI 1 x 10/100/1000 Mbps Management LAN	Operating Properties	Operating: 10°C~35°C, 8%~80% (non-condensing) Non-operating: -40°C~60°C, 20%~95% (non-condensing)
Video	Integrated in ASPEED® AST2600 - 1 x VGA port	Packaging Content	1 x G293-Z21-AAP1 1 x CPU heatsink 4 x GPU power cables (12VHPWR, 250mm) 1 x L-shape Rail kit
Storage	<b>Front hot-swap:</b> 4 x 2.5" Gen5 NVMe/SATA/SAS <sup>[1]</sup> 4 x 2.5" SATA/SAS <sup>[1]</sup> <b>Internal M.2:</b> 2 x M.2 (2280/22110), PCIe Gen5 x4 <sup>[1]</sup> SAS card is required to support SAS drives.	Ordering Part Numbers	6NG293Z21DR000ACP1*
RAID	Require RAID add-in cards		



Learn more at: <https://www.gigabyte.com/Enterprise>

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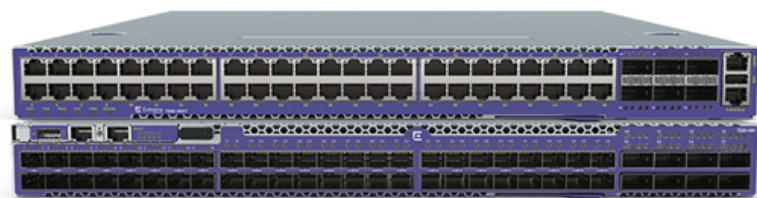
# Extreme 7520

## Highlights

- High-performance, fixed-form switches for leaf, spine, aggregation, or core applications
- Universal dual-persona hardware allows user choice of switch operating systems
- ExtremeCloud™ IQ and ExtremeCloud IQ - Site Engine for powerful, secure and easy to use cloud-based network management.
- Fabric Connect for automated network operations, simplified network provisioning and enhanced security

## Key Hardware Features

- Three models – two models with no MACsec and one model with MACsec in a fixed 1U form factor
- AC and DC power options
- Back-to-front and front-to-back airflow options
- Up to 8-unit stacking
- Integrated Application Hosting enables 3rd-party applications without impacting switch performance
- Non-blocking, wire-speed design



## Universal Aggregation/Core Switch Platform

The Extreme 7520 are purpose-built 48-port 10Gb and 48-port 25Gb switches designed for high-performance aggregation and core applications. As a universal hardware platform, the 7520 provides end-to-end secure network segmentation, in addition to advanced policy capabilities, with a user-selectable choice of Extreme's flagship switch operating systems. This makes the 7520 a uniquely flexible platform that can be deployed in a variety of aggregation and core environments.

The Extreme 7520 network hardware platform enables organizations to design networks that accommodate a variety of applications and east-west traffic patterns. With its high-density scale-out architecture, leading power efficiency, and airflow options, the 7520 platform delivers a cost-effective solution that optimizes power, cooling, and equipment room space, wherever your network operating center might be.

Three models of the 7520 are available.

### 7520-48XT-6C

48 x 1Gb/10Gb 10GBaseT copper ports (no MACsec)  
6 x 40Gb/100Gb QSFP28 fiber ports (no MACsec)

### 7520-48Y-8C

48 x 1Gb/10Gb/25Gb SFP28 fiber ports (no MACsec)  
8 x 40Gb/100Gb QSFP28 fiber ports (no MACsec)

### 7520-48YE-8CE

48 x 10/25Gb SFP28 fiber ports with MACsec support  
8 x 100Gb QSFP28 fiber ports with MACsec support  
Note: This model does not support stacking



## Universal Hardware Platform

The 7520 Series comes with a dual-persona capability allowing user choice of the switch operating system (OS). Either the Switch Engine (EXOS) or Fabric Engine (VOSS) persona can be enabled on 7520 hardware models. The desired persona can be selected at start-up or changed at a later stage. Once selected, the 7520 assumes the features/capabilities of the selected OS.

7520 persona activation can be done manually at boot-up, including via the system CLI. Or, it can be automated by pre-provisioning the 7520 persona in ExtremeCloud IQ. When first booted, the 7520 automatically connects to ExtremeCloud IQ to find its persona. The pre-provisioned OS persona is then remotely enabled on the 7520 system – eliminating the need for manual selection.

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## Ethernet Fabric Services

The 7520 supports a variety of Ethernet Fabric services, including Extreme's Fabric Connect when running Fabric Engine (VOSS) and Extreme's IP Fabric when running Switch Engine (EXOS). It also supports Fabric Attach for automated connection to either Layer 2 or Layer 3 fabric services. Extreme's Fabric Connect and IP Fabric on the 7520 enable the creation of virtualized networks that automate network operations, simplify network provisioning, and enhance security, all while reducing the strain on network and IT personnel.

## High-Performance Stacking

Two of the 7520's QSFP28 uplink ports can be used for high-speed 400Gb stacking when running Switch Engine (EXOS). Up to eight systems can be stacked using qualified direct attach cables and/or optical transceivers. (Note: Stacking is not supported on the 7520-48YE -8CE model or when running Fabric Engine (VOSS)).

---

## Management

The 7520 can be managed by ExtremeCloud IQ and ExtremeCloud IQ-Site Engine for comprehensive unified management with a consolidated view of users, devices and applications across wired and wireless networks.

Zero-touch provisioning from ExtremeCloud IQ lets one quickly bring new 7520 switches online as well as enable the selection of the operating system (OS) persona. Alternatively, 7520 on-box management can be done manually via a web-based GUI or generic CLI.



## Switch Specifications

Model	7520-48Y-8C 7520-48YE-8CE	7520-48XT-6C
Ports	<ul style="list-style-type: none"> <li>48 x 1/10/25GbE SFP28 ports (48Y/8C)</li> <li>48 x 10/25GbE SFP28 ports (48YE-8CE)</li> <li>8 x 40/100GbE QSFP28 ports</li> <li>1 x Serial console port RJ-45</li> <li>1 x 10/100/1000BASE-T out-of-band management port</li> <li>USB Type A storage port</li> </ul>	<ul style="list-style-type: none"> <li>48 x 1/10GbE 10GBaseT ports</li> <li>6 x 40/100GbE QSFP28 ports</li> <li>1 x Serial console port RJ-45</li> <li>1 x 10/100/1000BASE-T out-of-band management port</li> <li>USB Type A storage port</li> </ul>
Power Supplies	<ul style="list-style-type: none"> <li>Modular 800W AC power supply (up to two PSUs)</li> <li>Modular 800W DC power supply (up to two PSUs)</li> <li>Front to Back and Back to Front airflow option</li> </ul>	<ul style="list-style-type: none"> <li>Modular 800W AC power supply (up to two PSUs)</li> <li>Modular 800W DC power supply (up to two PSUs)</li> <li>Front to Back and Back to Front airflow options</li> </ul>
Fan Modules	<ul style="list-style-type: none"> <li>6 fan modules</li> <li>Front-Back and Back-Front airflow options</li> </ul>	<ul style="list-style-type: none"> <li>6 fan modules</li> <li>Front-Back and Back-Front airflow options</li> </ul>
Dimensions	<ul style="list-style-type: none"> <li>17.3in W/21.24in D/1.7in H (44.0cm/53.95cm/4.3cm) (48Y-8C)</li> <li>17.3in W/21.69in D/1.7in H (44.0cm/53.95cm/4.3cm) (48YE-8CE)</li> </ul>	<ul style="list-style-type: none"> <li>17.3in W/20.9in D/1.7in H (44.0cm/53.2cm/4.3cm)</li> </ul>
Weight	<ul style="list-style-type: none"> <li>16.71 lb (7.58 kg) empty chassis (48Y-8C)</li> <li>22.29 lb (10.11 kg) with two AC PSUs (-F and -R models) (48Y-8C)</li> <li>20.35 lb (9.23 kg) empty chassis (48YE-8CE)</li> <li>26.23 lb (11.90 kg) with two AC PSUs (-F and -R models) (48YE-8CE)</li> </ul>	<ul style="list-style-type: none"> <li>16.34 lb (7.41 kg) no PSU</li> <li>20.88 lb (9.47 kg) with two AC PSUs (-F and -R models)</li> </ul>
Performance	<ul style="list-style-type: none"> <li>Line rate 4 Tbps Switching Capacity (2 Tbps ingress, 2 Tbps egress)</li> <li>Typical Latency: 800 ns</li> <li>Forwarding rate: 1000 Mpps</li> </ul>	<ul style="list-style-type: none"> <li>Line rate 2.16 Tbps Switching Capacity (1.08 Tbps ingress, 1.08 Tbps egress)</li> <li>Typical Latency: 2,400 ns</li> <li>Forwarding rate: 1000 Mpps</li> </ul>
CPU/Memory	<ul style="list-style-type: none"> <li>8-core Processor</li> <li>16GB DDR4 ECC memory</li> <li>128GB SSD memory</li> </ul>	<ul style="list-style-type: none"> <li>8-core Processor</li> <li>16GB DDR4 ECC memory</li> <li>128GB SSD memory</li> </ul>
Packet Buffers	32MB	32MB
Environmental Operating Conditions	AC/DC, one fan failed, front-to-back: <ul style="list-style-type: none"> <li>0°C (32°F) to 50°C (122°F) at sea level;</li> <li>0°C (32°F) to 40°C (104°F) up to 3000 m (10,000 ft)</li> </ul> AC/DC, one fan failed, back-to-front: <ul style="list-style-type: none"> <li>0°C (32°F) to 45°C (113°F) at sea level;</li> <li>0°C (32°F) to 40°C (104°F) up to 3000 m (10,000 ft)</li> </ul>	AC/DC, one fan failed, front-to-back: <ul style="list-style-type: none"> <li>0°C (32°F) to 50°C (122°F) at sea level;</li> <li>0°C (32°F) to 40°C (104°F) up to 3000 m (10,000 ft)</li> </ul> AC/DC, one fan failed, back-to-front: <ul style="list-style-type: none"> <li>0°C (32°F) to 45°C (113°F) at sea level;</li> <li>0°C (32°F) to 40°C (104°F) up to 3000 m (10,000 ft)</li> </ul>

## 7520 Software Scaling Values

### Switch Engine

MAC Table: 294,000  
IPv4 ARP Table: 184,000

IPv4 Route Table: 256,000  
IPv4 Multicast Entries (S,G,V): 104,000  
IPv6 Neighbor Table: 57,000  
IPv6 Route Table: 131,000  
ACLs (Ingress/Egress): 8,192/1,024

QoS Egress Queues per port: 8  
 VLANs: 4,094  
 Routed VLANs: 2,048

## One Policy Scaling

Policy Profiles: 63  
 Unique Permit/Deny Rules per switch: 16,312

## Fabric Engine

MAC Table: 160,000  
 IPv4 ARP Table: 40,000 with SPB  
 IPv4 Route Table: 15,000  
 IP Multicast Entries (S,G,V): 6,000

IPv6 Neighbor Table: 32,000  
 IPv6 Route Table: Up to 7,000  
 ACLs (Ingress/Egress): 512/254 for non-IPv6  
 QoS Egress Queues per port: 8  
 VLANs: 4,059  
 IP Interfaces (Routed VLANs): 1,000

## Fabric Connect Scaling

Fabric Adjacencies per switch: 255  
 BEB Nodes per VSN: 2,000  
 L2 VSNs: 4,000  
 L3 VSNs: 256

## Power and Heat Dissipation

Switch Model	Minimum Heat Dissipation (BTU/hr) (Idle, no ports linked)	Minimum Power Consumption (W) (Idle, no ports linked)	Maximum Heat Dissipation (BTU/hr) (Fans high, all ports 100% traffic)	Maximum Power Consumption (W) (Fans high, all ports 100% traffic)
7520-48XT-6C	407.48	119.42	1359.06	398.30
7520-48Y-8C	326.71	95.75	1307.36	383.15
7520-48YE-8CE	596.58	174.84	1638.51	480.20

## Power Supply Specifications

	800W AC PSU XN-ACPWR-800W-F/R	800WDC PSU XN-DCPWR-800W-F/R
Dimensions	3.15 in W x 1.57 in H x 8.11 in D (8.0 cm x 4.0 cm x 20.6 cm)	3.15 in W x 1.57 in H x 8.11 in D (8.0 cm x 4.0 cm x 20.6 cm)
Weight	1.79 lb (0.81kg)	1.85 lb (0.85kg)
Voltage Input Range	100VAC-140 VAC/200VAC-240 VAC	-48VDC to -60VDC
Line Frequency Range	50Hz– 60Hz	N/A
PSU Input Socket	IEC320 C14	Terminal Block
PSU Output Cord	IEC320 C13	N/A
Operating Conditions	0°C–55°C operation	0°C–55°C operation

## Environmental

### Environmental Specifications

EN/ETSI 300 019-2-1 v2.1.2 - Class 1.2 Storage  
 EN/ETSI 300 019-2-2 v2.1.2 - Class 2.3 Transportation  
 EN/ETSI 300 019-2-3 v2.1.2 - Class 3.1e Operational  
 EN/ETSI 300 753 (1997-10) - Acoustic Noise  
 ASTM D3580 Random Vibration Unpackaged 1.5 G

### Environmental Compliance

EU RoHS - 2011/65/EU  
 EU WEEE - 2012/19/EU  
 EU REACH – Regulation (EC) No 1907/2006 Reporting  
 China RoHS - SJ/T 11363-2006  
 Taiwan RoHS - CNS 15663(2013.7)

## Environmental Operating Conditions

Temp: 0°C to 50°C (32°F to 122°F)

Humidity: 10% to 95% relative humidity, non-condensing

Altitude: 0 to 3,000 meters (9,850 feet)

Shock (half sine) 98m/s<sup>2</sup> (10G), 11ms, 18 shocks

Random vibration: 3Hz to 500Hz at 1.5 G rms

## Packaging and Storage Specifications

Temp: -40°C to 70°C (-40°F to 158°F)

Humidity: 10% to 95% relative humidity, non-condensing

Packaged Shock (half sine): 180 m/s<sup>2</sup> (18 G), 6 ms, 600 shocks

Packaged Vibration: 5Hz to 62Hz at velocity 5 mm/s, 62Hz to 500Hz at 0.2 G

Packaged Random Vibration: 5Hz to 20Hz at 1.0 ASD w/-3 dB/oct. from 20Hz to 200Hz

Packaged Drop Height: 14 drops minimum on sides and corners at 42 inches (<15 kg box)

## Regulatory and Safety

### North American ITE

UL 62368-1

UL/CuL62368-1 Listed

CAN/CSA-C22.2 No 60950-1-07 Incl. AM1 (2011) and AM2 (2014)

CAN/CSA C22.2 No. 62368-1:19

Complies with FCC 21CFR 1040.10 (U.S. Laser Safety)

CDRH Letter of Approval (US FDA Approval)

### European ITE

EN 60950-1 2nd Edition

EN62368-1

EN 60825-1 Class 1 (Lasers Safety)

2014/35/EU Low Voltage Directive

### International ITE

CB Report & Certificate per IEC 60950-1

CB Report & Certificate IEC 62368-1

AS/NZS 62368.1:2022 (Australia/New Zealand)

## EMI/EMC Standards

### North American EMC for ITE

FCC CFR 47 Part 15 Class A (USA)

ICES-003 Class A (Canada)

### European EMC Standards

EN 55032 Class A

EN 55035

EN 55011

EN 61000-3-2:2014 (Harmonics)

EN 61000-3-3 2013 (Flicker)

EN 61000-6-2

EN 61000-6-4

EN 300 386 (EMC Telecommunications) 2014/30/EU EMC Directive

## International EMC Certifications

CISPR 32, Class A (International Emissions) AS/NZSCISPR32

CISPR24 Class A (International Immunity)

IEC 61000-4-2/EN 61000-4-2 Electrostatic Discharge, 8 kV Contact, 15 kV Air, Criteria B

IEC 61000-4-3/EN 61000-4-3 Radiated Immunity 10V/m, Criteria A

IEC 61000-4-4/EN 61000-4-4 Transient Burst, 2 kV, Criteria B

IEC 61000-4-5/EN 61000-4-5 Surge, 2 kV L-L, 2 kV L-G, Level 3, Criteria B

IEC61000-4-6 Conducted Immunity, 0.15-80MHz, 10V/rms, 80%AM (1kHz), Criteria A

IEC/EN61000-4-11 Power Dips & Interruptions, >30%, 25 periods, Criteria C

## Country Specific

VCCI Class A (Japan Emissions)

ACMA RCM (Australia Emissions)

CQC Mark (China)

KCC Mark, EMC Approval (Korea)

BSMI (Taiwan)

Anatel (Brazil)

NoM (Mexico)

EAC (Russia, Belarus, Kazakhstan)

NRCS (South Africa)

TEC (India)

## IEEE 802.3 Media Access Standards

IEEE 802.3ab 1000BASE-T

IEEE 802.3ae 10GBASE-X

IEEE 802.3 10GBASE-T (up to 100m using Cat6a cabling or better)

IEE 802.3by-2016 25Gb/s Operation

IEEE 802.3ba/802.3bm 40 GBASE-X and 100 GBASE-X

## Ordering Notes

Customers ordering an AC-bundled version of the 7520 Series switch receive the hardware switch along with a Base software license, integrated power supply, fan modules, and rack-mount kit.

Customers ordering a non-bundled version of the 7520 Series switch customers will only receive the hardware switch, Base software license, and rackmount kit. Customers in this case, must order Power Supply Units (PSU) and fan modules separately.

At least one Power Supply Unit (PSU) is required for 7520 operations. Additional power supplies, transceiver/optics, power cords, as well as Premier license, must be ordered separately.

## Base Software and Optional Premier License

The Base software included with each 7520 unit supports most available software features. Certain features, however, require a Premier License to operate:

### For Switch Engine, a Premier License is required for:

5 or more OSPF interfaces  
PIM DM/PIM SSM  
Anycast RP (Rendezvous Point)  
MultiSource Discovery Protocol (MSDP)  
IS-IS/BGP4/MBGP\*  
GRE Tunneling  
Ethernet VPN (EVPN)

\* Up to 2 BGP interfaces included in Base software

### For Fabric Engine, a Premier License is required for :

Layer 3 Virtual Services Networks (VSNs)  
Distributed Virtual Routing Controller

VXLAN Gateway  
5 or more active OSPF interfaces  
17 or more BGP peers  
Insight Architecture/Integrated Application Hosting (IAH)

## Power Supplies for Use with Your Switch

Each 7520 Series switch runs with two replaceable internal power supply modules that provide all of the power needed for the switch to operate. You can remove one power supply module without interrupting the switch's operation. Supported power supply configurations include two 800W AC power supply modules, two 800W DC power supply modules, or one 800W AC and one 800W DC power supply module. Power supply modules have integrated cooling fans that operate independently of the switch fans and are available with front-to-back or back-to-front airflow. The direction of the airflow in both power supply modules must be in the same direction and must also be in the same direction of the airflow in the fan modules.

## Ordering Information

Part Number	Product Name	Description
7520-48XT-6C	7520-48XT Base System	Extreme 7520-48XT Switch - Ships with two empty power supply slots, six empty fan slots, one 4-post rack mount kit. Supports 48 x 1G/10G copper ports and 6 x 40G/100G fiber ports
7520-48XT-6C-AC-F	7520-48XT with front-to-back airflow	Extreme 7520-48XT Switch - Ships with two AC front-to-back airflow power supplies, six front- to-back airflow fans, one 4-post rack mount kit. Supports 48 x 1G/10G copper ports and 6 x 40G/100G fiber ports
7520-48XT-6C-AC-R	7520-48XT with back-to-front airflow	Extreme 7520-48XT Switch - Ships with two AC back-to-front airflow power supplies, six back- to-front airflow fans, one 4-post rack mount kit. Supports 48 x 1G/10G copper ports and 6 x 40G/100G fiber ports
7520-48Y-8C*	7520-48Y Base System	Extreme 7520-48Y Switch with two empty power supply slots, six empty fan slots, Ships with one 4-post rack mount kit. Supports 48 x 1G/10G/25G fiber ports and 8 x 40G/100G fiber ports
7520-48YE-8CE*	7520-48YE Base System	Extreme 7520-48YE Switch with two empty power supply slots, six empty fan slots, Ships with one 4-post rack mount kit. Supports 48 x 10G/25G fiber ports and 8 x 40G/100G fiber ports. Includes embedded MACsec capabilities.
7520-48Y-8C-AC-F*	7520-48Y with front- to-back airflow	Extreme 7520-48Y Switch - Ships with two AC front-to-back airflow power supplies, six front- to-back airflow fans, one 4-post rack mount kit. Supports 48 x 1G/10G/25G fiber ports and 8 x 40G/100G fiber ports
7520-48YE-8CE-AC-F*	7520-48YE with front-to-back airflow	Extreme 7520-48YE Switch - Ships with two AC front-to-back airflow power supplies, six front- to-back airflow fans, one 4-post rack mount kit. Supports 48 x 10G/25G fiber ports and 8 x 40G/100G fiber ports. Includes embedded MACsec capabilities.

Part Number	Product Name	Description
7520-48Y-8C-AC-R*	7520-48Y with back- to-front airflow	Extreme 7520-48Y Switch - Ships with two AC back-to-front airflow power supplies, six back- to-front airflow fans, one 4-post rack mount kit. Supports 48 x 1G/10G/25G fiber ports and 8 x 40G/100G fiber ports
7520-48YE-8CE-AC-R*	7520-48YE-8CE-AC-R with back-to- front airflow	Extreme 7520-48YE Switch - Ships with two AC back-to-front airflow power supplies, six back- to-front airflow fans, one 4-post rack mount kit. Supports 48 x 10G/25G fiber ports and 8 x 40G/100G fiber ports. Includes embedded MACsec capabilities.

\* When running Fabric Engine on the 7520, 2 of the 7520 uplink ports are blocked in support of Ethernet Fabric Connect (SPB) functionality.

## Accessories

Part Number	Product Name	Description
XN-ACPWR-800W-F	800W AC PSU (Front-to-Back)	AC800W PSU, Front to Back Airflow for use in 7520, 7720
XN-ACPWR-800W-R	800W AC PSU (Back-to-Front)	AC800W PSU, Back to Front Airflow for use in 7520, 7720
XN-DCPWR-800W-F	800W DC PSU (Front-to-Back)	DC800W PSU, Front to Back Airflow for use in 7520, 7720
XN-DCPWR-800W-R	800W DC PSU (Back-to-Front)	DC800W PSU, Back to Front Airflow for use in 7520, 7720
XN-FAN-001-F	Fan Module (Front-to-Back)	Single fan module Front to Back Airflow (also used in X695, VSP 7400, SLX 9150, SLX 9250, 7720, 8520, and 8720)
XN-FAN-001-R	Fan Module (Back-to-Front)	Single fan module Back to Front Airflow (also used in X695, VSP 7400, SLX 9150, SLX 9250, 7720, 8520, and 8720)
XN-2P-RKMT299	Two-post rack mount kit	Two-post rack mount kit for 7520 and 7720 switches
XN-4P-RKMT298	Four-post rack mount kit	Four-post rack mount kit for 7520-48Y, 7520-48XT, and 7720 switches
XN-4P-RKMT302	Four-post rack mount kit	Four-post rack mount kit for 7520-48YE switches

## Software Licenses

Part Number	Product Name	Description
7000-PRMR-LIC-P	Premier License for 7000 Series	Perpetual Premier License for Extreme 7000 series (Includes Integrated Application Hosting)
7000-MACSEC-LIC-P	MACsec License for 7000 Series	Perpetual MACsec License for Extreme 7000 series

## Warranty

All 7520 Series models are covered under Extreme's Universal LLW policy. For warranty details, visit: <http://www.extremenetworks.com/support/policies>

## Maintenance Services

Extreme's maintenance and support services with 100% in-sourced engineering experts and over 90% first-person resolution ensure efficient operation of your business-essential network. 24x7x365 phone support, advanced parts replacement, and on-site support augment your staff with experienced resources that help you mitigate critical network issues fast. Visit our [ExtremeWorks Maintenance Services page](#) for more information.

## Optics/Transceivers

For a list of the optics/transceivers supported on the 7520 Series, refer to our [Extreme Optics Compatibility Tool](#).

## Power Cords

In support of Extreme Networks green initiatives, power cords are not included with the 7520 but can be ordered separately. They should be specified at time of ordering.



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# EX3400 ETHERNET SWITCH DATASHEET

## Product Overview

*Juniper Networks EX3400 Ethernet Switch delivers a high-performance, flexible, and cost-effective solution for today's most demanding converged data, voice, and video enterprise access environments.*

*The EX3400 supports Juniper Networks Virtual Chassis technology, allowing up to 10 switches to be interconnected over uplink ports and managed as a single device, delivering a scalable, pay-as-you-grow solution for expanding network environments.*

*The EX3400 is onboarded, provisioned, and managed in the Juniper Mist Cloud Architecture. Mist Wired Assurance delivers better experiences for connected devices through AI-powered automation and service levels.*

## Product Description

The Juniper Networks® EX3400 Ethernet Switch with Juniper Networks Virtual Chassis technology provides enterprises with the flexibility and ease of management that previously was only available with higher-end access switches. The fixed-configuration EX3400 supports a number of key features, including:

- 24-port and 48-port models with and without Power over Ethernet (PoE/PoE+) are for campus wiring closet deployments.
- Cloud-ready and zero-touch provisioning (ZTP)-enabled for Juniper Mist Wired Assurance
- Data center-optimized cooling options offer both front-to-back and back-to-front airflows, making the EX3400 suitable for GbE data center access deployments.
- Two redundant, field-replaceable power supplies each provide up to 920 watts of power.
- 24-port data center models are included for metro deployments.
- Four dual-mode (GbE/10GbE) small form-factor pluggable transceiver (SFP/SFP+) uplink ports and two 40GbE QSFP+ ports are available.
- Uplink ports can be configured as Virtual Chassis interfaces and connected via standard 10GbE/40GbE optic interfaces (40GbE uplink ports are preconfigured by default as Virtual Chassis ports).
- Comprehensive Layer 2 functionality with RIP and static routing is provided.
- A compact, 13.8-inch deep 1 U form factor supports flexible deployment options.
- An easy-to-manage solution includes centralized software upgrades.
- Support is available for the same consistent modular Juniper Networks Junos operating system control plane feature implementation used by all other Juniper fixed-configuration Juniper Networks EX Series Ethernet Switches.
- Support is provided for Layer 3 (OSPF v2, IGMP v1/v2/v3, PIM, VRRP, BFD, virtual router) via an enhanced feature license (optional license required).
- Support is available for IPv6 management, including neighbor discovery, stateless auto configuration, telnet, SSH, DNS, system log, NTP, ping, traceroute, ACL, CoS static routing, and RIPng.
- IPv6 routing features (OSPFv3, virtual router support for unicast, VRRPv6, PIM, MLDv1/v2) are supported via an enhanced feature license.
- Support is available for Border Gateway Protocol (BGP), multiprotocol BGP (MBGP), and Intermediate System-to-Intermediate System (IS-IS) via an optional Advanced Feature license.
- Energy Efficient Ethernet (EEE) capability is provided.

<sup>1</sup>Software to come in future

## Architecture and Key Components

### Cloud Management with Juniper Mist Wired Assurance

Juniper Mist Wired Assurance, a cloud-based service driven by Mist AI to claim, configure, manage, and troubleshoot the EX3400, delivers AI-powered automation and service levels to ensure a better experience for connected devices. Wired Assurance leverages rich Junos switch telemetry data to simplify operations, reduce mean time to repair, and improve visibility. Wired Assurance offers the following features:

- **Day 0 operations**—Onboard switches seamlessly by claiming a greenfield switch or adopting a brownfield switch with a single activation code for true plug-and-play simplicity.
- **Day 1 operations**—Implement a template-based configuration model for bulk rollouts of traditional and campus fabric deployments, while retaining the flexibility and control required to apply custom site- or switch-specific attributes. Automate provisioning of ports via Dynamic Port Profiles.
- **Day 2 operations**—Leverage the AI in Juniper Mist Wired Assurance to meet service-level expectations such as throughput, successful connects, and switch health with key pre- and post-connection metrics (see Figure 1). Add the self-driving capabilities in Marvis Actions to detect loops, add missing VLANs, fix misconfigured ports, identify bad cables, isolate flapping ports, and discover persistently failing clients (see Figure 2). And perform software upgrades easily through Juniper Mist cloud.

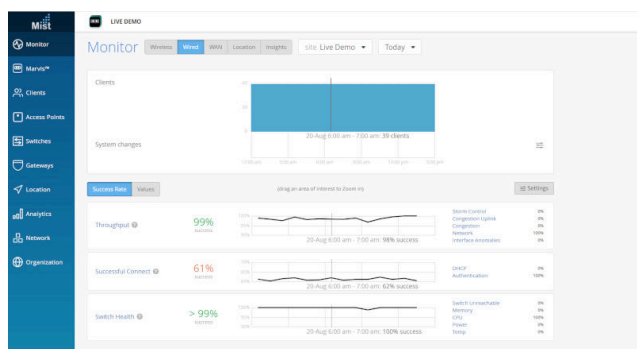


Figure 1: Juniper Mist Wired Assurance service-level expectations

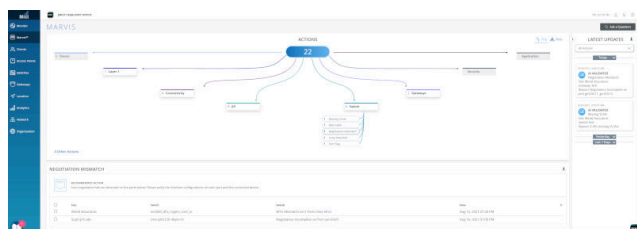


Figure 2: Marvis Actions for wired switches

The addition of Marvis, a complementary Virtual Network Assistant driven by Mist AI, lets you start building a self-driving network that simplifies network operations and streamlines troubleshooting via automatic fixes for EX Series switches or recommended actions for external systems.

For more information see [Juniper Mist Wired Assurance](#).

### Virtual Chassis Technology

The EX3400 supports Juniper Networks Virtual Chassis technology, allowing up to 10 switches to be interconnected over uplink ports and managed as a single logical device, delivering a scalable, pay-as-you-grow solution for expanding network environments.

When deployed in a Virtual Chassis configuration, the EX3400 switches elect a primary and backup switch based on a set of criteria or preconfigured policies. The primary switch automatically creates and updates the switching and optional routing tables on all switches in the Virtual Chassis configuration. Virtual Chassis technology allows switches to be added or removed without service disruption. An EX3400 Virtual Chassis configuration operates as a highly resilient unified system, providing simplified management using a single IP address, single telnet session, single command-line interface (CLI), automatic version checking, and automatic configuration. The EX3400 switches are also capable of local switching, so that packets coming into a port destined for another port on the same switch do not have to traverse the Virtual Chassis, increasing the forwarding capacity of the switch.

The EX3400 implements the same slot/module/port numbering schema as other Juniper Networks chassis-based products when numbering Virtual Chassis ports, providing true chassis-like operations. By using a consistent operating system and a single configuration file, all switches in a Virtual Chassis configuration are treated as a single device, simplifying overall system maintenance and management.

The two QSFP+ ports on the EX3400 switch can be configured as Virtual Chassis ports or as uplinks to aggregation devices.



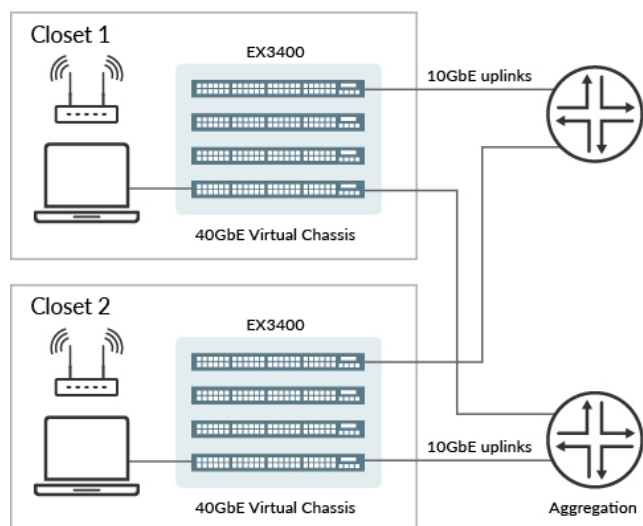


Figure 3: EX3400 Virtual Chassis deployments

## Campus Fabric Deployments

Juniper campus fabrics support these validated architectures with the EX3400 switch playing the role of access switch:

- EVPN multihoming (collapsed core or distribution):** A collapsed core architecture combines the core and distribution layers into a single switch, turning the traditional three-tier hierarchal network into a two-tier network. This eliminates the need for STP across the campus network by providing multihoming capabilities from the access to the core layer. EVPN multihoming can be deployed and managed using the Juniper Mist cloud.
- Core/distribution:** A pair of interconnected EX Series core or distribution switches provide L2 EVPN and L3 VXLAN gateway support. The EVPN-VXLAN network between the distribution and core layers offers two modes: centrally or edge routed bridging overlay.

In all these EVPN-VXLAN deployment modes, EX3400 switches can be used as an access layer switch.

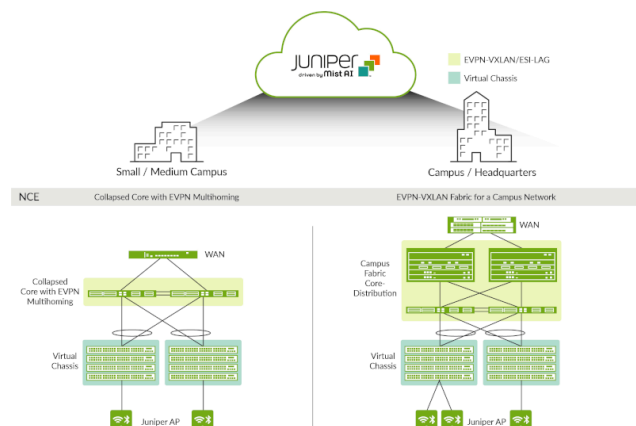


Figure 4: Campus fabrics showing Virtual Chassis and EVPN-VXLAN-based architectures

## Features and Benefits

### Managing AI-Driven Campus Fabric with the Juniper Mist Cloud

Juniper Mist Wired Assurance brings cloud management and Mist AI to campus fabric. It sets a new standard moving away from traditional network management towards AI-driven operations, while delivering better experiences to connected devices. The Juniper Mist Cloud streamlines deployment and management of campus fabric architectures by allowing:

- Automated deployment and zero touch deployment
- Anomaly detection
- Root cause analysis

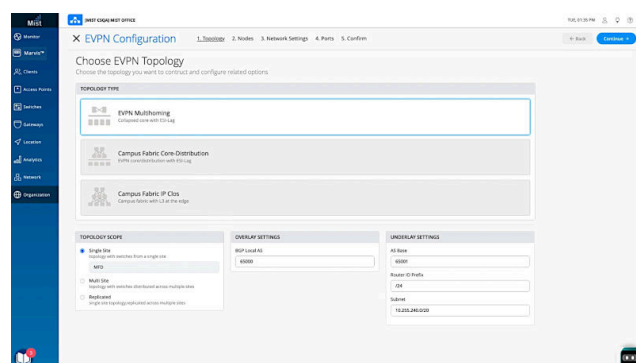


Figure 5: EVPN multihoming configuration via the Juniper Mist cloud

## Juniper Virtual Chassis

Virtual Chassis technology simplifies network management for smaller deployments. Up to 10 interconnected EX3400 switches can be managed as a single device utilizing a single Junos OS image and a single configuration file, reducing the overall number of units to monitor and manage. When the Junos OS is upgraded on the primary switch in an EX3400 Virtual Chassis configuration, the software is automatically upgraded on all other member switches at the same time.

In addition, a feature called system snapshot makes a copy of all software files used to run the switch, including the Junos operating system, the active configuration, and the rescue configuration. These copies can be used to reboot the switch the next time it is powered up or as a backup boot option. The Junos OS software can also be preinstalled on a flash drive and used to boot the EX3400 at any time.

Another feature, called automatic software download, enables network administrators to easily upgrade the EX3400 using the DHCP message exchange process to download and install software packages. Users simply configure the automatic software download feature on EX3400 switches acting as DHCP clients and establish a path to the server where the software package file is installed. The server then communicates the path to the software package file through DHCP server messages.

The ZTP feature allows a DHCP server to push configuration details and software images to multiple switches at boot-up time.

## Power

The EX3400 supports the 802.3af Class 3 Power over Ethernet (PoE) and 802.3at PoE+ standards for supporting networked devices such as telephones, video cameras, IEEE 802.11ac WLAN access points, and videophones in converged networks. While EX3400 switches ship with a single power supply by default, they can support redundant 600W or 920W power supplies that provide PoE (15.4W) or PoE+ (30W) power to all ports in the switch. Spare power supplies can be ordered as needed.

There are two PoE power mode settings on the EX3400 switches:

- Static mode allows customers to specify the maximum PoE power setting on an individual port.
- Class mode allows end devices to specify PoE class and negotiate whether the switch can provide PoE power to the device.

The EX3400 also supports the industry-standard Link Layer Discovery Protocol (LLDP) and LLDP-Media Endpoint Discovery (LLDP-MED), which enable the switches to automatically discover Ethernet-enabled devices, determine their power requirements, and assign virtual LAN (VLAN) parameters. LLDP-MED-based granular PoE management allows the EX3400 to negotiate PoE usage down to a fraction of a watt on powered devices, enabling more efficient PoE utilization across the switch.

The EX3400 supports the IEEE 802.3az standard for Energy Efficient Ethernet (EEE) functionality, reducing power consumption of copper physical layers during periods of low link utilization.

In addition, the EX3400 supports rich quality-of-service (QoS) functionality for prioritizing data, voice, and video traffic. The switches support 12 QoS queues (8 unicast and 4 multicast) on every port, enabling them to maintain multilevel, end-to-end traffic prioritization. The EX3400 also supports a wide range of scheduling options, such as priority and shaped-deficit weighted round-robin (SDWRR) scheduling.

Table 1. EX3400 PoE Power Budget

SKU	Total 10/100/1000BASE-T Ports	Total 30 W PoE+ Ports That Can Be Enabled	Total 15.4 W PoE Ports That Can Be Enabled	Power Supply Type	PoE+ Power Budget (W)
EX3400-24P	24	24 ports up to 30W	24 ports up to 15.4W	AC	370W/720W
EX3400-48P	48	48 ports up to 30W	48 ports up to 15.4W	AC	740W/1440W

## Security

The EX3400 switches fully interoperate with Juniper Networks Access Policy Infrastructure, which consolidates all aspects of a user's identity, device, and location, enabling administrators to enforce access control and security down to the individual port or user levels. Working as an enforcement point in the Access Policy Infrastructure, the EX3400 provides both standards-based 802.1X port-level access control and Layer 2-4 policy enforcement based on user identity, location, device, or a combination of these. A user's identity, device type, machine posture check, and location can be used to not only grant or deny access but also to determine the duration of access. If access is granted, the switch assigns the user to a specific VLAN based on authorization levels. The switch can also apply QoS policies or mirror user traffic to a central location for logging, monitoring, or threat detection by an intrusion prevention system (IPS).

The EX3400 also provides a full complement of port security features, including Dynamic Host Configuration Protocol (DHCP) snooping, dynamic ARP inspection (DAI), and media access control (MAC) limiting to defend against internal and external spoofing, man-in-the-middle, and denial-of-service (DoS) attacks.

### MACsec

EX3400 switches support IEEE 802.1ae MACsec, providing support for link-layer data confidentiality, data integrity, and data origin authentication. The MACsec feature enables the EX3400 to support 88 Gbps of near line-rate hardware-based traffic encryption on all GbE and 10GbE ports.

Defined by IEEE 802.1AE, MACsec provides secure, encrypted communication at the link layer that is capable of identifying and preventing threats from DoS and intrusion attacks, as well as man-in-the-middle, masquerading, passive wiretapping, and playback attacks launched from behind the firewall. When MACsec is deployed on switch ports, all traffic is encrypted on the wire but traffic inside the switch is not. This allows the switch to apply all network policies such as QoS, deep packet inspection, and sFlow to each packet without compromising the security of packets on the wire.

Hop-by-hop encryption enables MACsec to secure communications while maintaining network intelligence. In addition, Ethernet-based WAN networks can use MACsec to provide link security over long-haul connections. MACsec is transparent to Layer 3 and higher-layer protocols and is not limited to IP traffic—it works with any type of wired or wireless traffic carried over Ethernet links.

## Junos Operating System

The EX3400 switches run the same Junos OS that is used by other Juniper Networks EX Series Ethernet Switches, QFX Series Switches, Juniper Routers, Juniper SRX Firewalls, and the Juniper NFX Series Network Services Platform. By utilizing a common operating system, Juniper delivers a consistent implementation and operation of control plane features across all products. To maintain that consistency, Junos OS adheres to a highly disciplined development process that uses a single source code and employs a highly available modular architecture that prevents isolated failures from bringing an entire system down.

These attributes are fundamental to the core value of the software, enabling all Junos OS-powered products to be updated simultaneously with the same software release. All features are fully regression tested, making each new release a true superset of the previous version. Customers can deploy the software with complete confidence that all existing capabilities are maintained and operate in the same way.

### Converged Environments

The EX3400 switches provide a flexible solution for demanding converged data, voice, and video environments. The EX3400-24P and EX3400-48P support PoE+, delivering up to 30 watts of power per port to support networked devices such as telephones, video cameras, IEEE 802.11ac wireless LAN (WLAN) access points, and videophones. The PoE+ standard provides nearly double the 15.4 watts per port available with the IEEE 802.3af PoE standard.

## Product Options

Table 2. EX3400 Ethernet Switch Models

SKU	Total 10/100/1000 BASE-T Ports	Uplinks	Airflow	Power Supply Type	PoE+ Power (Budget W)	Max. System Power Consumption (W)*	Power Supply Rating (W)
EX3400-24T	24	10GbE/GbE SFP+/SFP ports 2 40GbE QSFP+ ports	Front-to-back	AC	0	100	150W
EX3400-48T	48		Front-to-back	AC	0	120	150W
EX3400-48T-AFI	48		Back-to-front	AC	0	120	150W
EX3400-24P	24 PoE+		Front-to-back	AC	370W <sup>2</sup> /720W <sup>3</sup>	110	600W
EX3400-48P	48 PoE+		Front-to-back	AC	740W <sup>2</sup> /1440W <sup>3</sup>	120	920W
EX3400-24T-DC	24		Front-to-back	DC	0	100	150W
EX3400-48T-DC	48		Front-to-back	DC	0	120	150W

<sup>1</sup> 1 power supply

<sup>2</sup> 2 power supplies

\* Input power without PoE

### High Availability

The EX3400 line of Ethernet switches is designed to support many of the same failover capabilities and high availability (HA) functionality as other Juniper EX access switches with Virtual Chassis technology.

Each EX3400 switch is capable of functioning as a Routing Engine (RE) when deployed in a Virtual Chassis configuration. When two or more EX3400 switches are interconnected in a Virtual Chassis configuration, all member switches share a single control plane. Junos OS automatically initiates an election process to assign a primary (active) and backup (hot-standby) Routing Engine. An integrated Layer 2 and Layer 3 graceful Routing Engine switchover (GRES) feature maintains uninterrupted access to applications, services, and IP communications in the unlikely event of a primary Routing Engine failure.

When more than two switches are interconnected in a Virtual Chassis configuration, the remaining switch elements act as line cards and are available to take on the backup Routing Engine position should the designated primary fail. Primary, backup, and line card priority status can be assigned by the network operations team to dictate the order of ascension. This N+1 Routing Engine redundancy—coupled with GRES, the nonstop routing (NSR), and, in the future, the nonstop bridging (NSB) capabilities of Junos OS—ensures a smooth transfer of control plane functions following unexpected failures.

The EX3400 also supports the following HA features:

- **Redundant trunk group**—To avoid the complexities of Spanning Tree Protocol (STP) without sacrificing network resiliency, the EX3400 employs redundant trunk groups to provide the necessary port redundancy and simplify switch configuration.

- **Cross-member link aggregation**—Cross-member link aggregation allows redundant link aggregation connections between devices in a single Virtual Chassis configuration, providing an additional level of reliability and availability.
- **Nonstop bridging (NSB) and nonstop active routing (NSR)**—NSB and NSR on the EX3400 switch ensure control plane protocols, states, and tables are synchronized between primary and backup REs to prevent protocol flaps or convergence issues following a Routing Engine failover.
- **Nonstop software upgrade (NSSU)**—With NSSU, all members of an EX3400 Virtual Chassis configuration can be upgraded with a single command. Mission-critical traffic can be configured as a link aggregate across multiple Virtual Chassis switch members, ensuring minimal disruption during the upgrade process.

### Flex Licensing

Juniper Flex licensing offers a common, simple, and flexible licensing model for EX Series access switches, enabling customers to purchase features based on their network and business needs.

Flex licensing is offered in Standard, Advanced, and Premium tiers. Standard tier features are available with the Junos OS image that ships with EX Series switches. Additional features can be unlocked with the purchase of a Flex Advanced or Flex Premium license.

The Flex Advanced and Premium licenses for the EX Series platforms are class based, determined by the number of access ports on the switch. Class 1 (C1) switches have 12 ports, Class 2 (C2) switches have 24 Ports, and Class 3 (C3) switches have 32 or 48 Ports.

The EX3400 switches support both subscription and perpetual Flex licenses. Subscription licenses are offered for three- and five-year terms. In addition to Junos features, the Flex Advanced and Premium subscription licenses include Juniper Mist Wired Assurance. Flex Advanced and Premium subscription licenses also allow portability across the same tier and class of switches, ensuring investment protection for the customer.

For a complete list of features supported by the Flex Standard, Advanced, and Premium tiers, or to learn more about Junos EX Series licenses, please visit <https://www.juniper.net/documentation/us/en/software/license/licensing/topics/concept/flex-licenses-for-ex.html>.

### Enhanced Limited Lifetime Warranty

The EX3400 includes an enhanced limited lifetime hardware warranty that provides return-to-factory switch replacement for as long as the original purchaser owns the product. The warranty includes lifetime software updates, advanced shipping of spares within one business day, and 24x7 Juniper Networks Technical Assistance Center (JTAC) support for 90 days after the purchase date. Power supplies and fan trays are covered for a period of five years. For complete details, please visit <https://support.juniper.net/support/>



EX3400-24T/P



EX3400-48T/P

### Physical Specifications

#### Dimensions (W x H x D)

- Base unit: 17.36 x 1.72 x 13.78 in (44.1 x 4.37 x 35 cm)
- With power supply installed: 17.36 x 1.72 x 15.05 in (44.1 x 4.37 x 38.24 cm)
- With power supply and front module installed: 17.36 x 1.72 x 15.19 in (44.1 x 4.37 x 38.58 cm)

#### Backplane

- 160 Gbps (with QSFP+ ports) or 80 Gbps (with SFP+ ports)  
Virtual Chassis interconnect to link up to 10 switches as a single logical device

#### Uplink

- Fixed 4-port uplinks can be individually configured as GbE (SFP) or 10GbE (SFP+) ports; 2 x 40G QSFP+ ports.

### System Weight

- EX3400 switch (no power supply or fan module): 10.49 lb (4.76 kg) maximum
- EX3400 switch (with single power supply and two fan modules): 12.65 lb (5.74 kg) maximum
- 150 W AC power supply: 1.43 lb (0.65 kg)
- 600 W AC power supply: 1.82 lb (0.83 kg)
- 920 W AC power supply: 1.87 lb (0.85 kg)
- 150 W DC power supply: 1.43 lb (0.65 kg)
- Fan module: 0.16 lb (0.07 kg)

### Environmental Ranges

- Operating temperature: 32° to 113° F (0° to 45° C)
- Storage temperature: -40° to 158° F (-40° to 70° C)
- Operating altitude: up to 10,000 ft (3048 m)
- Nonoperating altitude: up to 16,000 ft (4877 m)
- Relative humidity operating: 10% to 85% (noncondensing)
- Relative humidity nonoperating: 0% to 95% (noncondensing)

### Hardware Specifications

#### Switching Engine Model

- Store and forward

#### DRAM

- 2 GB with ECC

#### Flash

- 2 GB

#### CPU

- Dual Core 1 GHz

### GbE Port Density per System

- EX3400-24T/EX3400-24P/EX3400-24T-DC: 30 (24 host ports + four 1/10 GbE and two 40GbE uplink ports)
- EX3400-48T/EX3400-48T-AFI/EX3400-48P/EX3400-48T-DC: 54 (48 host ports + four 1/10 GbE and two 40GbE uplink ports)

### Physical Layer

- Cable diagnostics for detecting cable breaks and shorts
- Auto medium-dependent interface/medium-dependent interface crossover (MDI/MDIX) support
- Port speed downshift/setting maximum advertised speed on 10/100/1000BASE-T ports
- Digital optical monitoring for optical ports

**Packet-Switching Capacities (Maximum with 64-Byte Packets)**

- EX3400-24T, EX3400-24P, EX3400-24T-DC: 144 Gbps (unidirectional)/288 Gbps (bidirectional)
- EX3400-48T, EX3400-48T-AFI, EX3400-48P, EX3400-48T-DC: 168 Gbps (unidirectional)/336 Gbps (bidirectional)

**Software Specifications****Layer 2/Layer 3 Throughput (Mpps) (Maximum with 64 Byte Packets)**

- 24P/24T/24T-DC: 214 Mpps
- 48P/48T/48T-BF/48T-DC: 250 Mpps

**Layer 2 Features**

- Maximum MAC addresses per system: 32,000
- Jumbo frames: 9216 bytes
- Number of VLANs supported: 4,096
- Range of possible VLAN IDs: 1-4094
- Port-based VLAN
- MAC-based VLAN
- Voice VLAN
- Layer 2 Protocol Tunneling (L2PT)
- Compatible with Per-VLAN Spanning Tree Plus (PVST+)
- RVI (routed VLAN interface)
- Persistent MAC (sticky MAC)
- RSTP and VSTP running concurrently
- IEEE 802.1AB: Link Layer Discovery Protocol (LLDP)
- LLDP-MED with VoIP integration
- IEEE 802.1ae Media Access Control Security (MACsec)
- IEEE 802.1ak Multiple VLAN Registration Protocol (MVRP)
- IEEE 802.1br: Bridge Port Extension
- IEEE 802.1D: Spanning Tree Protocol
- IEEE 802.1p: CoS prioritization
- IEEE 802.1Q-in-Q: VLAN stacking
- IEEE 802.1Q: VLAN tagging
- IEEE 802.1s: Multiple Spanning Tree Protocol (MSTP)
- Number of MST instances supported: 64
- Number of VSTP instances supported: 510
- IEEE 802.1w: Rapid Spanning Tree Protocol (RSTP)
- IEEE 802.1X: Port access control
- IEEE 802.3: 10BASE-T
- IEEE 802.3ab: 1000BASE-T
- IEEE 802.3ad: Link Aggregation Control Protocol (LACP)
- IEEE 802.1ad Q-in-Q tunneling
- IEEE 802.3ae: 10-Gigabit Ethernet
- IEEE 802.3af: PoE
- IEEE 802.3at: PoE+
- IEEE 802.3u: 100BASE-T
- IEEE 802.3z: 1000BASE-X
- IEEE 802.3x: Pause Frames/Flow Control

- Layer 3 VLAN-tagged subinterface
- PVLAN support
- Multicast VLAN routing
- Adding/removing single tag
- Filter-based SVLAN tagging
- Flexible CoS (outer .1P marking)

**Layer 3 Features: IPv4**

- Maximum number of ARP entries: 16,000
- Maximum number of IPv4 unicast routes in hardware: 14,000 prefixes; 36,000 host routes
- Maximum number of IPv4 multicast routes in hardware: 18,000 groups; 4,000 multicast routes
- Routing Protocols: RIP v1/v2, OSPF v2
- Static routing
- Layer 3 redundancy: VRRP
- IP directed broadcast—traffic forwarding
- Virtual router (VRF-Lite) supporting RIP, OSPF
- Routing policy
- Filter-based forwarding (FBF)
- Unicast reverse-path forwarding

**Layer 3 Features: IPv6**

- Maximum number of Neighbor Discovery entries: 8,000
- Maximum number of IPv6 unicast routes in hardware: 3,500 prefixes; 18,000 host routes
- Maximum number of IPv6 multicast routes in hardware: 9,000 groups; 2,000 multicast routes
- Neighbor discovery, system logging, Telnet, SSH, Junos Web, SNMP, Network Time Protocol (NTP), Domain Name System (DNS)
- Routing protocols: RIPng, OSPF v3
- Static routing
- IPv6 ACL (PACL, VACL, RACL)
- IPv6 CoS (BA, MF classification and rewrite, scheduling based on TC)
- MLDv1/v2 snooping
- IPv6 ping, traceroute
- IPv6 stateless auto-configuration
- IPv6 Layer 3 forwarding in hardware
- IPv6 Layer 3 redundancy: VRRP v6
- Virtual Router support for IPv6 unicast
- PIM for IPv6 multicast

**Access Control Lists (ACLs) (Junos OS Firewall Filters)**

- Port-based ACL (PACL)—ingress and egress
- VLAN-based ACL (VACL)—ingress and egress
- Router-based ACL (RACL)—ingress and egress
- ACL entries (ACE) in hardware per system: 1500
- ACL counter for denied packets

- ACL counter for permitted packets
- Ability to add/remove/change ACL entries in middle of list (ACL editing)
- L2-L4 ACL
- Trusted Network Connect (TNC) certified
- Static MAC authentication
- MAC-RADIUS
- Control plane denial-of-service (DoS) protection
- Firewall filter on me0 interface (control plane protection)
- Captive portal—Layer 2 interfaces
- Fallback authentication
- Media Access Control Security (MACsec)

### Access Security

- MAC limiting
- Allowed MAC addresses, configurable per port
- Dynamic ARP inspection (DAI)
- Proxy ARP
- Static ARP support
- DHCP snooping
- 802.1X port-based
- 802.1X multiple supplicants
- 802.1X with VLAN assignment
- 802.1X with authentication bypass access (based on host MAC address)
- 802.1X with VoIP VLAN support
- 802.1X dynamic access control list (ACL) based on RADIUS attributes
- 802.1X supported EAP types: MD5, Transport Layer Security (TLS), Tunneled Transport Layer Security (TTLS), Protected Extensible Authentication
- Protocol (PEAP)
- IPv6 RA Guard
- IPv6 Neighbor Discovery Inspection
- Media Access Control security (MACsec)

### High Availability

- Link aggregation:
- 802.3ad (LACP) support
- Number of link aggregation groups (LAGs) supported: 128
- Maximum number of ports per LAG: 16
- Tagged ports support in LAG
- Graceful Route Engine switchover (GRES) for IGMP v1/v2/v3 snooping
- Nonstop routing (OSPF v1/v2/v3, RIP/RIPng, PIM)
- Nonstop software upgrade (NSSU)

### Quality of Service (QoS)

- Layer 2 QoS
- Layer 3 QoS
- Ingress policing: two-rate three-color
- Hardware queues per port: 12 (8 unicast, 4 multicast)
- Scheduling methods (egress): Strict Priority (SP), SDWRR
- 802.1p, DiffServ code point (DSCP/IP) precedence trust and marking
- L2-L4 classification criteria, including Interface, MAC address, EtherType, 802.1p, VLAN, IP address, DSCP/IP precedence, and TCP/UDP port numbers
- Congestion avoidance capabilities: Tail drop

### Multicast

- IGMP snooping entries: 1000
- IGMP snooping
- IGMP v1/v2/v3
- PIM SM, PIM SSM, PIM DM
- VRF-Lite support for PIM and IBMP
- MLD v1/v2 snooping
- IGMP filter
- Multicast Source Discovery Protocol (MSDP)
- PIM for IPv6 multicast

### Management and Analytics Platforms

- Juniper Mist Wired Assurance for Campus
- Junos Space® Network Director for Campus
- Junos Space® Management

### Device Management and Operations

- Junos OS CLI
- Junos Web interface (J-Web)
- Out-of-band management: Serial, 10/100BASE-T Ethernet
- ASCII configuration
- Rescue configuration
- Configuration rollback
- Image rollback
- Real-time performance monitoring (RPM)
- SNMP: v1, v2c, v3
- Remote monitoring (RMON) (RFC 2819) Groups 1, 2, 3, 9
- Network Time Protocol (NTP)
- DHCP server
- DHCP client and DHCP proxy
- DHCP relay and helper
- VR-aware DHCP
- RADIUS authentication
- TACACS+ authentication
- SSHv2
- Secure copy



- HTTP/HTTPS
- DNS resolver
- System logging
- Temperature sensor
- Configuration backup via FTP/secure copy
- sFlow
- Interface range
- Port profile associations
- Uplink failure detection
- Zero Touch Provisioning using DHCP

#### Supported RFCs

- RFC 768 UDP
- RFC 783 Trivial File Transfer Protocol (TFTP)
- RFC 791 IP
- RFC 792 Internet Control Message Protocol (ICMP)
- RFC 793 TCP
- RFC 826 Address Resolution Protocol (ARP)
- RFC 854 Telnet client and server
- RFC 894 IP over Ethernet
- RFC 903 Reverse ARP (RARP)
- RFC 906 Bootstrap Loading using TFTP
- RFC 951, 1542 BootP
- LLDP-MED, ANSI/TIA-1057, draft 08
- RFC 1027 Proxy ARP
- RFC 1058 RIP v1
- RFC 1122 Host requirements
- RFC 1256 IPv4 ICMP Router Discovery (IRDP)
- RFC 1492 TACACS+
- RFC 1519 Classless Interdomain Routing (CIDR)
- RFC 1591 Domain Name System (DNS)
- RFC 1812 Requirements for IP Version 4 routers
- RFC 2030 Simple Network Time Protocol (SNTP)
- RFC 2068 HTTP/1.1
- RFC 2131 BootP/DHCP relay agent and DHCP server
- RFC 2138 RADIUS Authentication
- RFC 2139 RADIUS Accounting
- RFC 2267 Network Ingress Filtering
- RFC 2328 OSPF v2
- RFC 2453 RIP v2
- RFC 2474 DiffServ Precedence, including 8 queues/port
- RFC 2597 DiffServ Assured Forwarding (AF)
- RFC 2598 DiffServ Expedited Forwarding (EF)
- RFC 2710 Multicast Listener Discovery Version (MLD) for IPv6
- RFC 2925 Definitions of Managed Objects for Remote Ping, Traceroute, and Lookup Operations
- RFC 3569 PIM SSM
- RFC 3579 RADIUS Extensible Authentication Protocol (EAP) support for 802.1X
- RFC 3618 Multicast Source Discovery Protocol (MSDP)
- RFC 3768 VRRP
- RFC 3973 PIM DM
- RFC 4601 PIM SM
- RFC 5176 Dynamic Authorization Extensions to RADIUS

#### Supported MIBs

- RFC 1155 Structure of Management Information (SMI)
- RFC 1157 SNMPv1
- RFC 1212, RFC 1213, RFC 1215 MIB-II, Ethernet-like MIB, and Traps
- RFC 1493 Bridge MIB
- RFC 1643 Ethernet MIB
- RFC 1724 RIPv2 MIB
- RFC 1905 RFC 1907 SNMP v2c, SMIv2, and Revised MIB-II
- RFC 1981 Path MTU Discovery for IPv6
- RFC 2011 SNMPv2 Management Information Base for the IP using SMIv2
- RFC 2012 SNMPv2 Management Information Base for the Transmission Control Protocol using SMIv2
- RFC 2013 SNMPv2 Management Information Base for the User Datagram Protocol using SMIv2
- RFC 2096 IPv4 Forwarding Table MIB
- RFC 2287 System Application Packages MIB
- RFC 2328 OSPF v2
- RFC 2460 IPv6 Specification
- RFC 2464 Transmission of IPv6 Packets over Ethernet Networks
- RFC 2570-2575 SNMPv3, user-based security, encryption, and authentication
- RFC 2576 Coexistence between Version 1, Version 2, and Version 3 of the Internet-standard Network Management Framework
- RFC 2578 SNMP Structure of Management Information MIB
- RFC 2579 SNMP textual conventions for SMIv2
- RFC 2665 Definitions of Managed Objects for the Ethernet-like Interface Types
- RFC 2819 RMON MIB
- RFC 2863 Interface Group MIB
- RFC 2863 The Interfaces Group MIB
- RFC 2922 LLDP MIB
- RFC 2925 Definitions of Managed Objects for Remote Ping/Traceroute, and Lookup Operations
- RFC 3413 SNMP application MIB
- RFC 3414 User-based Security Model for SNMPv3
- RFC 3415 View-based access control model (VACM) for SNMP



- RFC 3484 Default Address Selection for IPv6
- RFC 3621 PoE-MIB (PoE switches only)
- RFC 3810 Multicast Listener Discovery Version 2 (MLDv2) for IPv6
- RFC 4188 STP and Extensions MIB
- RFC 4213 Basic Transition Mechanisms for IPv6 Hosts and Routers
- RFC 4291 IPv6 Addressing Architecture
- RFC 4363 Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering, and VLAN Extensions
- RFC 4443 ICMPv6 for the IPv6 Specification
- RFC 4861 Neighbor Discovery for IPv6
- RFC 4862 IPv6 Stateless Address Autoconfiguration
- RFC 5643 OSPF v3 MIB Support
- IEEE 802.1ad Q-in-Q
- Draft – blumenthal – aes – usm - 08
- Draft – reeder - snmpv3 – usm - 3desede -00

### Troubleshooting

- Debugging: CLI via console, telnet, or SSH
- Diagnostics: Show and debug command statistics
- Traffic mirroring (port)
- Traffic mirroring (VLAN)
- Filter-based mirroring
- Mirroring destination ports per system: 4
- LAG port monitoring
- Multiple destination ports monitored to 1 mirror (N:1)
- Maximum number of mirroring sessions: 4
- Mirroring to remote destination (over L2): 1 destination VLAN
- Encapsulated Remote Switched Port Analyzer (ERSPAN)
- IP tools: Extended ping and trace
- Juniper Networks commit and rollback

### Safety Certifications

- UL-UL60950-1 (Second Edition)
- C-UL to CAN/CSA 22.2 No.60950-1 (Second Edition)
- TUV/GS to EN 60950-1 (Second Edition), Amendment
- A1-A4, A11
- CB-IEC60950-1, (Second Edition with all country deviations)
- EN 60825-1 (Second Edition)

### Electromagnetic Compatibility Certifications

- FCC 47CFR Part 15 Class A
- EN 55022 Class A
- ICES-003 Class A
- VCCI Class A
- AS/NZS CISPR 22 Class A
- CISPR 22 Class A
- EN 55024
- EN 300386

- CE

### Telecom Quality Management

- TL9000

### Environmental

- Reduction of Hazardous Substances (ROHS) 6

### Telco

- CLEI code

### Noise Specifications

- Noise measurements are based on operational tests taken from bystander position (front) and performed at 23° C in compliance with ISO 7779.

Table 3: Noise Test Results

Model	Acoustic Noise in DBA
EX3400-24T	36
EX3400-24P	37
EX3400-24T-DC	36
EX3400-48T/EX3400-48T-DC	35
EX3400-48T-AFI	39
EX3400-48P	46

### Warranty

- Limited lifetime switch hardware warranty

### Juniper Networks Services and Support

Juniper Networks is the leader in performance-enabling services that are designed to accelerate, extend, and optimize your high-performance network. Our services allow you to maximize operational efficiency while reducing costs and minimizing risk, achieving a faster time to value for your network. Juniper Networks ensures operational excellence by optimizing the network to maintain required levels of performance, reliability, and availability. For more details, please visit <https://www.juniper.net/us/en/products.html>.

## Ordering Information

Product Number	Description
<b>Switches</b>	
EX3400-24T	EX3400 24-port 10/100/1000BASE-T with 4 SFP+ and 2 QSFP + uplink ports (optics not included)
EX3400-24P	EX3400 24-port 10/100/1000BASE-T (24 PoE+ ports) with 4 SFP+ and 2 QSFP+ uplink ports (optics not included)
EX3400-24T-DC	EX3400 24-port 10/100/1000BASE-T with 4 SFP+ and 2 QSFP + uplink ports (optics not included) and DC power supply
EX3400-48T	EX3400 48-port 10/100/1000BASE-T, 4 x 1/10GbE SFP/SFP+, 2 x 40GbE QSFP+, redundant fans, front-to-back airflow, 1 AC PSU JPSU-150-AC-AFO included (optics sold separately)
EX3400-48T-AFI	EX3400 48-port 10/100/1000BASE-T, 4 x 1/10GbE SFP/SFP+, 2 x 40GbE QSFP+, redundant fans, back-to-front airflow, 1 AC PSU JPSU-150-AC-AFI included (optics sold separately)
EX3400-48P	EX3400 48-port 10/100/1000BASE-T (48 PoE+ ports) with 4 SFP+ and 2 QSFP+ uplink ports (optics not included)
EX3400-48T-DC	EX3400 48-port 10/100/1000BASE-T with 4 SFP+ and 2 QSFP + uplink ports (optics not included) and DC power supply
EX3400-24T-TAA	EX3400 TAA 24-port 10/100/1000BASE-T, 4 x 1/10GbE SFP/SFP+, 2 x 40GbE QSFP+, redundant fans, front-to-back airflow, 1 AC PSU JPSU-150-AC-AFO included (optics sold separately)
EX3400-24P-TAA	EX3400 TAA 24-port 10/100/1000BASE-T PoE+, 4 x 1/10GbE SFP/SFP+, 2 x 40GbE QSFP+, redundant fans, front-to-back airflow, 1 AC PSU JPSU-600-AC-AFO included (optics sold separately)
EX3400-48T-TAA	EX3400 TAA 48-port 10/100/1000BASE-T, 4 x 1/10GbE SFP/SFP+, 2 x 40GbE QSFP+, redundant fans, front-to-back airflow, 1 AC PSU JPSU-150-AC-AFO included (optics sold separately)
EX3400-48P-TAA	EX3400 TAA 48-port 10/100/1000BASE-T PoE+, 4 x 1/10GbE SFP/SFP+, 2 x 40GbE QSFP+, redundant fans, front-to-back airflow, 1 AC PSU JPSU-920-AC-AFO included (optics sold separately)
<b>Accessories</b>	
EX-4PST-RMK	Adjustable 4-post rack-mount kit for EX2200, EX3200, EX3400, and EX4200
EX-RMK	Rack-mount kit for EX2200, EX3200, EX3400, and EX4200
EX-WMK	EX4200, EX3200, EX3400, and EX2200 wall-mount kit with baffle
CBL-EX-PWR-C13-AU	AC power cable, Australia (10 A/250V, 2.5m)
CBL-EX-PWR-C13-C14	AC power cable, patch cord (10 A/250V, 2.5 m) for EU only
CBL-EX-PWR-C13-CH	AC power cable, China (10 A/250V, 2.5m)
CBL-EX-PWR-C13-EU	AC power cable, Europe (10 A/250V, 2.5m)
CBL-EX-PWR-C13-IT	AC power cable, Italy (10 A/250V, 2.5m)
CBL-EX-PWR-C13-JP	AC power cable, Japan (12 A/125V, 2.5m)
CBL-EX-PWR-C13-KR	AC power cable, Korea (10 A/250V, 2.5m)
CBL-EX-PWR-C13-SZ	AC power cable, Switzerland (10 A/250V, 2.5m)
CBL-EX-PWR-C13-UK	AC power cable, UK (10 A/250V, 2.5m)
CBL-EX-PWR-C13-US	AC power cable, U.S. (13 A/125V, 2.5m)—not to be used with EX3400-48P SKUs
CBL-PWR-C13-US-48P	AC power cable, US/Canada (15A/125V, 2.5m)—for EX3400-48P only
<b>Subscription Licenses</b>	
S-EX-A-C2-3	Software, EX Series Advanced license, Class 2 (24 ports), includes Wired Assurance subscription for EX Series 24-port switches, 3 year
S-EX-A-C2-5	Software, EX Series Advanced license, Class 2 (24 ports), includes Wired Assurance subscription for EX Series 24-port switches, 5 year

Product Number	Description
S-EX-P-C2-3	Software, EX Series Premium license, Class 2 (24 ports), includes Wired Assurance subscription for EX Series 24-port switches, 3 year
S-EX-P-C2-5	Software, EX Series Premium license, Class 2 (24 ports), includes Wired Assurance subscription for EX Series 24-port switches, 5 year
S-EX-A-C3-3	Software, EX Series Advanced license, Class 3 (32 or 48 ports), includes Wired Assurance subscription for EX Series 48-port switches, 3 year
S-EX-A-C3-5	Software, EX Series Advanced license, Class 3 (32 or 48 ports), includes Wired Assurance subscription for EX Series 48-port switches, 5 year
S-EX-P-C3-3	Software, EX Series Premium license, Class 3 (32 or 48 ports), includes Wired Assurance subscription for EX Series 48-port switches, 3 year
S-EX-P-C3-5	Software, EX Series Premium license, Class 3 (32 or 48 ports), includes Wired Assurance subscription for EX Series 48-port switches, 5 year
S-EX-A-C2-3-COR	Software, EX Series Advanced license, Class 2 (24 ports), includes Wired Assurance subscription for EX Series 24-port switches, 3 year with SVC CORE support, 3 year
S-EX-A-C2-5-COR	Software, EX Series Advanced license, Class 2 (24 ports), includes Wired Assurance subscription for EX Series 24-port switches with SVC CORE support, 5 YEAR
S-EX-P-C2-3-COR	Software, EX Series Premium license, Class 2 (24 ports), includes Wired Assurance subscription for EX Series 24-port switches with SVC CORE support, 3 YEAR
S-EX-P-C2-5-COR	Software, EX Series Premium license, Class 2 (24 ports), includes Wired Assurance subscription for EX Series 24-port switches with SVC CORE support, 5 YEAR
S-EX-A-C3-3-COR	Software, EX Series Advanced license, Class 3 (32 or 48 ports), includes Wired Assurance subscription for EX Series 48-port switches, 3 year with SVC CORE support, 3 YEAR
S-EX-A-C3-5-COR	Software, EX Series Advanced license, Class 3 (32 or 48 ports), includes Wired Assurance subscription for EX Series 48-port switches, 3 year with SVC CORE support, 5 YEAR
S-EX-P-C3-3-COR	Software, EX Series Premium license, Class 3 (32 or 48 ports), includes Wired Assurance subscription for EX Series 48-port switches, 3 year with SVC CORE support, 3 YEAR
S-EX-P-C3-5-COR	Software, EX Series Premium license, Class 3 (32 or 48 ports), includes Wired Assurance subscription for EX Series 48-port switches, 3 year with SVC CORE support, 5 YEAR
<b>Perpetual Licenses</b>	
S-EX-A-C2-P	Software, EX Series Advanced license, Class 2 (24 ports), Perpetual license for EX3400 24-port switches
S-EX-P-C2-P	Software, EX Series Premium license, Class 2 (24 ports), Perpetual license for EX3400 24-port switches
S-EX-A-C3-P	Software, EX Series Advanced license, Class 3 (32 or 48 ports), Perpetual license for EX3400 48-port switches
S-EX-P-C3-P	Software, EX Series Premium license, Class 3 (32 or 48 ports), Perpetual license for EX3400 48-port switches
EX-24-EFL	Enhanced feature license for EX3400 24-port switches
EX-48-EFL	Enhanced feature license for EX3400 48-port switches
EX-24-AFL	Advanced feature license for EX3400-24T, and EX3400-24P switches
EX-48-AFL	Advanced feature license for EX3400-48P, EX3400-48T, EX3400-48T-AFI, EX3400-48T-DC, and EX3400-48T-DC-AFI switches
EX-QFX-MACSEC-ACC4	MACsec software license for EX3400, EX4300, and EX4200 access switches
<b>Power Supplies</b>	
JPSU-150-AC-AFI	EX3400 150W AC power supply, back-to-front airflow (power cord ordered separately)
JPSU-150-AC-AFO	EX3400 150W AC power supply, front-to-back airflow (power cord ordered separately)

Product Number	Description
JPSU-150-DC-AFO	EX3400 150W DC power supply, front-to-back airflow (power cord ordered separately)
JPSU-600-AC-AFO	EX3400 600W AC power supply, front-to-back airflow (power cord ordered separately)
JPSU-920-AC-AFO	EX3400 920W AC power supply, front-to-back airflow (power cord ordered separately)
<b>Fans</b>	
EX3400-FAN-AFI	EX3400 back-to-front fan, spare
EX3400-FAN-AFO	EX3400 front-to-back fan, spare
<b>Optics</b>	
EX-SFP-10GE-DAC-1M	SFP+ 10-Gigabit Ethernet Direct Attach Copper (twinax copper cable), 1m
EX-SFP-10GE-DAC-3M	SFP+ 10-Gigabit Ethernet Direct Attach Copper (twinax copper cable), 3m
EX-SFP-10GE-DAC-5M	SFP+ 10-Gigabit Ethernet Direct Attach Copper (twinax copper cable), 5m
EX-SFP-10GE-DAC-7M	SFP+ 10-Gigabit Ethernet Direct Attach Copper (twinax copper cable), 7m
EX-SFP-10GE-ER	SFP+ 10GBASE-ER 10-Gigabit Ethernet Optics, 1550 nm for 40 km transmission on SMF
EX-SFP-10GE-ZR	SFP+ 10GBASE-ZR; LC connector; 1550 nm; 80 km reach on single-mode fiber
EX-SFP-10GE-LR	SFP+ 10GBASE-LR 10-Gigabit Ethernet Optics, 1310 nm for 10 km transmission on single-mode fiber-optic (SMF)
EX-SFP-10GE-LRM	SFP+ 10-Gigabit Ethernet LRM Optics, 1310 nm for 220m transmission on multimode fiber-optic (MMF)
EX-SFP-10GE-SR	SFP+ 10GBASE-SR 10-Gigabit Ethernet Optics, 850 nm for up to 300m transmission on MMF
EX-SFP-10GE-USR	SFP+ 10-Gigabit Ethernet Ultra Short Reach Optics, 850 nm for 10m on OM1, 20m on OM2, 100m on OM3 multimode fiber
EX-SFP-1GE-LX	SFP 1000BASE-LX Gigabit Ethernet Optics, 1310 nm for 10 km transmission on SMF
EX-SFP-1GE-LX40K	SFP 1000BASE-LX Gigabit Ethernet Optics, 1310 nm for 40 km transmission on SMF
EX-SFP-1GE-SX	SFP 1000BASE-SX Gigabit Ethernet Optics, 850 nm for up to 550m transmission on MMF
EX-SFP-1GE-LH	SFP 1000BASE-LH Gigabit Ethernet Optics, 1550 nm for 70 km transmission on SMF
EX-SFP-1GE-T	SFP 10/100/1000BASE-T Copper Transceiver Module for up to 100m transmission on Category 5
EX-SFP-GE10KT13R14	SFP 1000BASE-BX Gigabit Ethernet Optics, Tx 1310 nm/Rx 1490 nm for 10 km transmission on single strand of SMF
EX-SFP-GE10KT13R15	SFP 1000BASE-BX Gigabit Ethernet Optics, Tx 1310 nm/Rx 1550 nm for 10 km transmission on single strand of SMF
EX-SFP-GE10KT14R13	SFP 1000BASE-BX Gigabit Ethernet Optics, Tx 1490 nm/Rx 1310 nm for 10 km transmission on single strand of SMF

Product Number	Description
EX-SFP-GE10KT15R13	SFP 1000BASE-BX Gigabit Ethernet Optics, Tx 1550 nm/Rx 1310 nm for 10 km transmission on single strand of SMF
EX-SFP-GE40KT13R15	SFP 1000BASE-BX Gigabit Ethernet Optics, Tx 1310 nm/Rx 1550 nm for 40 km transmission on single strand of SMF
EX-SFP-GE40KT15R13	SFP 1000BASE-BX Gigabit Ethernet Optics, Tx 1550 nm/Rx 1310 nm for 40 km transmission on single strand of SMF
EX-SFP-GE80KCW1470	SFP Gigabit Ethernet CWDM, LC connector; 1470 nm, 80 km reach on single-mode fiber
EX-SFP-GE80KCW1490	SFP Gigabit Ethernet CWDM, LC connector; 1490 nm, 80 km reach on single-mode fiber
EX-SFP-GE80KCW1510	SFP Gigabit Ethernet CWDM, LC connector; 1510 nm, 80 km reach on single-mode fiber
EX-SFP-GE80KCW1530	SFP Gigabit Ethernet CWDM, LC connector; 1530 nm, 80 km reach on single-mode fiber
EX-SFP-GE80KCW1550	SFP Gigabit Ethernet CWDM, LC connector; 1550 nm, 80 km reach on single-mode fiber
EX-SFP-GE80KCW1570	SFP Gigabit Ethernet CWDM, LC connector; 1570 nm, 80 km reach on single-mode fiber
EX-SFP-GE80KCW1590	SFP Gigabit Ethernet CWDM, LC connector; 1590 nm, 80 km reach on single-mode fiber
EX-SFP-GE80KCW1610	SFP Gigabit Ethernet CWDM, LC connector; 1610 nm, 80 km reach on single-mode fiber
<b>For 40G VCP Ports</b>	
QFX-QSFP-40G-SR4	QSFP+ 40GBASE-SR4 40-Gigabit Optics, 850 nm for up to 150m transmission on multimode fiber
QFX-QSFP-DAC-1M	QSFP+ 40-Gbps QSFP+ Passive DAC Cable, 1 meter
QFX-QSFP-DAC-3M	QSFP+ 40-Gbps QSFP+ Passive DAC Cable, 3 meter
EX-QSFP-40GE-DAC-50CM	QSFP+ 40-Gbps QSFP+ Passive DAC Cable, 50 cm
JNP-QSFP-DAC-5M	QSFP+ 40-Gbps QSFP+ Passive DAC Cable, 5 meter
QFX-QSFP-40G-eSR4	QSFP+ 40-Gbps QSFP+ on OM3/OM4 multimode fiber
JNP-QSFP-40G-LR4	QSFP+ 40-Gbps QSFP+, 10 km range on single-mode fiber

## About Juniper Networks

At Juniper Networks, we are dedicated to dramatically simplifying network operations and driving superior experiences for end users. Our solutions deliver industry-leading insight, automation, security and AI to drive real business results. We believe that powering connections will bring us closer together while empowering us all to solve the world's greatest challenges of well-being, sustainability and equality.

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