



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

State of West Virginia  
 Request for Quotation  
 21 - Info Technology

Proc Folder: 205127

Doc Description: NETWORK SWITCHES FOR PAROLE SERVICES

Proc Type: Central Purchase Order

Date issued	Solicitation Closes	Solicitation No	Version
2016-06-14	2016-07-12 13:30:00	CRFQ 0608 COR1600000038	1

**BID RECEIVING LOCATION**

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

**VENDOR**

Vendor Name, Address and Telephone Number:

ADVANTAGE TECHNOLOGY  
 950 KANAWHA BLVD E  
 CHARLESTON, WV 25301  
 204-342-8796

07/12/16 12:04:06  
 WV Purchasing Division

**FOR INFORMATION CONTACT THE BUYER**

Crystal Rink  
 (304) 558-2402  
 crystal.g.rink@wv.gov

Signature X

FEIN # 74-3077314

DATE 7/11/16

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

ADDITIONAL INFORMATION:

THE STATE OF WEST VIRGINIA PURCHASING DIVISION FOR THE AGENCY, THE WEST VIRGINIA DIVISION OF CORRECTIONS, IS SOLICITING BIDS TO ESTABLISH A CONTRACT FOR THE ONE-TIME PURCHASE OF ETHERNET SWITCHES PER THE ATTACHED

INVOICE TO		SHIP TO	
FISCAL DEPARTMENT DIVISION OF CORRECTIONS - CENTRAL OFFICE 1409 GREENBRIER ST STE 300  CHARLESTON WV25311  US		FISCAL DEPARTMENT DIVISION OF CORRECTIONS - CENTRAL OFFICE STE 300 1409 GREENBRIER ST CHARLESTON WV 25311  US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
1	Network switches	10.00000	EA	\$ 3,373.67	\$23,736.76

Comm Code	Manufacturer	Specification	Model #
43222612	DELL	L3 48 Port PoE Switch	N3048P

Extended Description :

Cisco Catalyst 2960S-F48FPS-L  
 48 Ethernet 10/100 ports with PoE+  
 4 SFP  
 740W  
 Part Number WS-C2960S-F48FPS-L  
 or equivalent

INVOICE TO		SHIP TO	
FISCAL DEPARTMENT DIVISION OF CORRECTIONS - CENTRAL OFFICE 1409 GREENBRIER ST STE 300  CHARLESTON WV25311  US		FISCAL DEPARTMENT DIVISION OF CORRECTIONS - CENTRAL OFFICE STE 300 1409 GREENBRIER ST CHARLESTON WV 25311  US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
2	Network switches	14.00000	EA	\$ 2,137.15	\$29,920.10

Comm Code	Manufacturer	Specification	Model #
43222612	DELL	L3 24 PoE+ Switch	N3024P

Extended Description :

Cisco Catalyst 2960S-F24PS-L  
 24 Ethernet 10/100 ports with PoE+  
 2 SFP  
 370W  
 Part number WS-C2960S-F24PS-L  
 or equivalent

INVOICE TO		SHIP TO	
FISCAL DEPARTMENT DIVISION OF CORRECTIONS - CENTRAL OFFICE 1409 GREENBRIER ST STE 300		FISCAL DEPARTMENT DIVISION OF CORRECTIONS - CENTRAL OFFICE STE 300 1409 GREENBRIER ST	
CHARLESTON	WV25311	CHARLESTON	WV 25311
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
3	Transceivers and media converters	28.00000	EA	*158.*	*4,424.*

Comm Code	Manufacturer	Specification	Model #
43201553	DELL	SFP Transceiver 1000BASE-SX	407-8BDB

**Extended Description :**

GLC-SX-MMD= 1000BASE-SX SFP transceiver module MMF 850nm DOM. or equal

INVOICE TO		SHIP TO	
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CHARLESTON	WV25311	CHARLESTON	WV 25311
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
4	Guarantee agreements	10.00000	EA		Cost Included with Switch

Comm Code	Manufacturer	Specification	Model #
84101503	DELL	1 Year 24x7x365 Hw/sw Pr Support	966-3371

**Extended Description :**

CISCO Smartnet 24x7x365 Total Care Service, or equal for CISCO 2960-SF 48 FE PoE, OR EQUAL

INVOICE TO		SHIP TO	
FISCAL DEPARTMENT DIVISION OF CORRECTIONS - CENTRAL OFFICE 1409 GREENBRIER ST STE 300		FISCAL DEPARTMENT DIVISION OF CORRECTIONS - CENTRAL OFFICE STE 300 1409 GREENBRIER ST	
CHARLESTON	WV25311	CHARLESTON	WV 25311
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
5	Guarantee agreements	14.00000	EA		Cost Included with Switch

Comm Code	Manufacturer	Specification	Model #
84101503	DELL	1 Year 24x7x365 Hw/sw Pr. Support	966-3370

**Extended Description :**

CISCO Smartnet 24x7x365 Total Care Service, or equal  
for CISCO 2960-SF 24 FE PoE, OR EQUAL

**SCHEDULE OF EVENTS**

<u>Line</u>	<u>Event</u>	<u>Event Date</u>
1	VENDOR QUESTION DEADLINE	2016-06-27

<b>COR1600000038</b>	<b>Document Phase</b> Final	<b>Document Description</b> NETWORK SWITCHES FOR PAROLE SERVICES	<b>Page 5</b> <b>of 5</b>
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**ADDITIONAL TERMS AND CONDITIONS**

See attached document(s) for additional Terms and Conditions

## State of West Virginia VENDOR PREFERENCE CERTIFICATE

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Bidder: ADVANTAGE TECHNOLOGY

Signed: [Signature]

Date: 7/12/16

Title: Sales Director

STATE OF WEST VIRGINIA  
Purchasing Division

**PURCHASING AFFIDAVIT**

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

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

**DEFINITIONS:**

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

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

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

**AFFIRMATION:** By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (W. Va. Code §61-5-3) that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

**WITNESS THE FOLLOWING SIGNATURE:**

Vendor's Name: ADVANTAGE TECHNOLOGY

Authorized Signature: [Signature] Date: 7/12/16

State of West Virginia

County of Kanawha, to-wit:

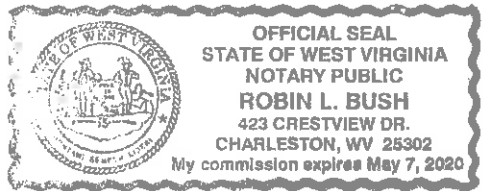
Taken, subscribed, and sworn to before me this 12 day of July, 2016

My Commission expires May 7, 2020.

**AFFIX SEAL HERE**

NOTARY PUBLIC Robin L Bush

*Purchasing Affidavit (Revised 07/01/2012)*



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

J. Hart Sales Director  
(Name, Title)  
JOSH HALSTEAD SALES DIRECTOR  
(Printed Name and Title)  
950 KANAWHA BLVD E CHARLESTON, WV 25361  
(Address)  
304-342-0796 | 304-720-1423  
(Phone Number) / (Fax Number)  
j.halstead@advantage-tech.biz  
(email address)

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

ADVANTAGE TECHNOLOGY  
(Company)  
J. Hart Sales Director  
(Authorized Signature) (Representative Name, Title)  
JOSH HALSTEAD SALES DIRECTOR  
(Printed Name and Title of Authorized Representative)  
7/12/2016  
(Date)  
304-342-0796 | 304-720-1423  
(Phone Number) (Fax Number)



**ADDENDUM ACKNOWLEDGEMENT FORM**  
**SOLICITATION NO.: CRFQ COR1600000038**

**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 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.

ADVANTAGE TECHNOLOGY  
Company

  
Authorized Signature

7/12/16  
Date

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



950 KANAWHA BLVD E  
 CHARLESTON, WV 25301  
 304-342-0796

**Quote**

No.: **5383**  
 Date: 07/11/2016

Prepared for:

WV Division of Corrections  
 1409 Greenbrier Street, Ste 300  
 Charleston, WV 25311 U.S.A.

Prepared by: Josh Halstead  
 Account No.: 7008  
 Phone: (304) 558-2036

Qty.	Item ID	Description	UOM	Sell	Total
10	Dell Networking N3000 Series Switch	N3048P	EA	\$3,373.07	\$33,730.70
14	Dell Networking N3000 Series Switch	N3024P	EA	\$2,137.15	\$29,920.10
28	Dell Transceiver SFP 1000BASE-SX	850nm Wavelength, 550m Reach	EA	\$158.00	\$4,424.00
14	Dell ProSupport	1 Year ProSupport 24x7x365 HW/SW Tech Support for N3048P	EA	\$0.00	\$0.00
14	Dell ProSupport	1 Year ProSupport 24x7x365 HW/SW Tech Support for N3024P	EA	\$0.00	\$0.00

**Your Price: \$68,074.80**

**Total: \$68,074.80**

Prices are firm until 8/10/2016 Terms: Due On Receipt

**Quoted by:** Josh Halstead, jhalstead@advantagetech.biz

**Date:** 7/11/2016

**Accepted by:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Disclaimer: All hardware & software must be paid in full prior to ordering. See Terms and Conditions.**



## QUOTATION

**Quote #:** 731309218  
**Customer #:** 131729459  
**Contract #:** 74777  
**Customer Agreement #:** One Time Reseller  
**Quote Date:** 07/12/2016  
**Customer Name:** ADVANTAGE TECHNOLOGY

**Date:** 7/12/2016

Thanks for choosing Dell! Your quote is detailed below; please review the quote for product and informational accuracy. If you find errors or desire certain changes please contact your sales professional as soon as possible.

### GROUP: 1 QUANTITY: 14

Description	Quantity
Dell Networking N3024P, L3, POE+, 24x 1GbE, 2xCombo, 2x 10GbE SFP+ fixed ports, Stacking, IO to PSU air, 1x 715w AC PSU (210-ABOF)	14
Dell Hardware Limited Warranty Initial Year (966-3309)	14
Lifetime Limited Hardware Warranty with Basic Hardware Service Next Business Day Parts Only on Your Network Switch (966-3319)	14
ProSupport: Next Business Day Onsite Service After Problem Diagnosis, Initial Year (966-3325)	14
ProSupport: 7x24 HW / SW Tech Support and Assistance, 1 Year (966-3370)	14
No Warranty beyond initial term (988-7279)	14
Thank you choosing Dell ProSupport. For tech support, visit <a href="http://www.dell.com/support">http://www.dell.com/support</a> or call 1-800- 945-3355 (989-3439)	14
US Order (332-1286)	14
On-Site Installation Declined (900-9997)	14
Dell Networking N2000/3000 Series User Guide (343-BBBQ)	14
Power Supply, 715w, Hot Swap, Required for more than 550 watts of POE+, or for redundancy (450-ABKH)	14
Power Cord, 125V, 13A, 6 Feet, C15 to NEMA 5-15P (450-ADYH)	28
Dell Networking, Transceiver, SFP, 1000BASE-SX, 850nm Wavelength, 550m Reach (407-BBDB)	28

### GROUP: 2 QUANTITY: 10

Description	Quantity
Dell Networking N3048P, L3, POE+, 48x 1GbE, 2xCombo, 2x 10GbE SFP+ fixed ports, Stacking, IO to PSU air, 1x 1100w AC PSU (210-ABOH)	10
Dell Hardware Limited Warranty Initial Year (966-3310)	10
Lifetime Limited Hardware Warranty with Basic Hardware Service Next Business Day Parts Only on Your Network Switch (966-3320)	10
ProSupport: Next Business Day Onsite Service After Problem Diagnosis, Initial Year (966-3326)	10
ProSupport: 7x24 HW / SW Tech Support and Assistance, 1 Year (966-3371)	10
No Warranty beyond initial term (988-7279)	10
Thank you choosing Dell ProSupport. For tech support, visit <a href="http://www.dell.com/support">http://www.dell.com/support</a> or call 1-800- 945-3355 (989-3439)	10
US Order (332-1286)	10

On-Site Installation Declined (900-9997)	10
Dell Networking N2000/3000 Series User Guide (343-BBBQ)	10
Power Supply, 1100w, Hot Swap, Required for more than 900 watts of POE+, or for redundancy (450-ABKF)	10
Power Cord, 125V, 13A, 6 Feet, C15 to NEMA 5-15P (450-ADYH)	20
SFP+ 10GbE Module for N3000/S3100 Series, 2x SFP+ Ports (optics or direct attach cables required) (407-BBNZ)	10

Order this quote easily online through your Premier page, or if you do not have Premier, using Quote to Order

#### Statement of Conditions

The information in this document is believed to be accurate. However, Dell assumes no responsibility for inaccuracies, errors, or omissions, and shall not be liable for direct, indirect, special, incidental, or consequential damages resulting from any such error or omission. Dell is not responsible for pricing or other errors, and reserves the right to cancel orders arising from such errors.

Dell may make changes to this proposal including changes or updates to the products and services described, including pricing, without notice or obligation.

#### Terms of Sale

This quote is valid for 30 days unless otherwise stated. Unless you have a separate written agreement that specifically applies to this order, your order will be subject to and governed by the following agreements, each of which are incorporated herein by reference and available in hardcopy from Dell at your request:

If this purchase is for your internal use only: Dell's Commercial Terms of Sale ([www.dell.com/CTS](http://www.dell.com/CTS)), which incorporate Dell's U.S. Return Policy ([www.dell.com/returnpolicy](http://www.dell.com/returnpolicy)) and Warranty ([www.dell.com/warrantyterms](http://www.dell.com/warrantyterms)).

If this purchase is intended for resale: Dell's Reseller Terms of Sale ([www.dell.com/resellerterms](http://www.dell.com/resellerterms)).

If this purchase includes services: in addition to the foregoing applicable terms, Dell's Service Terms ([www.dell.com/servicecontracts/global](http://www.dell.com/servicecontracts/global)).

If this purchase includes software: in addition to the foregoing applicable terms, your use of the software is subject to the license terms accompanying the software, and in the absence of such terms, then use of the Dell-branded application software is subject to the Dell End User License Agreement - Type A ([www.dell.com/AEULA](http://www.dell.com/AEULA)) and use of the Dell-branded system software is subject to the Dell End User License Agreement - Type S ([www.dell.com/SEULA](http://www.dell.com/SEULA)).

You acknowledge having read and agree to be bound by the foregoing applicable terms in their entirety. Any terms and conditions set forth in your purchase order or any other correspondence that are in addition to, inconsistent or in conflict with, the foregoing applicable online terms will be of no force or effect unless specifically agreed to in a writing signed by Dell that expressly references such terms.

#### Additional Terms for Public Customers

If you are a department, agency, division, or office of any district, state, county or municipal government within the United States ("Public Customer"), the following terms ("Public Customer Terms") apply in addition to the foregoing terms: A. If any portion of the foregoing terms and conditions (or any terms referenced therein) is prohibited by law, such portion shall not apply to you. Notwithstanding anything to the contrary, the End User License Agreements shall take precedence in all conflicts relevant to your use of any software. B. By placing your order, you confirm that (1) you are a contracting officer or other authorized representative of Public Customer with authority to bind the Public Customer to these terms and conditions, and (2) you have read and agree to be bound by these terms and conditions.

#### Pricing, Taxes, and Additional Information

All product, pricing, and other information is valid for U.S. customers and U.S. addresses only, and is



# Dell Networking N3000 series

Dell Networking N3000 is a series of energy-efficient and cost-effective 1GbE switches designed for modernizing and scaling network infrastructure. N3000 switches utilize a comprehensive enterprise-class Layer 3 Advanced feature set, deliver consistent, simplified management and offer high-availability device and network design.

The N3000 switch series offers a power-efficient and resilient Gigabit Ethernet (GbE) switching solution with integrated 10GbE uplinks for advanced Layer 3 distribution for offices and campus networks. The N3000 switch series has high-performance capabilities and wire-speed performance utilizing a non-blocking architecture to easily handle unexpected traffic loads. Use dual internal hot-swappable 80PLUS-certified power supplies for high availability and power efficiency. The switches offer simple management and scalability via an 84Gbps (full-duplex) high-availability stacking architecture that allows management of up to 12 switches from a single IP address.

## Modernize campus network architectures

Modernize campus network architectures with a power-efficient and resilient 1/10GbE switching solution with dense Power over Ethernet Plus (PoE+). Select N3000 models offer 24 or 48 ports of PoE+ to deliver clean power to network devices such as wireless access points (APs), Voice-over-IP (VoIP) handsets, video conferencing systems and security cameras. For greater interoperability in multivendor networks, N3000 series switches offer the latest open-standard protocols and include technology to interface with Cisco protocol RPVST+ and devices using CDP.

Achieve high availability and full bandwidth utilization with Multi-chassis Link Aggregation (MLAG). N3000 series switches support MLAG to create active/active loop-free redundancy without spanning tree. Server rooms can deliver reliable server and storage connectivity with features to help save time and avoid configuration errors. N3000 supports VRF-lite, allowing it to be partitioned into multiple virtual routers with isolated control and data planes on the same physical switch. The N3000 series is also fully tested and validated to work with Dell EqualLogic™ PS-Series storage arrays.\*

## Leverage familiar tools and practices

All N-Series switches include Dell Networking OS 6 designed for easier deployment, greater interoperability and a lower learning curve for network administrators. One common command line interface (CLI) and graphic user interface (GUI) using a well-known command language gets skilled network administrators productive quickly. This allows network administrators to maintain consistent configurations by running one OS release across all N-Series products. With USB auto-configuration, network administrators can rapidly deploy mirrored configurations to numerous devices by simply inserting a USB key.

## Deploy with confidence at any scale

N3000 series switches help create performance assurance with a data rate up to 260Gbps (full duplex) and a forwarding rate up to 193Mpps. Scale easily with built-in rear stacking ports. Switch stacks of up to 624 1GbE ports can be managed from a single screen using the highly-available stacking architecture for high-density aggregation with seamless redundant availability. N-Series switches help provide certainty with a lifetime warranty that covers software upgrades, hardware repair or replacement, and optics and cables purchased with the switch. Details at [Dell.com/LifetimeWarranty](http://Dell.com/LifetimeWarranty)\*\*

\*Contact your Dell representative for a full list of validated storage arrays.

\*\*Select Networking products carry a Lifetime Limited Warranty with Basic Hardware Service (repair or replacement) for life. Repair or replacement does not include troubleshooting, configuration, or other advanced service provided by Dell ProSupport.

## Hardware, performance and efficiency

- Up to 48 line-rate GbE ports of copper or fiber, two combo ports for fiber/copper flexibility, and two integrated 10GbE SFP+ ports.
- Up to 48 ports of PoE+ in 1RU without an external power supply.
- Up to 624 1GbE ports in a 12-unit stack for high-density, high-availability aggregation and distribution in wiring closets/MDFs. Non-stop forwarding and fast failover in stack configurations.
- Hot swappable expansion module supporting dual-port SFP+ or dual-port 10GBaseT.
- Available with dual 80PLUS-certified hot swappable power supplies. Variable speed fan operation helps decrease cooling and power costs.
- Energy-Efficient Ethernet and lower power PHYs reduce power to inactive ports and idle links, providing energy savings from the power cord to the port.
- Dell Fresh Air compliance for operation in environments up to 113°F (45°C) helps reduce cooling costs in temperature constrained deployments.

## Deploying, configuring and managing

- Tool-less ReadyRails™ significantly reduces rack installation time.
- USB auto-configuration rapidly deploys the switch without setting up complex TFTP configurations or sending technical staff to remote offices.
- Plug-and-Play configuration with Dell EqualLogic iSCSI storage arrays\* and one-command iSCSI setup alleviates multiple step configuration and potential configuration errors.
- Management via an intuitive and familiar CLI, embedded web server (GUI), SNMP-based management console application (including Dell OpenManage Network Manager), Telnet or serial connection.
- Private VLAN extensions and Private VLAN Edge support.
- AAA authorization, TACACS+ accounting and RADIUS support for comprehensive secure access support.
- Authentication tiering allows network administrators to tier port authentication methods such as 802.1x, MAC Authentication Bypass and Captive Portal in priority order so that a single port can provide flexible access and security.
- Achieve high availability and full bandwidth utilization with MLAG and support firmware upgrades without taking the network offline.
- Interfaces with RPVST+ protocol for greater flexibility and interoperability in Cisco networks.
- Advanced Layer 3 IPv4 and IPv6 functionality.
- Flexible routing options with policy-based routing to route packets based on assigned criteria beyond destination address.
- Remote Switch Port Analyzer (RSPAN) monitors ports across a Layer 2 domain without costly dedicated network taps.
- OpenFlow 1.3 provides the ability to separate the control plane from the forwarding plane for more sophisticated traffic management.

# Specifications: Dell Networking N3000 series

## Dell SKU description

**N3024:** 24x RJ45 10/100/1000Mb auto-sensing ports, 2x SFP+ ports, 2x GbE combo media ports, 1x hot swap expansion module bay, 1x 200W PSU included

**N3024F:** 24x 1000-SX (up to 500m distance) or 1000-LX (up to 10km distance) SFP GbE ports, 2x SFP+ ports, 2x GbE combo media ports, 1x hot swap expansion module bay, 1x 200W PSU included

**N3024P:** 24x RJ45 10/100/1000Mb PoE+ (up to 30.8W) auto-sensing ports, 2x SFP+ ports, 2x GbE combo media ports, 1x hot swap expansion module bay, 1x 715W PSU included\*

**N3048:** 48x RJ45 10/100/1000 Mb auto-sensing ports, 2x SFP+ ports, 2x GbE combo media ports, 1x hot swap expansion module bay, 1x 200W PSU included

**N3048P:** 48x RJ45 10/100/1000 Mb PoE+ (up to 30.8W) auto-sensing ports, 2x SFP+ ports, 2x GbE combo media ports, 1x hot swap expansion module bay, 1x 1100W PSU included\*

### Power cords

C13 to NEMA 5-15, 3M

C13 to C14, 2M

C15 to NEMA 5-15, 2M (C15 for PCE N-Series only)

### Modules (optional)

2-port 10 Gigabit BASE-T RJ-45 hot swappable uplink module

2-port 10 Gigabit SFP+ hot swappable uplink module

### Power supplies (optional)

200W AC hot swappable with V-Lock, adds redundancy to non-PoE switches (N3024, N3024F and N3048 only)

715W AC hot swappable, adds redundancy to N3024P (N3024P only)

1100W AC hot swappable, adds redundancy to N3048P or upgrade N3024P for additional PoE+ power: (N3024P and N3048P only)

### Optics (optional)

Transceiver, SFP, 100BASE-FX, 1310nm wavelength, up to 2km reach

Transceiver, SFP, 1000BASE-T

Transceiver, SFP, 1000BASE-SX, 850nm wavelength, up to 550m reach

Transceiver, SFP, 1000BASE-LX, 1310nm wavelength, up to 10km reach

Transceiver, SFP, 1000BASE-ZX, 1550nm wavelength, up to 80km reach

Transceiver, SFP+, 10GbE, LRM, 1310nm wavelength, up to 220m reach

Transceiver, SFP+, 10GbE, SR, 850nm wavelength, up to 300m reach

Transceiver, SFP+, 10GbE, LR, 1310nm wavelength, up to 10km reach

Transceiver, SFP+, 10GbE, ER, 1550nm wavelength, up to 40km reach

### Cables (optional)

Stacking cable 0.25m, 1m and 3m

Dell Networking cable, SFP+ to SFP+, 10GbE copper twinax direct attach cable, 0.5m, 1m, 3m, 5m and 7m

\* Requires C15 plug

### Physical

2 rear stacking ports (21Gbps) supporting up to 84Gbps (full-duplex)

2 integrated front 10GbE SFP+ dedicated ports

Out-of-band management port (10/100/1000BASE-T)

USB (Type A) port for configuration via USB flash drive

Auto-negotiation for speed and flow control

Auto-MDI/MDIX, port mirroring

Flow-based port mirroring

Broadcast storm control

Energy-Efficient Ethernet per port settings

Redundant variable speed fans

Air flow: I/O to power supply

RJ45 console/management port with RS232 signaling (RJ-45 to female DB-9 connector cable included)

Dual firmware images on-board

Switching engine model: Store and forward

### Chassis

Size (1RU): 1.7126 in x 17.0866 in x 16.0236 in

(43.5 mm x 434.0 mm x 407.0 mm) (H x W x D)

Approximate weight: 13.2277lbs/6kg (N3024 and N3024F),

14.5505lbs/6.6kg (N3024P), 13.8891lbs/6.3kg (N3048),

15.2119lbs/6.9kg (N3048P)

ReadyRails rack mounting system, no tools required

### Environmental

Power supply: 200W (N3024, N3024F and N3048), 715W or

1,100W (N3024P), 1,100W (N3048P)

Power supply efficiency: 80% or better in all operating modes

Max. thermal output (BTU/hr): 151.4 (N3024), 204.6 (N3024F), 4,467.1

(N3024P), 220.97 (N3048), 3,113.33 (N3048P)

Power consumption max (watts): 52.8 (N3024), 67.1 (N3024F), 1,287

(N3024P), 74.8 (N3048), 2,145 (N3048P)

Operating temperature: 32° to 113°F (0° to 45°C)

Operating relative humidity: 95%

Storage temperature: -40° to 149°F (-40° to 65°C)

Storage relative humidity: 85%

### Performance

MAC addresses: 32K

Static routes: 1,024 (IPv4)/1,024 (IPv6)

Dynamic routes: 8,160 (IPv4)/4,096 (IPv6)

Switch fabric capacity: 212Gbps (N3024, N3024F and

(full duplex) N3024P)

260Gbps (N3048 and N3048P)

Forwarding rate: 158Mpps (N3024, N3024F and N3024P)

193Mpps (N3048 and N3048P)

Link aggregation: 128 LAG groups, 144 dynamic ports

per stack, 8 member ports per LAG

Priority queues per port:	8
Line-rate Layer 2 switching:	All (non-blocking)
Line-rate Layer 3 routing:	All (non-blocking)
Flash memory:	256MB
Packet buffer memory:	4MB
CPU memory:	1GB
OSPF routing interfaces:	8,160
RIP routing interfaces:	512
ECMP next hops per route:	4
ECMP groups:	64
VLAN routing interfaces:	128
VLANs supported:	4,094
Protocol-based VLANs:	Supported
Multicast forwarding entries:	1,536 (IPv4), 512 (IPv6)
ARP entries:	6,144
NDP entries:	400
Access control lists (ACL):	Supported
MAC and IP-based ACLs:	Supported
Time-controlled ACLs:	Supported
Max number of ACLs:	100
Max ACL rules system-wide:	4,096
Max rules per ACL:	1,023
Max ACL rules per interface (IPv4):	3,072 (ingress), 1,024 (egress)
Max ACL rules per interface (IPv6):	1,021 (ingress), 512 (egress)
Max VLAN interfaces with ACLs applied:	24

### IEEE compliance

802.1AB	LLDP
Dell	Voice VLAN
Dell	ISDP (inter-operates with devices running CDP)
802.1D	Bridging, Spanning Tree
802.1p	Ethernet Priority (User Provisioning and Mapping)
Dell	Adjustable WRR and Strict Queue Scheduling
802.1Q	VLAN Tagging, Double VLAN Tagging, GVRP
802.1s	Multiple Spanning Tree (MSTP)
802.1v	Protocol-based VLANs
802.1W	Rapid Spanning Tree (RSTP)
Dell	RSTP-Per VLAN (compatible with Cisco's RPVST+)
Dell	Spanning tree optional features: STP root guard, BPDU guard, BPDU filtering
802.1X	Network Access Control, Auto VLAN
802.2	Logical Link Control
802.3	10BASE-T
802.3ab	Gigabit Ethernet (1000BASE-T)
802.3ac	Frame Extensions for VLAN Tagging
802.3ad	Link Aggregation with LACP
802.3ae	10 Gigabit Ethernet (10GBASE-X)
802.3at	PoE+ (N3024P and N3048P)
802.3AX	LAG Load Balancing
Dell	Multi-Chassis LAG (MLAG)
Dell	Policy Based Forwarding
802.3az	Energy Efficient Ethernet (EEE)
802.3u	Fast Ethernet (100BASE-TX) on management ports
802.3x	Flow Control
802.3z	Gigabit Ethernet (1000BASE-X)
ANSI	LLDP-MED (TIA-1057)
Dell	Equalllogic iSCSI Auto-configuration
MTU	9,216 bytes

### RFC compliance and additional features

#### General Internet protocols

General Internet protocols are supported. For a detailed list, please contact your Dell representative.

#### General IPv4 protocols

General IPv4 protocols are supported. For a detailed list, please contact your Dell representative.

#### General IPv6 protocols

General IPv6 protocols are supported. For a detailed list, please contact your Dell representative.

#### Layer 3 functionality

1058	RIPv1	2453	RIPv2
1724	RIPv2 MIB Extension	2740	OSPFv3
1765	OSPF DB overflow	2787	VRRP MIB
1850	OSPF MIB	3101	NSSA
2082	RIP-2 MD5 Auth	3137	OSPF Stub Router Advert
2328	OSPFv2	3623	Graceful Restart
2338	VRRP	3768	VRRP
2370	Opaque LSA Option	4271	BGP
Dell	Policy Based Routing	5187	OSPFv3 Graceful Restart

#### Multicast

1112	IGMPv1	3810	MLDv2
2236	IGMPv2	3973	PIM-DM
2365	Admin scoped IP Mcast	4541	IGMP v1/v2/v3
2710	MLDv1		Snooping and Querier
2932	IPv4 MIB	4601	PIM-SM
2933	IGMP MIB	5060	PIM MIB
3376	IGMPv3	Dell	Static IP Multicast
Draft-ietf-pim-sm-bsr-05			
Draft-ietf-idmr-dvmrp-v3-10 DVMRP			
Draft-ietf-magma-igmp-proxy-06.txt IGMP/MLD Proxying			
Draft-ietf-magma-igmpv3-and-routing-05.txt			
draft-ietf-idmr-dvmrp-mib-11			
draft-ietf-magma-mgrnd-mib-05			
draft-ietf-pim-bsr-mib-06			
IEEE 802.1ag draft 8.1 - Connectivity Fault Management (CFM)			
IEEE 802.1p GMRP Dynamic L2 Multicast Registration			

### Quality of service

2474	DiffServ Field	2697	srTCM
2475	DiffServ Architecture	4115	trTCM
2597	Assured Fwd PHB	Dell	L4 Trusted Mode (TCP/UDP)
Dell	Port Based QoS Services Mode		
Dell	Flow Based QoS Services Mode (IPv4/IPv6)		

### Network management and security

1155	SMIPv1	2856	Text Conv. For High Capacity Data Types
1157	SNMPv1		
1212	Concise MIB Definitions	2863	Interfaces MIB
1213	MIB-II	2865	RADIUS
1215	SNMP Traps	2866	RADIUS Accounting
1286	Bridge MIB	2868	RADIUS Attributes for Tunnel Prot.
1442	SMIPv2		
1451	Manager-to-Manager MIB	2869	RADIUS Extensions
1492	TACACS+	3410	Internet Standard Mgmt. Framework
1493	Managed objects for Bridges MIB	3411	SNMP Management Framework
1573	Evolution of Interfaces Extensions	3412	Message Processing and Dispatching
1612	DNS Resolver MIB	3413	SNMP Applications
1643	Ethernet-like MIB	3414	User-based security model
1757	RMON MIB	3415	View-based control model
1867	HTMLv2.0 Forms with file upload extensions		
1901	Community-based SNMPv2	3416	SNMPv2
1907	SNMPv2 MIB	3417	Transport Mappings
1908	Coexistence between SNMPv1/v2	3418	SNMP MIB
2011	IP MIB	3577	RMON MIB
2012	TCP MIB	3580	802.1X with RADIUS
2013	UDP MIB	3737	Registry of RMON MIB
2068	HTTP/1.1	4086	Randomness Requirements
2096	IP Forwarding Table MIB	4113	UDP MIB
2233	Interfaces Group using SMv2	4251	SSHv2 Protocol
2246	TLS v1	4252	SSHv2 Authentication
2271	SNMP Framework MIB	4253	SSHv2 Transport
2295	Transport Content Negotiation	4254	SSHv2 Connection Protocol
2296	Remote Variant Selection	4419	SSHv2 Transport Layer Protocol
2346	AES Ciphersuites for TLS	4521	LDAP Extensions
2576	Coexistence between SNMPv1/v2/v3	4716	SECSH Public Key File Format
2578	SMv2	6101	SSL
2579	Textual Conventions for SMv2	6398	IP Router Alert Enterprise MIB
2580	Conformance Statements for SMv2	Dell	supporting routing features draft-ietf-hubmib-etherif-mib-v3-00.txt (Obsoletes RFC 2665)
2613	RMON MIB	Dell	LAG MIB Support for 802.3ad functionality sflow version 1.3 draft 5
2618	RADIUS Authentication MIB	Dell	
2620	RADIUS Accounting MIB	Dell	
2665	Ethernet-like Interfaces MIB	Dell	802.1x Monitor Mode
2666	Identification of Ethernet chipsets	Dell	Custom Login Banners
2674	Extended Bridge MIB	Dell	Dynamic ARP Inspection
2737	ENTITY MIB	Dell	IP Address Filtering
2818	HTTP over TLS	Dell	Tiered Authentication
2819	RMON MIB (groups 1, 2, 3, 9)	Dell	RSPAN
		Dell	Change of Authorization Demo
		Dell	OpenFlow 1.0

### Regulatory, environment and other compliance

#### Safety and emissions

Australia/New Zealand: ACMA RCA Class A

Canada: ICES Class A; cUL

China: CCC Class A; NAL

Europe: CE Class A

Japan: VCCI Class A

USA: FCC Class A; NRTL UL

Eurasia Customs Union: EAC

Germany: GS mark

Product meets EMC and safety standards in many countries

inclusive of USA, Canada, EU, Japan, China.

For more country-specific regulatory information, and approvals,

please see your Dell representative.

#### RoHS

Product meets RoHS compliance standards in many countries

inclusive of USA, EU, China, and India. For more country-specific

RoHS compliance information, please see your Dell representative.

EU WEEE

EU Battery Directive

REACH

#### Energy

Japan: JEL

#### Certifications (available or coming soon)

Available with US Trade Agreements Act (TAA) compliance.

N-Series products have the necessary features to support a

PCI compliant network topology.

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