# Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan



## **Tender Document**

# Tender No. IT-021 Procurement of IT Equipment for ICT Department

at

Khwaja Fareed University of Engineering
& Information Technology
Rahim Yar Khan

## **TENDER DOCUMENT**

## TENDER No. IT-021

## **Procurement of IT Equipment for ICT Department**

<u>at</u>

Khwaja Fareed University of Engineering and Information Technology

TENDER PRICE Rs. 2,000/-

Last date of submission: <u>04-07-2019</u>

## FOR OFFICE USE ONLY

Serial No	
Sold to: M/S	
Date of Sale	_
Bank Challan No	_
Date	

#### 1. Overview

Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan intends "Procurement of IT Equipment for ICT Department" as provided at Annex 'A'. The supplier will be responsible for Supply, delivery and commissioning of all specified items, wherever required, at the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan. This document provides complete instructions for bidders intending to participate in this Tender.

#### 2. Instructions for Bidders

- 2.1. Response to the Tender (Bid) should be submitted in one part which shall include two separately sealed envelopes of Technical Proposal and Financial Proposal before 12:30 PM on 04-07-2019. Technical Proposals will be opened on same day at 01:00 PM in the presence of representatives of responding bidders, if any, and Financial Proposals will be opened after completion of technical evaluation. The exact time and place for opening of financial proposals will be informed to technically qualified bidders.
- **2.2.** Responding bidder shall deliver two sealed copies of the bid. Each copy being physically separate, bound, sealed and labeled. Proposals shall be delivered at the address given below.

### Dr. Aamir Alaudin, Director Procurement

### **Procurement Department**

Khwaja Fareed University of Engineering & Information Technology Abu Dhabi Road, Rahim Yar Khan.

#### Tel. # 068-5882460

**2.3.** Any queries regarding this proposal should be directed to the designated Contact Person listed below.

Mr. Zaid Naeem, Network Administrator, zaid.naeem@kfueit.edu.pk

#### Tel. # 068-5882499

**2.4.** All bids must be submitted by filling the **Annex 'B'**. Same should be enclosed in the financial proposal. Bidder must use the same numbers and labels used in this

Request for Proposal.

**2.5.** The original Tender Document duly signed and officially sealed by the bidder must be submitted in whole with the proposals. Any conditional, ambiguous, incomplete, supplementary or revised offer after the opening of tender shall not be entertained.

## 3. Technical Proposal Format

Bidders are required to include the following documents/information in their technical proposals in the order given below:

- i. The Name and Address
- ii. Profile of company
- iii. List of Previous/Current customers of related supply.
- iv. Detailed product information
- v. Copy of National Tax Registration Certificate
- vi. Copy of Sales Tax Registration Certificate
- vii. Bank letter of financial standing
- viii. An affidavit on Rs 100/- Stamp Paper that currently they are not black listed or debarred by any Government/Semi-Government Department to participate in bidding and to supply equipment. Failure to submit such affidavit may lead to disqualification.
- ix. Any additional information the bidder may like to furnish e.g. repair/maintenance other concerned facility
- x. Detailed item specifications matched corresponding to the BOQ as given at **Annex 'A'**
- xi. Detailed project implementation schedule/Completion Schedule which includes the delivery of items mentioned in the BOQ
- xii. Signed and stamped Tender document
- xiii. Bank Draft of the Earnest Money

### 4. Financial Proposal Format

Financial Proposal must include the following in the order given below:

- i. Equipment prices duly entered on the form in the attached BOQ
- ii. Validity period of the quoted price
- iii. Any other Terms and Conditions

### 5. Terms & Conditions

- **5.1.** This invitation for bids is open to all national original Manufacturers/ Distributors/Suppliers in Pakistan for supply.
- **5.2.** All prices should be quoted in Pak Rupees and inclusive of all Government Taxes & Levies.
- **5.3.** A bank draft equal to 2% of the estimated cost should accompany the Tender as **Earnest Money** drawn in favor of **KFUEIT Rahim Yar Khan**. The Tender shall not be considered without Earnest Money. Bank guarantee will not be accepted. Bank draft for Earnest Money should be placed with the Technical proposal.
- **5.4.** Earnest Money for bidders not selected will be returned a minimum of two weeks after announcement of award and returned to successful bidder after signing the contract. If the selected bidder fails to sign the contract with in stipulated time, Earnest Money will be forfeited.
- 5.5. A Bank draft of 5% of the total amount as **Performance Guarantee** will be provided by the supplier in favor of KFUEIT, Rahim Yar Khan within 10 days after decision of award of contract along with judicial stamp paper of the value 0.25 % of total cost which shall remain valid for 12 months beyond delivery period. This performance guarantee will be released after the completion of warranty/guarantee period, along with the satisfactory completion report by the inspection committee which will be intimated to the Seller and the Director Procurement KFUEIT, Rahim Yar Khan for their onward issuance of No Objection Certificate (NOC) for the release of performance guarantee.
- **5.6.** The quantity of an order may vary depending on the quoted prices and the allocated funds.
- **5.7.** The decision of the KFUEIT procurement committee will be binding on all concerned and will in no case be challenged in any forum.
- **5.8.** KFUEIT Rahim Yar Khan reserves the right to modify the conditions / specifications of the Tender Document with written intimation to all the participants who have purchased the Tender Document.
- **5.9.** Delivery period will be as per terms and conditions of purchase order/supply order.
- **5.10.** Delivery shall be completed according to the agreed upon schedule.
- **5.11.** In case the selected bidder fails to execute the contract strictly in accordance with the terms and conditions laid down in the contract, the Performance Guarantee shall be

forfeited.

- **5.12.** The University will get the item inspected at KFUEIT Rahim Yar Khan and reject the item, if not found according to the stated specifications.
- **5.13.** The University reserves the right to claim compensation for the losses caused by delay in the delivery of equipment.
- **5.14.** It is the sole responsibility of the bidder to comply with local, national and international laws.
- **5.15.** In case any supplies/material is found not in conformity with the specifications provided in the tender, either on account of inferior quality, defective workmanship, faulty design, faulty packing or is short supplied, or wrongly supplied, the supplier will replace the same free of charges or pay the full cost of replacement.
- **5.16.** All the proposals submitted will become the property of the University.
- **5.17.** All prices should be valid for at least 60 days. Withdrawal or any modification of the original offer within the validity period shall entitle the KFUEIT Rahim Yar Khan to forfeit the Earnest Money in favor of the KFUEIT Rahim Yar Khan and/or putting a ban on the future inquires or taking any other suitable action against the bidder.
- **5.19.** Delivery of the items will be free of charge at Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan during the office hours with a copy of Delivery Challan.
- **5.20.** Items being ordered should be brand-new and according to order specification from the current production and covered under normal warranty/guarantee etc. as mentioned in the quote. Brochures mentioned and product details must be attached.

### 6. Tender Evaluation Criteria

All bids shall be evaluated on technical and financial merit. The Company Evaluation Criteria is attached at **Annex 'D'** for reference. Technical evaluation process may include, but not limited to the consideration of the following with respect to the functional requirements given ahead:

- a. Technical specifications of proposed item
- b. Company Profile
  - I. Age of the company
  - II. Financial strength of the bidder

Financial Evaluation process will be based on the consideration of the quoted price.

## 7. Undertaking

Conditions given in this Tender Document
Name of bidder
Authorized person
Authorized signature
Stamp
Office Address
Tel No
Fax No

On behalf of the company it is certified that we agree to the all the Instructions and Terms &

# **Procurement of IT Equipment for ICT Department**

Sr.	Specifications/Minimum Requirements	Unit of	Total
No.		Measure	Quantity
01	Network Video Recorder, 64 Channel "IP Video Input 64 Channel Two-way Audio Input 1-Ch, RCA Incoming Bandwidth 320Mbps Incoming Bandwidth 320Mbps Remote Users 128 HDMI/ VGA Output HDMII/ VGA: 1920x1080p /60Hz, 1920x1080p /50Hz, 1600x1200 /60Hz, 1280x1024 /60Hz, 1280x720 /60Hz, 1024x768 /60Hz HDMI2: 4K (3840x2160) /60Hz, 4K (3840x2160)/30Hz, 1920x1080p /50Hz, 1600x1200 /60Hz, 1280x1024 /60Hz, 1280x720 /Hz, 1920x1080p /50Hz, 1600x1200 /60Hz, 1280x1024 /60Hz, 1280x720 /Hz, 1024x768 /60Hz CVBS Output 1-ch, BNC Recording Resolution 12MP/8MP/6MP/5MP/4MP/3MP/1080p/960p/720p/D1/2CIF/CIF Audio Output 1Ch, RCA Synchronous Playback 16-Ch Corridor Mode Screen 3/4/5/7/9/10/12/16/32 Decoding format Ultra 265, H.265, H.264 Sata 8 Sata Interfaces Capacity Up to 10TB for each HDD eSata 1 eSata interface N+1 Hot spare Support VCA Detection  Face Detection, Intrusion detection, Cross line detection, Audio detection, Defocus detection, Scene change detection, Auto tracking  VCA Search Face Search, Behavior search Statistical Analysis People Counting Array Type RAID 0, 1, 5, 6, 10 Network Interfaces Serial Interfaces 2 RJ45 10M/ 100M 1000M self-adaptive Ethernet Interfaces Serial Interface 1 x RS232, 1 x RS485 USB Interface Front panel: 2 x USB 2.0, Rear panel: 1 x USB3.0 Alarm In 16-Ch	Each	01

Alarm Out 4-Ch	
1 Year Hardware Warranty"	
Network Video Recorder, 32 Channel	
" IP Video Input 32 Channel	
Two-way Audio Input 1-Ch, RCA	
Incoming Bandwidth 320Mbps	
Incoming Bandwidth 320Mbps	
Remote Users 128	
HDMI/ VGA Output HDMI1/ VGA: 1920x1080p /60Hz,	
1920x1080p /50Hz, 1600x1200 /60Hz,	
1280x1024 /60Hz, 1280x720 /60Hz, 1024x768 /60Hz	
HDMI2: 4K (3840x2160) /60Hz, 4K (3840x2160)/30Hz,	
1920x1080p /Hz,	
1920x1080p /50Hz, 1600x1200 /60Hz, 1280x1024 /60Hz,	
1280x720 /Hz,	
1024x768 /60Hz	
CVBS Output 1-ch, BNC	
Recording Resolution	
12MP/8MP/6MP/5MP/4MP/3MP/1080p/960p/720p/D1/2CIF/CIF	
Audio Output 1Ch, RCA	
Synchronous Playback 16-Ch	
02 Corridor Mode Screen 3/4/5/7/9/10/12/16/32 Each	01
Decoding format Ultra 265, H.265, H.264	
Sata 8 Sata Interfaces	
Capacity Up to 10TB for each HDD	
eSata 1 eSata interface	
N+1 Hot spare Support	
VCA Detection	
Face Detection, Intrusion detection, Cross line detection, Audio	
detection,	
Defocus detection, Scene change detection, Auto tracking	
VCA Search Face Search, Behavior search	
Statistical Analysis People Counting	
Array Type RAID 0, 1, 5, 6, 10	
Network Interface 2 RJ45 10M/ 100M 1000M self-adaptive	
Ethernet Interfaces	
Serial Interface 1 x RS232, 1 x RS485	
USB Interface Front panel: 2 x USB 2.0, Rear panel: 1 x USB3.0	
Alarm In 16-Ch	
Alarm Out 4-Ch	
1 Year Hardware Warranty"	

	Network Video Becarder O Channel		
	Network Video Recorder, 8 Channel		
	Support Ultra 265/H.265/H.264 video formats		
	• 8/16-channel input		
	• Third-party IP cameras supported with ONVIF conformance: Profile		
	S, Profile G, Profile T		
	• Support 1-ch HDMI, 1-ch VGA, HDMI at up to 4K(3840x2160)		
	resolution		
	<ul> <li>Up to 12 Megapixels resolution recording</li> </ul>		
	• Up to 10TB for each disk		
	<ul> <li>Various fisheye dewarping modes for live view and playback for</li> </ul>		
	both web interface and GUI		
	• Plug & Play with up to 8/16 independent PoE network interfaces		
	• ANR technology to enhance the storage reliability when the network		
	is disconnected		
	Support cloud upgrade		
	Network		
	Incoming Bandwidth 80Mbps 160Mbps		
	Outgoing Bandwidth 160Mbps 320Mbps		
	Remote Users 128		
	Protocols P2P, UPnP, NTP, DHCP, PPPoE		
	Video/Audio Output		
	HDMI/VGA Output VGA:		
	1920x1080p /60Hz, 1920x1080p /50Hz, 1600x1200 /60Hz,		
	*		
	1280x1024 /60Hz, 1280x720 /60Hz, 1024x768 /60Hz HDMI:		
03	4K (3840x2160) /60Hz, 4K (3840x2160) /30Hz, 1920x1080p /60Hz,	Each	01
	1920x1080p /50Hz, 1600x1200 /60Hz, 1280x1024 /60Hz, 1280x720		
	/60Hz, 1024x768 /60Hz		
	Recording Resolution		
	12MP/8MP/6MP/5MP/4MP/3MP/1080p/960p/720p/D1/2CIF/CIF		
	Audio Output 1-ch, RCA		
	Synchronous Playback 8-ch 16-ch		
	Corridor Mode Screen 3/4/5/7/9 3/4/5/7/9/10/12/16		
	Decoding		
	Decoding format Ultra 265, H.265, H.264		
	Live view/		
	Playback		
	12MP/8MP/6MP/5MP/4MP/3MP/1080p/960p/720p/D1/2CIF/CIF		
	Capability 3 x 12MP@25, 4 x 4K@30, 8 x 4MP@30, 16 x 1080P@30		
	Hard Disk		
	SATA 2 SATA interfaces		
	Capacity up to 10TB for each disk		
	Smart		
	VCA Detection Face detection, Intrusion detection, Cross line		
	detection, Audio detection, Defocus detection, Scene change		
	detection, Auto tracking		
	VCA Search Face search, Behavior search		
	Statistical Analysis People counting		
	External Interface		
	Network Interface 1 RJ-45 10M/100M/1000M self-adaptive Ethernet		
	Interface		
	USB Interface Front panel: 1 x USB2.0, Rear panel: 1 x USB3.0		
	Alarm In 4-ch		

	Alarm Out 1-ch		
	PoE		
	Interface 8 independent 100 Mbps PoE network interfaces 16		
	independent 100 Mbps PoE network interfaces		
	Max Power Max 30W for single port		
	Max 130W in total (16.25W for each) Max 30W for single port		
	Max 240W in total (15W for each)		
	Supported Standard IEEE 802.3af/at		
	2TB SATA hard disk		
04	Capacity: 2 TB	Each	01
	1-year hardware warranty		
	UPS, Capacity 1 KVA		
	"Key Features:		
	Built-in intelligent 3-stage charger control for efficient charging		
	and to prevent overcharging		
	Light weighted		
	wall mounted rack design		
	User friendly LCD & LED		
05	Multiple protections: low battery alarm, low battery shutdown,	Each	04
00	overload protection, over heating protection, short circuit	Lacii	0.
	protection		
	Highly efficient DC-to-AC conversion		
	minimizing energy loss		
	Free AC & DC cables		
	Innovative charging system with Auto Cutoff when battery is		
	fully charged & especially designed to suit local type batteries and		
	local weather conditions"		
	External Battery		
	"Battery Specs:		
	Minimum Backup 2 Hours		
06	Liquid Acid	Each	04
00	180 Amp	Lacii	0.
	21 Plates		
	Better than or Equivalent to Homage Hexa HEX-1004 700W Home		
	Inverter  1 Year Handware Warrenty!		
	1 Year Hardware Warranty"		
	CCTV 4MP Fish Eye Camera Image sensor 1/3", 4.0 megapixel, progressive scan, CMOS		
	Lens 1.6mm@F1.6		
	DORI Distance Lens (mm) Detect (m) Observe (m) Recognize (m)		
	Identify (m)		
	1.6 36 14.4 7.2 3.6		
	Angle of View 180°		
07	Shutter Auto/Manual, shutter time: 1 ~ 1/100000s	Each	02
	Minimum Illumination Colour: 0.01Lux (F1.6, AGC ON)		
	OLux with IR		
	Day/Night IR-cut filter for day & night function		
	Digital noise reduction 2D/3D DNR		
	S/N Ratio >55dB		
	IR Range UP to 10m(33ft)		
	Defog Digital Defog		

	WDR 120dB		
	Video		
	Compression Ultra265, H.264, MJPEG		
	H.264 code profile Baseline profile, Main Profile, High Profile		
	Frame Rate Main Stream: 4MP (2560*1440), Max 25fps;		
	Sub Stream: 1080P (1920*1080), Max 25fps;		
	Third Stream: D1(720*576), Max 25fps		
	BLC Supported		
	OSD Up to 8 OSDs		
	Privacy Mask Up to 8 areas		
	ROI Up to 8 areas		
	Motion Detection Up to 4 areas		
	General Function Watermark, IP Address Filtering, Tampering Alarm,		
	Access Policy, ARP Protection, RTSP Authentication, User		
	Authentication		
	Storage		
	Edge Storage Micro SD, up to 256GB		
	Network Storage ANR		
	Network		
1	Protocols IPv4, IGMP, ICMP, ARP, TCP, UDP, DHCP, PPPoE, RTP,		
	RTSP, RTCP, DNS, DDNS, NTP, FTP, UPnP, HTTP, HTTPS,		
	SMTP, 802.1x, SNMP, QoS		
	Compatible Integration ONVIF (Profile S, Profile G, Profile T), API		
	Live View Display  Mount Type Sympost table, well, and seiling		
	Mount Type Support table, wall, and ceiling		
	Interface Network 1 DI45 10M/100M Page TV Auto adopting Ethanicat		
	Network 1 RJ45 10M/100M Base-TX Auto-adaptive Ethernet		
	Video Output 1 BNC		
	CCTV Bullet Network Camera 4MP		
	Sensor 1/3", 4.0 megapixel, progressive scan, CMOS		
	Lens 4.0mm@F2.0		
	Angle of View (H) 78.9°		
	Angle of View (V) 39.6°		
	Angle of View (O) 97.0°		
	Adjustment angle Pan: 0°~360°		
	Tilt: 0°~90°		
	Rotate: 0°~360°		
	Shutter Auto/Manual, 1~1/100000 s		
	Minimum Illumination		
00	Colour: 0.03 Lux (F2.0, AGC ON)	ъ 1	16
08	0 Lux with IR on	Each	16
	Digital noise reduction 2D/3D DNR		
	Day/Night IR-cut filter with auto switch (ICR)		
	S/N >52dB		
	IR Range Up to 30m (98 ft) IR range		
	WDR DWDR		
1	Video Compression Ultra 265,H.265, H.264, MJPEG		
	H.264 code profile Baseline profile, Main Profile		
	Frame Rate		
1	Main Stream:4MP (2592*1520): Max. 20 fps;		
1	Sub Stream:720P (1280*720): Max. 20 fps;		
	Third Stream:D1 (720×576): Max. 20 fps		
1	HLC Supported		
<u></u>	TILE Supported		

	BLC Supported		
	OSD Up to 4 OSDs		
	Privacy Mask Up to 8 areas		
	ROI Up to 2 areas		
	Motion Detection Up to 4 areas		
	Protocols IPv4,IGMP,ICMP,ARP,TCP,UDP,DHCP,		
	RTP,RTSP,RTCP,DNS,DDNS,NTP,FTP,UPnP,HTTP,HTTPS,SMTP,		
	SSL		
	Compatible Integration ONVIF(Profile S, Profile T), API		
	Network 10/100M Base-TX Ethernet		
	Android LED TV 50"		
	"Features		
	Connectivity 2 USB Ports, 2 HDMI Ports		
	Display 50 Inch, LED, Full HD, 1920x1080		
	Design 1117.8 x 705.6 x 310.5 mm, Weight: 12.3 kg, Colour:		
	Black		
	Hdmi Ports 2		
09	Usb Supports Audio, Video, Image	Each	04
	Rf Inputanalog Coaxial Ports 1		
	Component Outputrgb Input Ports 1		
	Composite Inputaudio Video Cable Ports 1		
	Usb Ports 2		
	Headphonespeaker Output Ports 1		
	Android TV: Yes		
	1 Year Hardware Warranty"		
	8TB SATA Hard Drive		
	"Capacity: 8TB		
	Speed: 7,200RPM		
1.0	Interface Types: SATA		
10	Form Factor: 3.5inx1.0in LFF Hard Drive	Each	06
	Sector Size: 512 / 512e		
	Sustained Throughput: 190		
	Electrical Interface: SATA 600 - 6.0Gbps		
	On-Board Cache: 256MB		
	1 Year Hardware Warranty"		
	Network Rack 42U		
	"Networking Rack 42U Networking Rack 42U having following		
	equivalent or better specification is required		
	Network Rack cabinet 42U		
	Dual vented rear doors 800mm(W) X 1000mm(D)		
	Minimum 2xPower Distribution Panels		
	Mesh front doors		
	Moveable & Lockable Wheels Foundation		
11	Minimum Rack Unit Weight 250lbs	Each	05
	Color Black		
	Accessories:		
	Sidewalls		
	Split rear doors		
	Bolt Down Kits		
	Cable Management		
	Power Strips – vertical or Rackmount Enclosure Monitoring		
	System		
	Toolless Blanking Panels, Fans		
L	100 less Dialiking Fallers, Falls		

	Batter than or Equivalent to TrippLite/Toten 42U rack"		
12	RFID CARD Printer  "Side Printing: Single or Dual Print Method: HDP® Dye-Sublimation / Resin Thermal Transfer Print Speed: Up to 124 cards per hour (YMCK with transfer) Accepted Card Sizes: CR-80 Warranty: 3 years (printer); Lifetime (printhead) Dual-sided printing Card flattener 200-card input hopper"  "Resolution: 300 dpi (11.8 dots/mm) Colors: Up to 16.7 million / 256 shades per pixel 1 Year Hardware Warranty	Each	02
13	32GB DDR4-2666 ECC RDIMM RAM for Dell Server  "Capacity: 32GB DDR4-2666 ECC DIMM Type: RDIMM Data rate: Minimum 2400 MT/s Dual Rank x8 Data Width Must be compatible with Dell Server (Power Edge R730) 1 Year Hardware Warranty"	Each	06
14	WOIP / SIP Phone  Better than or equivalent to Grandstream GXP 1625  Protocols/Standards SIP RFC3261, TCP/IP/UDP, RTP/RTCP,  HTTP/HTTPS, ARP/RARP, ICMP, DNS (A record, SRV, NAPTR),  DHCP, PPPoE, SSH, TFTP, NTP, STUN, SIMPLE, LLDP- MED,  LDAP, TR-069, 802.1x, TLS, SRTP  Network Interfaces Dual, auto-sensing 10/100 Mbps Ethernet ports, integrated PoE Graphic Display 132 x 48 backlit graphical LCD display  Feature Keys  2 line keys with dual-color LED and 2 SIP accounts, 3 XML programmable context tion keys sensitive for MUTE, soft HEADSET, keys, 5 (navigation, TRANSFER, menu) CONFERENCE, keys. 13  SEND dedicated and REDIAL, func- SPEAKERPHONE, VOLUME, PHONEBOOK, MESSAGE, HOLD, PAGE/INTER- COM, RECORD, HOME  Support for G.711µ/a, G.722 (wide-band), G.723, G.726-32, G.729  A/B, iLBC, Voice Codecs in-band and out-of-band DTMF (In audio, RFC2833, SIP INFO), VAD, CNG, AEC, PLC, AJB, AGC  Telephony Features  Hold, transfer, forward (unconditional/no-answer/busy), 3-way conferen- cing, rance call (BLA), park/pickup, Downloadable shared- call phone appearance book (XML, (SCA) LDAP, / up bridged-line- appea- to 500 items), call waiting, call history (up to 200 records), off- hook auto dial, auto answer, click-to-dial, server redundancy flexible  & dial fail-over plan, hot desking, personalized music ringtones, Headset Jack RJ9 headset jack (allowing EHS with Plantronics headsets)  HD Audio Yes, HD handset and speakerphone with support for wideband audio	Each	50

	Base Stand		
	QoS Layer 2 QoS (802.1Q, 802.1P) and Layer 3 (ToS, DiffServ,		
	MPLS) QoS		
	User and administrator level access control, MD5 and MD5-sess		
	based Security authentication, 256-bit AES encrypted configuration		
	file, TLS, SRTP, HTTPS, 802.1x media access control		
	Multi-language English, simplified German, and traditional Italian,		
	French, Chinese, Spanish, Korean, Portuguese, Japanese and Russian,		
	more Croatian, Upgrade/Provisioning Firmware upgrade via TFTP /		
	HTTP / HTTPS, mass provisioning using TR-069 or AES encrypted		
	XML configuration file		
	Power & Green Energy Efficiency Universal Power Supply Input 100-		
	240VAC 50-60Hz; Output +5VDC,		
	600mA PoE: ieee802.3af Class 2, 3.84W-6.49W		
	Temperature and Humidity Operation: 0°C to 40°C, Storage: -10°C to		
	60°C, Humidity: 10% to 90% Non-condensing		
	Package Must Contain: network cable, phone, Quick handset		
	Installation with cord, Guide, base brochure, stand, universal GPL		
	License power supply		
	Compliance:		
	FCC: Part 15 (CFR 47) Class B CE: EN55022 Class B, EN55024,		
	EN61000-3-2, EN61000-3-3, EN60950-1 RCM: AS/ACIF S004;		
	AS/NZS CISPR22/24; AS/NZS 60950; AS/NZS 60950.1		
	1 Year Hardware Warranty		
	Network Switch 48 Port, 10/100/1000Base-T, 4 x 1 1/10GbE,		
	SFP/SFP+ Better than or Equivalent to Juniper EX 2300 48 Port		
	Rack mountable: 1 Rack Unit		
	Backplane: 80 Gbps Virtual Chassis interconnect to link up to four		
	switches as a single logical device		
	DRAM 2 GB		
	Flash 2 GB		
	CPU 1.25GHz ARM CPU		
	GbE port density per system 52 (48 host ports + four-port SFP/SFP+		
	uplinks)		
	Supported Optics: 10/100/1000BASE-T connector type RJ-45		
	GbE SFP optic/connector type: RJ-45, or LC SFP fiber supporting		
	1000BASE-T SFP, SX (multimode), LX (singlemode), or LH (single-		
15	mode) Packet-Switching Capacities	Each	04
	(Maximum with 64-Byte Packets): 176 Gbps Access		
	Security:		
	MAC limiting		
	Allowed MAC addresses—configurable per port		
	Sticky MAC (persistent MAC address learning)		
	Dynamic ARP inspection (DAI)		
	Proxy ARP		
	Static ARP support		
	DHCP snooping		
	802.1X port-based		
i	802.1X multiple supplicants		
	802.1X with VLAN assignment		

802.1X with VoIP VLAN support

802.1X dynamic ACL based on RADIUS attributes

802.1X Supported EAP types: Message Digest 5 (MD5), Transport Layer Security (TLS), Tunneled Transport Layer Security (TTLS),

Protected Extensible Authentication Protocol (PEAP)

IPv6 RA Guard

IPv6 Neighbor Discovery Inspection

Captive Portal

Static MAC authentication

**MAC-RADIUS** 

Control plane DoS protection

Fallback authentication

Trusted Network Connect (TNC) certified

## **High Availability**

Link Aggregation

802.3ad (LACP) support:

Number of LAGs supported: 128

Maximum number of ports per LAG: 8

Tagged ports support in LAG

Uplink Failure Detection (UFD)

## Quality of Service (QoS)

Laver 2 OoS

Layer 3 OoS

Ingress policing: one-rate two-color; two-rate three-color markers

Hardware queues per port: 8

Scheduling methods (egress): Strict Priority (SP), shaped deficit

weighted round-robin (SDWRR)

802.1p, DSCP/IP precedence trust and marking

L2-L4 classification criteria: Interface, MAC address, Ethertype, 802.1p, VLAN, IP address, DSCP/IP precedence, TCP/UDP port

Congestion avoidance capabilities: Tail drop and WRED

#### Services and Manageability

CLI

Web interface

Out-of-band management: Serial, 10/100BASE-T Ethernet

ASCII configuration Rescue configuration Configuration rollback

Image rollback

Element management tools: Junos Space Network Management

Platform

Simple Network Management Protocol (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

**RADIUS** authentication

TACACS+ authentication

SSHv2

Secure copy

HTTP/HTTPs

	DAIG 1		
	DNS resolver		
	System log logging		
	Temperature sensor		
	Configuration backup via FTP/secure copy		
	Interface range		
	1 Year Hardware Warranty		
	Network Switch 24Port PoE+, 10/100/1000Base-T, 4 x 1 1/10GbE,		
	SFP/SFP+ Better than or Equivalent to Juniper Networks		
	EX2300-24P PoE+		
	Subtype Gigabit Ethernet		
	Ports 24 x 10/100/1000 (PoE+) + 4 x Gigabit SFP / 10 Gigabit SFP+		
	Power Over Ethernet (PoE) PoE+		
	PoE Budget 370 Watt		
	Performance Switching capacity: 128 Gbps		
	Throughput: 95 Mpps		
	Jumbo Frame Support 9216 bytes		
	Authentication Method Extensible Authentication Protocol (EAP),		
	RADIUS, Secure Shell v.2 (SSH2), TACACS+		
	Flash Memory 2 GB		
	MAC Address Table Size 16000 entries		
	Authentication Method RADIUS, TACACS+, Secure Shell v.2		
	(SSH2), Extensible Authentication Protocol (EAP)		
	Power Over Ethernet (PoE) PoE+		
	Encryption Algorithm MD5, TLS, PEAP, TTLS		
	Routing Protocol RIP-1, RIP-2, OSPFv3, static IPv4 routing, static		
	IPv6 routing, RIPng, CIDR		
	Jumbo Frame Support 9216 bytes		
	PoE Budget 370 W		
16	ManufacturerJuniper Networks, Inc.	Each	02
16	ManufacturerJuniper Networks, Inc. NETWORKING	Each	02
16	ManufacturerJuniper Networks, Inc.  NETWORKING  MAC Address Table Size 16000 entries	Each	02
16	ManufacturerJuniper Networks, Inc. NETWORKING MAC Address Table Size 16000 entries Subcategory network hubs and switches	Each	02
16	ManufacturerJuniper Networks, Inc.  NETWORKING  MAC Address Table Size 16000 entries Subcategory network hubs and switches Subtype Gigabit Ethernet	Each	02
16	ManufacturerJuniper Networks, Inc.  NETWORKING  MAC Address Table Size 16000 entries Subcategory network hubs and switches Subtype Gigabit Ethernet Form Factor desktop, rack-mountable	Each	02
16	ManufacturerJuniper Networks, Inc.  NETWORKING  MAC Address Table Size 16000 entries Subcategory network hubs and switches Subtype Gigabit Ethernet Form Factor desktop, rack-mountable Type Switch	Each	02
16	ManufacturerJuniper Networks, Inc. NETWORKING MAC Address Table Size 16000 entries Subcategory network hubs and switches Subtype Gigabit Ethernet Form Factor desktop, rack-mountable Type Switch Advanced Switching Layer 3	Each	02
16	ManufacturerJuniper Networks, Inc.  NETWORKING  MAC Address Table Size 16000 entries Subcategory network hubs and switches Subtype Gigabit Ethernet Form Factor desktop, rack-mountable Type Switch Advanced Switching Layer 3 Features ARP support, Access Control List (ACL) support, BOOTP	Each	02
16	ManufacturerJuniper Networks, Inc.  NETWORKING  MAC Address Table Size 16000 entries Subcategory network hubs and switches Subtype Gigabit Ethernet Form Factor desktop, rack-mountable Type Switch Advanced Switching Layer 3 Features ARP support, Access Control List (ACL) support, BOOTP support, Cable Diagnostics Function, Captive Portal, Class of Service	Each	02
16	ManufacturerJuniper Networks, Inc.  NETWORKING  MAC Address Table Size 16000 entries Subcategory network hubs and switches Subtype Gigabit Ethernet Form Factor desktop, rack-mountable Type Switch Advanced Switching Layer 3 Features ARP support, Access Control List (ACL) support, BOOTP support, Cable Diagnostics Function, Captive Portal, Class of Service (CoS), DHCP client, DHCP proxy, DHCP relay, DHCP server, DHCP	Each	02
16	ManufacturerJuniper Networks, Inc.  NETWORKING  MAC Address Table Size 16000 entries Subcategory network hubs and switches Subtype Gigabit Ethernet Form Factor desktop, rack-mountable Type Switch  Advanced Switching Layer 3 Features ARP support, Access Control List (ACL) support, BOOTP support, Cable Diagnostics Function, Captive Portal, Class of Service (CoS), DHCP client, DHCP proxy, DHCP relay, DHCP server, DHCP snooping, DiffServ Code Point (DSCP) support, DiffServ support,	Each	02
16	ManufacturerJuniper Networks, Inc.  NETWORKING  MAC Address Table Size 16000 entries Subcategory network hubs and switches Subtype Gigabit Ethernet Form Factor desktop, rack-mountable Type Switch  Advanced Switching Layer 3 Features ARP support, Access Control List (ACL) support, BOOTP support, Cable Diagnostics Function, Captive Portal, Class of Service (CoS), DHCP client, DHCP proxy, DHCP relay, DHCP server, DHCP snooping, DiffServ Code Point (DSCP) support, DiffServ support, DoS attack prevention, Dynamic ARP Inspection (DAI), Energy	Each	02
16	ManufacturerJuniper Networks, Inc.  NETWORKING  MAC Address Table Size 16000 entries Subcategory network hubs and switches Subtype Gigabit Ethernet Form Factor desktop, rack-mountable Type Switch Advanced Switching Layer 3 Features ARP support, Access Control List (ACL) support, BOOTP support, Cable Diagnostics Function, Captive Portal, Class of Service (CoS), DHCP client, DHCP proxy, DHCP relay, DHCP server, DHCP snooping, DiffServ Code Point (DSCP) support, DiffServ support, DoS attack prevention, Dynamic ARP Inspection (DAI), Energy Efficient Ethernet, High Availability, ICMP Router Discovery	Each	02
16	ManufacturerJuniper Networks, Inc.  NETWORKING  MAC Address Table Size 16000 entries Subcategory network hubs and switches Subtype Gigabit Ethernet Form Factor desktop, rack-mountable Type Switch Advanced Switching Layer 3 Features ARP support, Access Control List (ACL) support, BOOTP support, Cable Diagnostics Function, Captive Portal, Class of Service (CoS), DHCP client, DHCP proxy, DHCP relay, DHCP server, DHCP snooping, DiffServ Code Point (DSCP) support, DiffServ support, DoS attack prevention, Dynamic ARP Inspection (DAI), Energy Efficient Ethernet, High Availability, ICMP Router Discovery Protocol (IRDP), IP Precedence, Internet Control Message Protocol	Each	02
16	ManufacturerJuniper Networks, Inc.  NETWORKING  MAC Address Table Size 16000 entries Subcategory network hubs and switches Subtype Gigabit Ethernet Form Factor desktop, rack-mountable Type Switch  Advanced Switching Layer 3 Features ARP support, Access Control List (ACL) support, BOOTP support, Cable Diagnostics Function, Captive Portal, Class of Service (CoS), DHCP client, DHCP proxy, DHCP relay, DHCP server, DHCP snooping, DiffServ Code Point (DSCP) support, DiffServ support, DoS attack prevention, Dynamic ARP Inspection (DAI), Energy Efficient Ethernet, High Availability, ICMP Router Discovery Protocol (IRDP), IP Precedence, Internet Control Message Protocol (ICMP), Management Information Base (MIB), Multiple Spanning	Each	02
16	ManufacturerJuniper Networks, Inc.  NETWORKING  MAC Address Table Size 16000 entries Subcategory network hubs and switches Subtype Gigabit Ethernet Form Factor desktop, rack-mountable Type Switch  Advanced Switching Layer 3 Features ARP support, Access Control List (ACL) support, BOOTP support, Cable Diagnostics Function, Captive Portal, Class of Service (CoS), DHCP client, DHCP proxy, DHCP relay, DHCP server, DHCP snooping, DiffServ Code Point (DSCP) support, DiffServ support, DoS attack prevention, Dynamic ARP Inspection (DAI), Energy Efficient Ethernet, High Availability, ICMP Router Discovery Protocol (IRDP), IP Precedence, Internet Control Message Protocol (ICMP), Management Information Base (MIB), Multiple Spanning Tree Protocol (MSTP) support, Multiple VLAN Registration Protocol	Each	02
16	ManufacturerJuniper Networks, Inc.  NETWORKING  MAC Address Table Size 16000 entries Subcategory network hubs and switches Subtype Gigabit Ethernet Form Factor desktop, rack-mountable Type Switch Advanced Switching Layer 3 Features ARP support, Access Control List (ACL) support, BOOTP support, Cable Diagnostics Function, Captive Portal, Class of Service (CoS), DHCP client, DHCP proxy, DHCP relay, DHCP server, DHCP snooping, DiffServ Code Point (DSCP) support, DiffServ support, DoS attack prevention, Dynamic ARP Inspection (DAI), Energy Efficient Ethernet, High Availability, ICMP Router Discovery Protocol (IRDP), IP Precedence, Internet Control Message Protocol (ICMP), Management Information Base (MIB), Multiple Spanning Tree Protocol (MSTP) support, Multiple VLAN Registration Protocol (MVRP), NTP time synchronization, Neighbor Discovery Protocol	Each	02
16	ManufacturerJuniper Networks, Inc.  NETWORKING  MAC Address Table Size 16000 entries Subcategory network hubs and switches Subtype Gigabit Ethernet Form Factor desktop, rack-mountable Type Switch Advanced Switching Layer 3 Features ARP support, Access Control List (ACL) support, BOOTP support, Cable Diagnostics Function, Captive Portal, Class of Service (CoS), DHCP client, DHCP proxy, DHCP relay, DHCP server, DHCP snooping, DiffServ Code Point (DSCP) support, DiffServ support, DoS attack prevention, Dynamic ARP Inspection (DAI), Energy Efficient Ethernet, High Availability, ICMP Router Discovery Protocol (IRDP), IP Precedence, Internet Control Message Protocol (ICMP), Management Information Base (MIB), Multiple Spanning Tree Protocol (MSTP) support, Multiple VLAN Registration Protocol (MVRP), NTP time synchronization, Neighbor Discovery Protocol (NDP), Per-VLAN Spanning Tree Plus (PVST+), Quality of Service	Each	02
16	ManufacturerJuniper Networks, Inc.  NETWORKING  MAC Address Table Size 16000 entries Subcategory network hubs and switches Subtype Gigabit Ethernet Form Factor desktop, rack-mountable Type Switch  Advanced Switching Layer 3 Features ARP support, Access Control List (ACL) support, BOOTP support, Cable Diagnostics Function, Captive Portal, Class of Service (CoS), DHCP client, DHCP proxy, DHCP relay, DHCP server, DHCP snooping, DiffServ Code Point (DSCP) support, DiffServ support, DoS attack prevention, Dynamic ARP Inspection (DAI), Energy Efficient Ethernet, High Availability, ICMP Router Discovery Protocol (IRDP), IP Precedence, Internet Control Message Protocol (ICMP), Management Information Base (MIB), Multiple Spanning Tree Protocol (MSTP) support, Multiple VLAN Registration Protocol (MVRP), NTP time synchronization, Neighbor Discovery Protocol (NDP), Per-VLAN Spanning Tree Plus (PVST+), Quality of Service (QoS), RARP support, Rapid Spanning Tree Protocol (RSTP) support,	Each	02
16	ManufacturerJuniper Networks, Inc.  NETWORKING  MAC Address Table Size 16000 entries Subcategory network hubs and switches Subtype Gigabit Ethernet Form Factor desktop, rack-mountable Type Switch Advanced Switching Layer 3 Features ARP support, Access Control List (ACL) support, BOOTP support, Cable Diagnostics Function, Captive Portal, Class of Service (CoS), DHCP client, DHCP proxy, DHCP relay, DHCP server, DHCP snooping, DiffServ Code Point (DSCP) support, DiffServ support, DoS attack prevention, Dynamic ARP Inspection (DAI), Energy Efficient Ethernet, High Availability, ICMP Router Discovery Protocol (IRDP), IP Precedence, Internet Control Message Protocol (ICMP), Management Information Base (MIB), Multiple Spanning Tree Protocol (MSTP) support, Multiple VLAN Registration Protocol (MVRP), NTP time synchronization, Neighbor Discovery Protocol (NDP), Per-VLAN Spanning Tree Plus (PVST+), Quality of Service (QoS), RARP support, Rapid Spanning Tree Protocol (RSTP) support, Redundant trunk group (RTG), SNTP support, Secure Copy (SCP),	Each	02
16	ManufacturerJuniper Networks, Inc.  NETWORKING  MAC Address Table Size 16000 entries Subcategory network hubs and switches Subtype Gigabit Ethernet Form Factor desktop, rack-mountable Type Switch Advanced Switching Layer 3 Features ARP support, Access Control List (ACL) support, BOOTP support, Cable Diagnostics Function, Captive Portal, Class of Service (CoS), DHCP client, DHCP proxy, DHCP relay, DHCP server, DHCP snooping, DiffServ Code Point (DSCP) support, DiffServ support, DoS attack prevention, Dynamic ARP Inspection (DAI), Energy Efficient Ethernet, High Availability, ICMP Router Discovery Protocol (IRDP), IP Precedence, Internet Control Message Protocol (ICMP), Management Information Base (MIB), Multiple Spanning Tree Protocol (MSTP) support, Multiple VLAN Registration Protocol (MVRP), NTP time synchronization, Neighbor Discovery Protocol (NDP), Per-VLAN Spanning Tree Plus (PVST+), Quality of Service (QoS), RARP support, Rapid Spanning Tree Protocol (RSTP) support, Redundant trunk group (RTG), SNTP support, Secure Copy (SCP), Smoothed Deficit Weighted Round Robin (SDWRR), Spanning Tree	Each	02
16	ManufacturerJuniper Networks, Inc.  NETWORKING  MAC Address Table Size 16000 entries Subcategory network hubs and switches Subtype Gigabit Ethernet Form Factor desktop, rack-mountable Type Switch Advanced Switching Layer 3 Features ARP support, Access Control List (ACL) support, BOOTP support, Cable Diagnostics Function, Captive Portal, Class of Service (CoS), DHCP client, DHCP proxy, DHCP relay, DHCP server, DHCP snooping, DiffServ Code Point (DSCP) support, DiffServ support, DoS attack prevention, Dynamic ARP Inspection (DAI), Energy Efficient Ethernet, High Availability, ICMP Router Discovery Protocol (IRDP), IP Precedence, Internet Control Message Protocol (ICMP), Management Information Base (MIB), Multiple Spanning Tree Protocol (MSTP) support, Multiple VLAN Registration Protocol (MVRP), NTP time synchronization, Neighbor Discovery Protocol (NDP), Per-VLAN Spanning Tree Plus (PVST+), Quality of Service (QoS), RARP support, Rapid Spanning Tree Protocol (RSTP) support, Redundant trunk group (RTG), SNTP support, Secure Copy (SCP), Smoothed Deficit Weighted Round Robin (SDWRR), Spanning Tree Protocol (STP) support, Strict Priority (SP), VLAN Spanning Tree	Each	02
16	ManufacturerJuniper Networks, Inc.  NETWORKING  MAC Address Table Size 16000 entries Subcategory network hubs and switches Subtype Gigabit Ethernet Form Factor desktop, rack-mountable Type Switch Advanced Switching Layer 3 Features ARP support, Access Control List (ACL) support, BOOTP support, Cable Diagnostics Function, Captive Portal, Class of Service (CoS), DHCP client, DHCP proxy, DHCP relay, DHCP server, DHCP snooping, DiffServ Code Point (DSCP) support, DiffServ support, DoS attack prevention, Dynamic ARP Inspection (DAI), Energy Efficient Ethernet, High Availability, ICMP Router Discovery Protocol (IRDP), IP Precedence, Internet Control Message Protocol (ICMP), Management Information Base (MIB), Multiple Spanning Tree Protocol (MSTP) support, Multiple VLAN Registration Protocol (MVRP), NTP time synchronization, Neighbor Discovery Protocol (NDP), Per-VLAN Spanning Tree Plus (PVST+), Quality of Service (QoS), RARP support, Rapid Spanning Tree Protocol (RSTP) support, Redundant trunk group (RTG), SNTP support, Secure Copy (SCP), Smoothed Deficit Weighted Round Robin (SDWRR), Spanning Tree	Each	02

			1
	and forward, system log, tagged VLAN, temperature sensor		
	Compliant Standards IEEE 802.1BR, IEEE 802.1D, IEEE 802.1Q,		
	IEEE 802.1ab (LLDP), IEEE 802.1ak, IEEE 802.1p, IEEE 802.1s,		
	IEEE 802.1w, IEEE 802.1x, IEEE 802.3, IEEE 802.3ab, IEEE		
	802.3ad (LACP), IEEE 802.3af, IEEE 802.3ah, IEEE 802.3at, IEEE		
	802.3u, IEEE 802.3z		
	Jumbo Frame Support 9216 bytes		
	Manageable Yes		
	Routing Protocol CIDR, OSPFv3, RIP-1, RIP-2, RIPng, static IPv4		
	routing, static IPv6 routing		
	Remote Management Protocol CLI, HTTP, HTTPS, RMON 1,		
	RMON 2, RMON 3, RMON 9, SNMP, SNMP 1, SNMP 2c, SNMP 3,		
	SSH, TFTP, Telnet		
	Power Over Ethernet (PoE) PoE+		
	PORTS		
	Type 10/100/1000 (PoE+)		
	Qty 24		
	PERFORMANCE		
	Type switching capacity, throughput		
	Value 128 Gbps, 95 Mpps		
	PORTS (2ND)		
	Type Gigabit SFP / 10 Gigabit SFP+		
	Qty 4		
	CAPACITY		
	Type ACL entries, ARP entries, IPv4 hosts, IPv4 routes (Multicast),		
	IPv4 routes (Unicast), IPv6 hosts, IPv6 routes (Multicast), IPv6 routes		
	(Unicast), LAG groups, Multiple Spanning Tree Protocol instances,		
	QoS hardware queues per port, VLAN Spanning Tree Protocol		
	instances, active VLANs, maximum member ports per LAG.		
	1 Year Hardware Warranty		
	Network Switch 24Port, 10/100/1000Base-T, 4 x 1 1/10GbE,		
	SFP/SFP+ Better than or		
	Equivalent to Juniper Networks EX2300-24T		
	1 <del>-</del> -		
	Hardware Specifications : Switching Engine Model Store and		
	forward		
	DRAM 2 GB		
	Flash 2 GB		
	CPU 1.25GHz ARM CPU		
	GbE port density per system 28 (24 host ports + four-port SFP/SFP+		
	uplinks)		
17	Supported Optics	Each	02
	10/100/1000BASE-T connector type RJ-45		
	GbE SFP optic/connector type: RJ-45, or LC SFP fiber supporting		
	1000BASE-T SFP, SX (multimode), LX (singlemode), or LH (single-		
	mode)		
	Physical Layer		
	Physical port redundancy: Redundant trunk group (RTG)		
	Cable diagnostics for detecting cable breaks and shorts		
	Auto MDI/MDIX (medium-dependent interface/mediumdependent		
	interface crossover) support		
	Port speed downshift/setting maximum advertised speed on		
1	10/100/1000BASE-T ports		
1	Digital optical monitoring for optical ports		
			1

Packet-Switching Capacities (Maximum with 64-Byte Packets) 128

**Gbps** 

## **Additional Feature Specifications:**

Layer 2/Layer 3 Throughput (Mpps) (Maximum with 64 Byte

Packets)

95 Mpps (wire speed)

## **Layer 2 Features**

Maximum MAC addresses in hardware: 16,000

Jumbo frames: 9216 bytes

Number of VLANs supported: 4093 Range of possible VLAN IDs: 1-4094

Port-based VLAN MAC-based VLAN

Voice VLAN

IEEE 802.1ak: Multiple VLAN Registration Protocol (MVRP) Compatible with Per-VLAN Spanning Tree Plus (PVST+)

RVI (Routed VLAN Interface)

IEEE 802.1AB: Link Layer Discovery Protocol (LLDP)

LLDP-MED with VoIP integration IEEE 802.1ad Q-in-Q tunneling

IEEE 802.1br: Bridge Port Extension

IEEE 802.1D: Spanning Tree Protocol

IEEE 802.1p: CoS prioritization

IEEE 802.1Q: VLAN tagging

IEEE 802.1Q-in-Q: VLAN Stacking

IEEE 802.1s: Multiple Spanning Tree Protocol (MSTP)

Number of MST instances supported: 64 Number of VSTP instances supported: 253

IEEE 802.1w: Rapid Spanning Tree Protocol (RSTP)

IEEE 802.1X: Port Access Control

IEEE 802.3: 10BASE-T IEEE 802.3u: 100BASE-T IEEE 802.3ab: 1000BASE-T IEEE 802.3z: 1000BASE-X

IEEE 802.3af: PoE IEEE 802.3at: PoE+

IEEE 802.3ad: Link Aggregation Control Protocol (LACP)

IEEE 802.3ah: Ethernet in the First Mile

#### **Laver 3 Features: IPv4**

Maximum number of ARP entries: 1,500

Maximum number of IPv4 unicast routes in hardware: 512 prefixes;

4,096 host routes

Maximum number of IPv4 multicast routes in hardware: 2,048

groups; 2,048 multicast routes

Routing Protocols: RIP v1/v2, OSPF v1/v2

Static routing Routing policy

Bidirectional Forwarding Detection (BFD) with slow timers (> 3 sec)

IP directed broadcast Layer 3 Features: IPv6

Maximum number of Neighbor Discovery (ND) entries: 1,500 Maximum number of IPv6 unicast routes in hardware: 512 prefixes;

2,048 host routes

Maximum number of IPv6 multicast routes in hardware: 1,024

groups; 1,024 multicast routes

Neighbor discovery, system logging, Telnet, SSH, SNMP, Network

Time Protocol (NTP), Domain Name System (DNS)

Static routing

Routing protocols: RIPng, OSPF v3

Access control lists (ACLs) (Junos OS firewall filters)

Port-based ACL (PACL)—256 ingress; 256 egress

VLAN-based ACL (VACL)—256 ingress; 256 egress

Router-based ACL (RACL)—256 ingress; 512 egress

ACL entries (ACE) in hardware per system: 2,000

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

Access Security

MAC limiting

Allowed MAC addresses—configurable per port

Sticky MAC (persistent MAC address learning)

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 ACL based on RADIUS attributes

802.1X Supported EAP types: Message Digest 5 (MD5), Transport

Layer Security (TLS), Tunneled Transport Layer Security (TTLS),

Protected Extensible Authentication Protocol (PEAP)

IPv6 RA Guard

IPv6 Neighbor Discovery Inspection

Captive Portal

Static MAC authentication

**MAC-RADIUS** 

Control plane DoS protection

Fallback authentication

Trusted Network Connect (TNC) certified

High Availability

Link Aggregation

802.3ad (LACP) support:

Number of LAGs supported: 128

Maximum number of ports per LAG: 8

Tagged ports support in LAG

Uplink Failure Detection (UFD)

Quality of Service (QoS)

Layer 2 QoS

Layer 3 QoS

Ingress policing: one-rate two-color; two-rate three-color markers

Hardware queues per port: 8

Scheduling methods (egress): Strict Priority (SP), shaped deficit weighted round-robin (SDWRR)

802.1p, DSCP /IP precedence trust and marking

L2-L4 classification criteria: Interface, MAC address, Ethertype, 802.1p, VLAN, IP address, DSCP/IP precedence, TCP/UDP port numbers

Congestion avoidance capabilities: Tail drop and WRED

Multicast

IGMP snooping entries: 2,000

IGMP: v1, v2, v3 IGMP snooping

PIM-SM, PIM-SSM, PIM-DM

Services and Manageability

Junos OS CLI

Web interface (J-Web)

Out-of-band management: Serial, 10/100BASE-T Ethernet

ASCII configuration Rescue configuration Configuration rollback

Image rollback

Element management tools: Junos Space Network Management

Platform

Simple Network Management Protocol (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

**RADIUS** authentication

TACACS+ authentication

SSHv2

Secure copy

HTTP/HTTPs

DNS resolver

System log logging

Temperature sensor

Configuration backup via FTP/secure copy

Troubleshooting

Debugging: CLI via console, telnet, or SSH

Diagnostics: Show and debug command statistics

Traffic mirroring (port)

Traffic mirroring (VLAN)

ACL-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		
ir tools. Extended ping and trace		
RUCKUS Zone Director 1200 Wireless Access Point Integration License	Each	26
DSLR Camera 26 Mega Pixel With Accessories Image Sensor Type : Approx. 35.9 x 24.0 mm CMOS Effective Pixels : Approx. 26.2 megapixels Aspect Ratio : 3:2 Low-Pass Filter: Built in/Fixed Sensor Cleaning : EOS integrated cleaning system Colour Filter Type Primary Colour Processor Type: DIGIC 7 Lens Mount: Lens 24_105mm L2 Lens 24_70mm EF (excludes EF-S, EF-M lenses) Focal Length : Equivalent to 1.0x the focal length of the lens Image Stabilisation : Optical Image Stabilizer on compatible lens Movie: In-camera 5-axis Digital IS available.1  LCD Monitor Type:Touch screen Vari angle 7.7cm (3.0") 3:2 Clear View II TFT, approx. 1040K dots Coverage Flash Modes:E-TTL II Auto Flash, Metered Manual X-sync:1/180 sec Flash Exposure Compensation +/- 3EV in 1/2 or 1/3 increments  Long exposure noise reduction High ISO speed noise reduction (4 settings + Multi Shot Noise Reduction) Interfaces Computer:Hi-Speed USB (USB 2.0) Wifi: Wi-Fi (2.4GHz) Channels: IEEE802.11b, IEEE802.11g, IEEE802.11n17 Wi-Fi Security: Camera Access Point: WPA2-PSK with AES encryption or open  Bluetooth:Bluetooth Specification Version 4.1 compliant (Bluetooth low energy technology)18 Other: HDMI output (Type-C), External microphone (3.5 mm Stereo mini jack) Storage Type: SD, SDHC or SDXC (UHS-I) card	Each	01
	RUCKUS Zone Director 1200 Wireless Access Point Integration License  DSLR Camera 26 Mega Pixel With Accessories Image Sensor Type : Approx. 35.9 x 24.0 mm CMOS Effective Pixels : Approx. 26.2 megapixels Aspect Ratio :3:2 Low-Pass Filter: Built in/Fixed Sensor Cleaning :EOS integrated cleaning system Colour Filter Type Primary Colour Processor Type: DIGIC 7 Lens Mount: Lens 24_105mm L2 Lens 24_70mm EF (excludes EF-S, EF-M lenses) Focal Length :Equivalent to 1.0x the focal length of the lens Image Stabilisation :Optical Image Stabilizer on compatible lens Movie: In-camera 5-axis Digital IS available.1  LCD Monitor Type:Touch screen Vari angle 7.7cm (3.0") 3:2 Clear View II TFT, approx. 1040K dots Coverage Flash Modes:E-TTL II Auto Flash, Metered Manual X-sync:1/180 sec Flash Exposure Compensation +/- 3EV in 1/2 or 1/3 increments  Long exposure noise reduction High ISO speed noise reduction (4 settings + Multi Shot Noise Reduction) Interfaces Computer:Hi-Speed USB (USB 2.0) Wifi: Wi-Fi (2.4GHz) Channels: IEEE802.11b, IEEE802.11g, IEEE802.11n17 Wi-Fi Security: Camera Access Point: WPA2-PSK with AES encryption or open  Bluetooth:Bluetooth Specification Version 4.1 compliant (Bluetooth low energy technology)18 Other: HDMI output (Type-C), External microphone (3.5 mm Stereo mini jack)	RUCKUS Zone Director 1200 Wireless Access Point Integration License  BSLR Camera 26 Mega Pixel With Accessories Image Sensor Type: Approx. 35.9 x 24.0 mm CMOS Effective Pixels: Approx. 26.2 megapixels Aspect Ratio: 3:2 Low-Pass Filter: Built in/Fixed Sensor Cleaning: EOS integrated cleaning system Colour Filter Type Primary Colour Processor Type: DIGIC 7 Lens Mount: Lens 24_105mm L2 Lens 24_70mm Ef (excludes EF-S, EF-M lenses) Focal Length: Equivalent to 1.0x the focal length of the lens Image Stabilisation: Optical Image Stabilizer on compatible lens Movie: In-camera 5-axis Digital IS available.1  LCD Monitor Type: Touch screen Vari angle 7.7cm (3.0") 3:2 Clear View II TFT, approx. 1040K dots Coverage Flash Modes:E-TTL II Auto Flash, Metered Manual X-sync:1/180 sec Flash Exposure Compensation +/- 3EV in 1/2 or 1/3 increments  Long exposure noise reduction High ISO speed noise reduction (4 settings + Multi Shot Noise Reduction) Interfaces Computer:Hi-Speed USB (USB 2.0) Wif: Wi-Fi (2.4GHz) Channels: IEEE802.11b, IEEE802.11g, IEEE802.11n17 Wi-Fi Security: Camera Access Point: WPA2-PSK with AES encryption or open  Bluetooth:Bluetooth Specification Version 4.1 compliant (Bluetooth low energy technology)18 Other: HDMI output (Type-C), External microphone (3.5 mm Stereo mini jack) Storage

Accessories required:	
1x Professional Tripod Camera Stand	
2x 32GB SD Card Ultra High Speed	
1x Flash Gun Chargeable	
1x Flash Gun Extra Battery	
1 Year Hardware Warranty	

## **Procurement of IT Equipment for ICT Department**

# (Bid Form)

Sr. No.	Item Name	Unit of Measure	Total Qty.	Price per Item (inclusive of all taxes and Shipment charges)	Total Amount (inclusive of all taxes and Shipment charges)
01	Network Video Recorder, 64 Channel	Each	01		
02	Network Video Recorder, 32 Channel	Each	01		
03	Network Video Recorder, 8 Channel	Each	01		
04	2TB SATA hard disk	Each	01		
05	UPS, Capacity 1 KVA	Each	04		
06	External Battery 180 Amp 21 plates	Each	04		
07	CCTV 4MP Fish Eye Camera	Each	02		
08	CCTV Bullet Network Camera  4MP	Each	16		
09	Android LED TV 50"	Each	04		
10	8TB SATA Hard Drive	Each	06		
11	Network Rack 42U	Each	05		

Sr. No.	Item Name	Unit of Measure	Total Qty.	Price per Item (inclusive of all taxes and Shipment charges)	Total Amount (inclusive of all taxes and Shipment charges)
12	RFID CARD Printer	Each	02		
13	32GB DDR4-2666 ECC RDIMM RAM for Dell Server	Each	06		
14	VOIP / SIP Phone	Each	50		
15	Network Switch 48 Port, 10/100/1000Base-T, 4 x 1 1/10GbE, SFP/SFP+ Better than or Equivalent to Juniper EX 2300 48 Port	Each	04		
16	Network Switch 24Port PoE+, 10/100/1000Base-T, 4 x 1 1/10GbE, SFP/SFP+ Better than or Equivalent to Juniper Networks EX2300-24P PoE+	Each	02		
17	Network Switch 24Port, 10/100/1000Base-T, 4 x 1 1/10GbE, SFP/SFP+ Better than or Equivalent to Juniper Networks EX2300-24T	Each	02		
18	RUCKUS Zone Director 1200 Wireless Access Point Integration License	Each	26		
19	DSLR Camera 26 Mega Pixel With Accessories	Each	01		
Total	TOTAL:				

## **Company Evaluation Criteria**

- i. Profile of company complete in all respect
- ii. List of Previous/Current customers, Purchase Orders of related Services with contact person and telephone/fax numbers.
- iii. Copy of National Tax Registration Certificate or Copy of Online Taxpayer Verification
- iv. Copy of Sales Tax Registration Certificate or Copy of Online Active Taxpayer
- v. Bank letter of financial standing /Bank Statement
- vi. An affidavit on Rs 100/- Stamp Paper issued after date of publishing of tender which illustrate that currently they are not black listed or de-barred by any Government/Semi-Government Department to participate in bidding. Failure to submit such affidavit may lead to disqualification.
- vii. Detailed item specifications or Services matched corresponding to the BOQ as given at **Annex 'A'**
- viii. Proposed delivery, response time, plan for rendering service
- ix. Signed and Stamped Complete Tender document
- x. Bank Draft of the Earnest Money

<u>Note:</u> Basic Evaluation Criteria is mandatory to fulfill to qualify for detailed evaluation. Failure to meet and submit all documents related to basic evaluation may lead to disqualification.

## 2. Detailed Evaluation

(Minimum Passing Score Required is 65 Points for qualifying to Financial Opening)

## DETAILED EVALUATION CRITERIA FOR TENDER

## Specifications are available at Annex-A

Sr. No	Item Name and Description	Marks	Max Marks
1	Past Performance/Experience of the Bidder (Reg. with GST/NTN) Attach copy of all supporting documents		10
1.1	1 – 3 year experience	2	
1.2	4 – 8 year experience	4	
1.3	9 – 15 years' experience	6	
1.4	Above 15	10	
2	Relevant Experience (Attach copy of all supporting documents)		10
2.1	1 – 5 years' experience	3	
2.2	6 – 10 years' experience	6	
2.3	11 and above year experience	10	
3	Financial Position/ Status (Attach copy of all supporting documents)		10
3.1	Last sales tax paid Form	4	
3.2	Bank Certificate (satisfactory) attach original bank certificate indicating financial status	2	
3.3	Statement Worth (Min 2 m) attach all supporting documents	4	
4	After Sale Services Available (Attach copy of all supporting documents)		10
_	Technical Evaluation of quoted items (Attach copy of all		
5	supporting documents)		60
5.1	Specification matched as provided in Annex-A	30	
5.2	Literature in printed shape attached	2.5	
5.3	Reliability	2.5	
5.4	Delivery schedule as per need	5	
5.5 5.6	List of clients / where this equipment delivered  Satisfactory letter from clients in favour of such againment	5	
5.7	Satisfactory letter from clients in favour of such equipment Guarantee / Warranty (as the case may be)	5	
5.8	Provision of Training to concerned user	2.5	
5.9	Free Installation (if required) as per requirement	2.5	
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