CENTRAL POWER PURCHASING AGENCY (GUARANTEE) LIMITED (CPPA-G)

Tender

For Procurement of Data Center Equipment (Servers, Storage Area Network, Network Switches, Firewalls, Virtualization Software, UPS etc.)

Document No. ERP-04/09-2016

OFFICE OF CEO
CPPA-G, 6th Floor, Shaheed-e-Millat Secretariat, Jinnah Avenue, Blue Area, Islamabad Tel: 051-9213616, Fax # 051-9213617

BID SCHEDULE FOR TENDER NO. ERP-04/09-2016

Description of Work

CPPA-G invites sealed quotations under two envelop (i.e. technical and financial bids separately) from the potential dealing firms for the supply of Data Center Equipment (Servers, Storage Area Network, Network Switches, Firewalls, Virtualization Software, UPS etc.). During warranty period, the successful bidder will be responsible for repair/replacement of faulty equipment inclusive of labor charges.

Bid Timings & Validity

Pre-Bid Conference at 10:00 A.M on **21st September, 2016**
Bids will be closed at 02:00 P.M on **30th September, 2016**
Technical Bids will be opened at 02:30 P.M on **30th September, 2016**
Tender shall remain valid for **180 days** after opening date

1. SCOPE OF WORK

Following requirements define the scope of work for this Tender:

1. It is a turnkey project and it is required that the submitted bid will cover all services, devices or items, mentioned or unmentioned that are required for completion of this project as per specification and accepted standard / best practices required for such projects.

2. The selected bidder will be responsible for the supply, installation, Integration, testing and commissioning of all equipment and services, provided against this Tender.

3. Selected bidder must ensure that the supplied equipment is fully operational, new and performs properly and meet Tender Technical Specification.

4. At the time of installation and commissioning, selected bidder must provide comprehensive documentation of system/equipment deployed including system manuals, training and training manuals, etc.

5. Standard warranty & support as offered by manufacturer or Three (3) years (whichever is higher) with parts and labor.

6. Detailed BOQ is placed at Annexure "A".

Note:

This tender is governed by General Conditions of Contract for purchase by WAPDA dated 12.8.1984 (amended to date) and latest purchase procedure PPRA-2004 (amended to-date).

2. INSTRUCTIONS TO BIDDERS

2.1 The quoted FCS prices, exclusive applicable percentage of taxes shall be firm and final and not subject to escalation for any reason whatsoever. The conditional prices shall not be accepted.

2.2 All proposals and price shall remain valid for a period of 180 days from the closing date of the submission of the proposal. However, the responding organization is encouraged to state a longer

period of validity for the proposal.

2.3 Conditional Bids / Rates offered in other currencies except Pak Rupees will not be entertained / accepted.

2.4 Bid submission / tender opening date & timing shall be observed strictly.

2.5 The bidder must quote for complete lot; failure to meet will be disqualified.

2.6 The bidders will submit Bid Bond equal to 2% of the total quoted (inclusive GST) value in the form of Bank Draft or CDR, WAPDA Bearer Bond/Non-Judicial Stamp Paper in favor of Central Power Purchasing Agency (Guarantee) Limited.

2.7 Maximum of 8 hours response time and one business working day resolution time for all components including replacement of the whole unit at his own expense.

2.8 The bidder must provide mechanism to ensure conformity in accordance with clause 1.7

2.9 In case of International Warranties, the local authorized dealers should mention their service and warranty setup, details of qualified engineers, etc.

2.10 The bidder is required to submit the compliance sheet for complete LOT in the following manner:

- FC (Fully Compliance)
- Non Compliance

2.11 The Network (Routers, Switches and Firewall) should be from the same Principal to avoid any integration issues.

2.12 The vendor is responsible for the installation of Configuration Management Software, Server Operating System, configuration of Virtualization software, routers, switches, firewalls, SAN configuration and providing training for the efficient configuration, operation and management of the same.

2.13 Please mention the country of origin / manufacturing / assembly of the quoted brand / model.

2.14 The participating company should be partner with brand (Servers & Storage, Network Equipment) for the last 5 years minimum, documentary proof must be presented for each item (Servers, Network Equipment) through Principal.

2.15 The participating company should have experience of at least (05) similar nature projects (Servers & Storage, Network Equipment) in the last three years in value, size and nature. The participating company should provide the details of experience in similar projects according to the following format:

Sr #	**Nature of Project (small brief)**	**Value of Project**	**Size of project (Ex. No. of Servers, SAN delivered & configured etc.)**	**Name of the customer with contact person & contact details**

2.16 The bidder will provided a comprehensive Training, Support and Knowledge Transfer Plan for the IT Technical Staff.

2.17 Bids deviating from above terms **and conditions will be treated as non-responsive.**

3. SPECIAL CONDITIONS

3.1 The unit price excludes the present applicable duties and taxes. In case however the present

applicable duties and taxes are increased or new taxes/duties are imposed by the Government on finished goo ds, during the currency of the contract, the same will be paid extra on production of documentary evidence. In case of decrease in duties/taxes by Government the prices will be decreased accordingly.

3.2 The bidder will not be eligible if the material offered is Non Compliance with the specifications as given in the tender document. However higher specifications may be considered.

4. GENERAL CONDITIONS

4.1 Only one FCS rate should be quoted for supply of goods and services at (Consignee Store) or the address mentioned in purchase order. The rate shall be quoted for full quantity.

4.2 Successful bidder will have to submit a performance security in the shape of Bank Draft/Bank Guarantee from a schedule bank of Pakistan on the prescribed form valid for till the completion of project from the receipt of last consignment, equal to 5% of the total value (inclusive GST). The Performance security shall be furnished with the acceptance of Letter of Intent and before the formal issuance of the Purchase Order.

4.3 CPPA-G reserves the right to increase/decrease the quantities up to 15% at the time of award/during the currency of contract.

4.4 CPPA-G also reserves the right to scrap this tender as per PPRA rules, 2004 (amended to date).

4.5 After opening the tender if it is established that the bidders have quoted a single price then CPPA-G reserves the right to scrap the tender and invite fresh tender or to take any decision as deemed fit for CPPA-G.

5. DELIVERY PERIOD

100% material shall be delivered within 70 days and delivery schedule will be mentioned in the letter of intent issued to the successful bidders.

Delivery period is the essence of the Contract and delivery must be completed no later than the dates specified. The terms Delivery Date shall mean the date of 1st day of inspection or 15th days of inspection call whichever is earlier, shall be reckoned as date of delivery of stores to consignee provided the goods accepted for supply have been delivered within 20 days of issue of inspection certificate subject to the condition that the supplier/manufacturer offers the material for inspection at least 15-days prior to the due date and the offer is not rejected due to being a fake call or material not conforming to the specification.

6. INSPECTION

Inspection of the material will be carried out by Project Director CPPA-G or his/her authorized representative. Notice in writing shall have to be given to the Inspecting Officer by bidder under intimation to this office when the work against the order is completed and ready for inspection. All reasonable facilities as provided in the specifications or followed by the Industry or Trade in General shall have to be afforded to the Inspecting Officer by bidder at bidder's expense for carrying out inspection.

7. PAYMENT

The 100% Payment (including GST) will be made by Chief Financial Officer CPPA-G on production of following documents:

i) Bill in triplicate for 100% claim, approved by the Director General (IT) CPPA-G and pre-audited by office of Chief Financial Officer CPPA-G.
ii) Delivery Challan and GRN duly stamped and signed by the consignee
iii) Warranty Certificate
iv) Confirmation of Director General (IT) about acceptance of Performance Bond in case of the first claim.
v) Inspection Certificate issued by Inspecting Officer CPPA-G.
vi) GST amount will be deducted at the time of making payment as per FBR rules.
vii) Professional Tax Paid Certificate by the firm.
viii) The bidder in its invoices shall also give an undertaking that in case of omission of any deductible amount, CPPA-G's claim at any later stage (through pre-audit or post audit) shall be acceptable to bidder.
ix) While raising invoice for the material supplied the firm shall vividly mention the account number as well as the name of the bank and branch enabling Chief Financial Officer's Office to release payment thereof accordingly.
x) Non-payment certificate

The payment of Sales Tax (if applicable) on production of sales tax return cum payment challan. In case of lump sum sales tax payment, firm shall also submit an affidavit on non-judicial paper that the challan includes the amount of sales tax for supply of the mentioned period services.

8. GENERAL INSTRUCTIONS FOR THE BIDDERS

The bidders are required to carefully note the following instructions, terms & conditions etc:

7.1 A Bid not submitted in conformity with the specifications/terms & conditions shall not be considered by CPPA-G.

7.2 CPPA-G reserves the right to modify the bidding documents at any time prior to the deadline for submission of bids, on the request of the prospective bidders for any clarification or at its own initiative, for any reason. This amendment shall constitute part of the biding documents. In order to afford the prospective bidders a reasonable time to take the amendments into account in preparing its bid, CPPA-G may at its discretion extend the deadline.

7.3 The bidder shall prepare Technical and Financial Bid separately, clearly marking each as "TECHNICAL" and "FINANCIAL". The bidder shall seal the Technical and financial bids separately in an INNER and an OUTER envelope, duly marking the envelopes as "TECHNICAL" and "FINANCIAL".

7.4 The bids will be evaluated in two steps. Technical envelop will be opened and evaluated at first stage and financial bids will be opened only for those companies who will technically qualify. Technically qualifying marks are 70%. Technically non responsive bidder's financial envelop will be returned un-opened. The lowest financial bid of technically responsive bidders will be accepted.

9. WARRANTY

The bidder will furnish a Warranty Certificate of each item, certifying that the goods or services supplied conform exactly to the specifications required and are brand new and that in the event of the material being found defective or not conforming to the Specifications/Particulars governing supply at the time of delivery and for a period for three years from the date of completion of supply, you will be held responsible for all losses and that the unacceptable goods shall be substituted with the acceptable goods at your expense and cost.

10. LATE BID

Bidder will be responsible for ensuring that his bid is submitted in accordance with the instructions stated herein. Any bid not submitted by the deadline prescribed for submission of bids will not be considered even if it becomes late as a result of circumstances beyond the Bidder's control.

11. AMENDMENT OF BID SCHEDULE

a) At any time prior to the deadline for submission of bids, the purchaser may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder, modify the Bidding Documents by amendment.

b) The amendment will be notified in writing or publish on CPPA-G's official website to all prospective bidders who have received the bid schedule/bidding documents and will be binding on them.

c) In order to afford prospective bidders reasonable time in which to take the amendment into account in preparing their bids, the purchaser may at its discretion extend the deadline for the submission of bids.

12. FAILURE AND TERMINATION

(A) If you fail to deliver the stores or any consignment thereof within the specified delivery period, the purchaser shall be entitled at his option either;

i) To recover from you liquidated damages levied at the rate of two percent (2%) per month or a fraction thereof, subject to a maximum of ten percent (10%) of the Contract Price, except;

   a) Where un-delivered stores hold up the use of other Stores, liquidated damages shall be levied on the total value of the Contract.

   b) The recovery of liquidated damages mentioned above can be effected from any payment due to you from any unit of CPPA-G/DISCOs/GENCOs/NTDC/WAPDA, or

ii) To purchase from elsewhere without notice to you at your risk and cost, the stores not delivered, without canceling the contract in respect of the consignment not yet due for delivery.

iii) To cancel the contract at your risk and cost;

In the event of action being taken under (ii) or (iii) above, bidder shall be liable for any loss which the purchaser may suffer on the account; but bidder shall not be entitled to any gain on repurchase made against the supply order.

(B) If during the course of execution of contract, bidder is black-listed by DISCOs/GENCOs/NTDC/WAPDA/CPPA-G, or any other Electric Supply Company, the purchaser may proceed with all or any of the actions detailed below:

i) To allow the contract to run its course till completed in accordance with the terms and conditions of Contract.
ii) To stop further supplies with or without financial repercussions;
iii) To cancel the contract with or without reservation or rights.

NOTE:

While determining liquidated damages the purchaser shall not consider any of the following circumstances, a cause under "FORCE MAJEURE" and shall not allow any relaxation in the liquidated damages on the account:-

i) Delay on the part of the contractor in the arrangement of raw materials.
ii) Defect or failure occurring to any machinery or equipment installed at the contractor works during the currency of the contract.

13. FORFEITURE OF SECURITY BOND/GUARANTEE (PERFORMANCE BOND)

CPPA-G will have the right to forfeit the security Bond/Guarantee (performance bond)

A. If the contractor:
   i. Fails to supply the goods within the time specified;
   ii. Commits any breach of contract;
   iii. Fails to account for the Import License issued on account of the purchase;
   iv. Fails to account for the raw material secured by the contractor against any license or permit issued on account of the Contracting Officer.
   v. Fails to return drawings, design or any material belonging to the contracting officer which was to be returned in good condition to the Contracting Officer after the successful termination of the contract.
   vi. For other reasons specified in the Purchase Order by the contracting officer for forfeiting the security deposit.

B. If the forfeiture of the security deposit does not compensate the contracting officer for losses suffered due to non-delivery or breach of contract for any other reasons, the Contracting Officer will have a right to forfeit other security deposits or to recover the same from any other security deposit made in favor of any other unit of DISCOs/GENCOs/NTDC/CPPA-G or from any money due to the Contractor from any unit of WAPDA/CPPA-G/DISCOs/GENCOs/NTDC.

14. COST OF BIDDING

The bidder shall bear all the costs associated with the preparation and submission of its bid, and the purchaser named in the Bid data sheet, hereinafter referred as "the purchaser" will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

15. CLARIFICATION OF BIDDING DOCUMENTS

A prospective bidder requiring any clarification of the bidding document may notify the purchaser in writing or by cable (hereinafter the term cable is deemed to include telex and facsimile) at the purchaser address indicated in the bid data sheet.

The purchaser will respond in writing to any request for clarification of the bidding documents which it receives not later than fifteen days from date of advertisement of tender.

16. LANGUAGE OF BID

The bid prepared by the bidder shall be written in the English, supporting documents and printed literature furnished by bidder may be in another language provided they are accompanied by accurate translation in English, for purpose of interpretation of the bid.

17. BID FORM

The Bidder shall complete the bid form and the appropriate price schedule furnished in the bidding document, indicating the goods or services to be supplied, a brief description of the goods or services, their country of origin, quantity and prices.

18. BID PRICES

The bidder shall indicate on the appropriate price schedule the unit price (where applicable) and total bid price of the goods it proposes to supply under the contract.

19. BID SECURITY

17.1 The bidder shall furnish, as part of its bid, a bid security in the amount specified in the bid data sheet.

17.2 The bid security is required to protect the purchaser against the risk of bidder's conduct which would warrant the security's forfeiture.

17.3 The bid security may be forfeited:

If a bidder;

a) Withdrawals its bid during the period of bid validity specified by the bidder on the bid form, or

b) Does not accept the correction of error or in case of a purchaser bidder, if the bidder fails

c) To sign the contract in accordance with the clause of contract or

d) To furnish performance security in accordance with clause of contract after issue of LOI

20. PERIOD OF VALIDITY OF BID

18.1 Bid shall remain valid for the period of 180 days from the date of bid submission prescribed by the purchaser. A bid valid for a shorter period shall be rejected by the purchaser as non responsive.

18.2 In exceptional circumstances, the purchaser may solicit the bidder's consent to an extension of the period of validity. The request and the responses thereto shall be made in writing.

21. PRELIMINARY EXAMINATION

19.1 The purchaser will examine the bid to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed and whether the bids are generally in

order.

19.2 Arithmetical error will be rectified on the following basis, if there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected. If there is a discrepancy between words and figures, the amount in words will prevail, if the suppliers not accept the correction of the errors, its bid will be rejected and its bid security may be forfeited.

22. FORCE MAJEURE

i. Notwithstanding the provision of GCC Clauses, the supplier shall not be liable for forfeiture of its performance security, liquidated damages, or termination for default if and to the extent that its delay in performance or other failure to perform its obligations under the contract is the result of an events of Force Majeure.

ii. For purpose of this clause "Force Majeure" means an event beyond the control of the supplier and not involving the supplier's fault or negligence and no restricted to act of the purchaser, epidemics, quarantine restrictions and freight embargoes.

iii. If a Force Majeure situation arises, the supplier shall continue to perform its obligations under the contract as far as is reasonably practical and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

23. CONSIGNEE

Manager (IT), IT Center, CPPA-G, Islamabad.

24. BASIS OF EVALUATION AND COMPARISON OF BID

The bids will be evaluated in two steps. Technical envelop will be opened and evaluated at first stage and financial bids will be opened only for those companies who will technically qualify. Technically qualifying marks are 70 %. Technically non responsive bidder's financial envelop will be returned un-opened.

25. Criteria of Technical Evaluation

Sr #	Evaluation Parameter For Bids	Total Points	Criteria
Total Marks = 700			
1	Staff Skill Set and Experience	100	Technical Certification from the Principle/Manufacturer = 20 Marks for each staff member of bidder
2	Company's Strength	50	Existence of Company Over 10 Years = 50 marks Existence of Company Over 05 Years = 30 marks The company must provide its financial audit report of at least five financial years completed with the stamped signatures of the Auditor
3	Office location	50	Main Office located at Islamabad = 50 marks

			Branch Office at Islamabad = 25 -marks
4	Response Time after sales and replacement	100	Within the Islamabad: Less than 4 hours response for support, then = 100 marks Less than 8 hours response for support, then = 50 marks
5	Backup Inventory	50	If more than 15% items of each quoted item available, =50 marks If between 10% to 15% items of each quoted item available,=30 marks If between 5% to 10% items of each quoted item available, = 10 marks If less than 5% items of each quoted item available, = 0 marks
6	Relationship with the Principle/ Partner	100	Manufacturer authorization Letter from Principal = 100 marks
7	Company Experience in terms of projects Qualification	100	Number of similar nature projects where (Only one project by one client will be considered). Documentary proof is required. • More than 10 projects = 50 marks • More than 05 but less than 10 projects = 35 marks
8	Principal Inventory Depot in Pakistan	100	In Islamabad/Lahore = 100 Marls In other than Islamabad = 50 Marks A certificate regarding its presence from principal should be presented.
9	Manufacturer local office in Pakistan including Pre-Sales and Sales staff	50	More than last 5 years = 50 Marks From 3 to 5 Years = 25 Marks Less than 3 Years = 0 Marks Documentary proof of principal is required.

26. SETTLEMENT OF DISPUTES

(i) If any dispute or difference of any kind whatsoever shall arise between the Purchaser and the Supplier in connection with or arising out the Contract, the parties shall make every effort to resolve amicably such dispute or difference by mutual consultation.

(ii) If after 30 days the parties have failed to resolve their dispute or difference by such mutual consultation, then either party the purchaser or the supplier may give notice to the other party of its intention to commence arbitration, as hereinafter provided as to the matter in dispute and no arbitration in respect of this matter may be commenced unless such notice is given.

a. Any dispute or difference in respect of which a notice of intention to commence arbitration has been given in accordance with this clause shall be finally settled by arbitration. Arbitration may be commence prior to or after delivery of the goods under the contract.

b. Arbitration proceeding shall be conducted in accordance with the rules of procedure specified in the

SCC.

c. Notwithstanding any reference to arbitration herein

i) The parties shall continue to perform their respective obligations under the contract unless they otherwise agree; and

ii) The purchaser shall pay the supplier any monies due to the supplier.

27. LAWS GOVERNING THE CONTRACT

a) The contract shall be governed by the Laws of Pakistan as amended from time to time.

b) Subject to the above conditions, a binding contract has been concluded with the issuance of this tender and that the provisions of this contract shall be binding on bidder, on bidder's assigns, executors, administrators and all those who have any interest pecuniary or otherwise in bidder concern.

Annexure "A"
Bill of Quantity (BOQ)

#	Item	Specification	Description	Qty.	Unit price w/o Taxes	Total price w/o Taxes	Delivery period
1	Server	The proposed servers must be based on 2U form factor architecture and have cable management arm.		4			
		Server should support dual Intel Xeon Series multicore processors					
		2.2 GHz E5-2650 v4/105W 12C/30MB / 2400MHz Qty=8					
		Server should support minimum eight front-accessible, hot-swappable SAS hard drives					
		Must Support both type of drives 15,000-RPM					
		600GB 12G SAS 15K RPM HDD , Qty=16					
		Right PCIe Riser Board (Riser 1) (x8 + GPU)					
		Should have Industry-standard double-data-rate 4 (DDR4) memory 32GB DDR4-2400-MHz LRDIMM/PC4-19200/quad rank/x4/1.2v or higher					
		24 DDR4 DIMM slots ,Support for DDR4 registered RDIMMs and LRDIMMs , Advanced error-correcting code (ECC) , Independent channel mode , Mirrored channel mode ,Lockstep channel mode					
		32 GB DDR4 , Qty = 8					
		16 GB DDR4, Qty = 2					
		Must support extended memory footprint for Vmware, Hyper-V etc.					
		Must support Green Data Center initiative by automatically putting processor and memory in the lowest available power state when required					
		Intel Quad Port 1Gb Adapter					
		650W V2 or higher AC Power Supply for 2U Servers (hot swappable)					
		Ball Bearing Rail Kit for rack servers					
		Heat sink for rack servers					
		12G SAS Modular Raid Controller					
		12Gbps SAS 1/2GB FBWC Cache module (Raid 0/1/5/6/10)					
		Integrated Baseboard Management Controller (BMC) ; IPMI 2.0 compliant for management and control ; One 10/100/1000 Ethernet out-of-band management interface ; CLI and WebGUI management tool for automated, lights-out management ; KVM					
		Should support OS Microsoft Windows Servers 2008 and above, RHL 6 and above, vMWare vSphere (esxi) 5.1, 5.5 and 6					
2	**Virtualization**	VMware vCenter Server 6 Standard for vSphere 6 (Per Instance) for 3 year		1			
		Production Support/Subscription VMware vCenter Server 6 Standard for vSphere 6 (Per Instance) for 3 year		1			
		VMware vSphere with Operations Management Enterprise		4			

		Plus 1 Processor for 3years					
		3 Year Support & Subscription Production		4			
3	**Storage Area Network**	Storage	At Least 10TB of usable Unified Storage	1			
		Controller	Redundant Controllers Installed, Minimum support up to 8 controllers or more				
		Controller cache	32 GB Controller cache (Combined or higher) – Base Controller				
		Host ports	Should have 4 x 1 Gbps iSCSI				
		Hard disks	Should support SSD, SAS, SATA/NL-SAS hot-swappable hard disks; Tier - 1 4 TB useable SAS Drives , Tier - II 6TB useable NL-SAS Drives , Scale out with at least 350 drives or higher				
		Compatibility	Should support Linux, Window, VMware, XenServer, and Hyper-V.				
		Raid Levels	RAID 10, RAID 5, RAID 6 etc.				
		Raid Level Migration	SAN Solution should support the RAID level migration on the fly without any downtime				
		Forward Compatibility:	The SAN must allow multiple controllers and generations of hardware to work on the same volumes at the same time.				
		Data Load Balancing:	The storage array should automatically perform data load balance and seamlessly spread data across multiple active storage arrays and controllers for maximum performance.				
		Automatic storage Tiering	Should have 3-tier automatic storage tiering function license3 tier: SSD, SAS, SATA/NL-SAS				
		QoS control	Should have LUN-based storage QoS function license to ensure the performance on application priority				
		Multipathing	Should support Multipathing Feature				
		Other features	Should include Snap shot, Remote Replication, Thin provisioning, Auto Tiering, feature Licenses for entire capacity.				
		Management and	Should have GUI-based				

		maintenance	management software with full functions, such as storage array and volume management software.				
		Monitoring Software	• Built-in monitoring and notifications provision through e-mail. • Syslog support, and comprehensive Simple Network Management Protocol (SNMP) monitoring and traps. • Provides historical data capturing. • Trend analysis, capacity. • I/O performance. • Network link through put. • Port through put, volume. • Enterprise SAN Management Tool capable of monitoring and managing multiple SAN's over LAN and WAN • Ability to view the status of individual SAN components such as drives, power supplies, and controllers, as well as the overall system				
4	**Router**	Form Factor	2 RU	4			
		Integrated WAN ports	2 PoE GE / SFP, 1 GE/ SFP				
		Performance	200 Mbps,Upgradable to 400 Mbps				
		Management port	1 GE (Integrated Out of Band)				
		Network Interface Modules (NIM)	3				
		Enhanced Services Module (SM-X)	2 single- or 1 double-wide				
		Integrated Services Card (ISC) slots	1				
		USB ports (type A)	2				
		Default/max Flash	4 GB / 16 GB				
		Default/max DRAM	4 GB / 16 GB				
		Power supply type	Internal: AC				
		Module online insertion and removal (OIR)	Yes				
		Server virtualization platform	2 core single-wide,4 core single-wide,4 core double-wide,6 core double-wide,8 core double-wide				
		Zone-based firewall and NAT services	VRF-Aware Firewall and Network Address Translation				

			(NAT)				
		IPSEC VPN services	FlexVPN, Easy VPN remote server, Enhanced Easy VPN, Dynamic Multipoint VPN (DMVPN), Group Encrypted Transport VPN (GET VPN), V3PN, MPLS VPN				
		Intrusion prevention	Yes				
		Network foundation protection	ACL, FPM, control plan protection, control plane policing (CoPP), QoS, role-based CLI access, source-based RTBH, uRPF, SSHv2				
		IPv4 routing protocols	RIP v1/v2, EIGRP, OSPF, BGP, PBR, PfR				
		Multicast routing protocols	PIM-SM, mroute (static route), and MLD				
		IPv6 routing protocols	EIGRP, RIP, OSPFv3, IS-IS, BGP and PBR				
		PoE support (wattage) without PoE boost	500 W				
		PoE support (wattage) with PoE boost	990 W				
		Intelligent Path Control	PfR				
		Network Contention Control	QoS, HQoS				
		Application Visibility	NBAR v2				
		WAN Optimization	ISR-WAAS,				
5	**Firewall**	Maximum Throughput: Application Control (AVC)	500 Mbps	2			
		Maximum Throughput: Application Control (AVC) and IPS	250 Mbps				
		Sizing Throughput [440 byte HTTP]2 Application Control (AVC) or IPS	150 Mbps				
		Maximum concurrent sessions	250,000				
		Maximum New Connections per second	15000				
		IPsec VPN Peers	250				
		Premium AnyConnect VPN Peers(Included/Maximum)	2/250				
		Concurrent Connections	100000				
		New Connections/Second	15000				
		Virtual Interfaces (VLANs)	100				
		High Availability	Active/Active and Active/Standby				
		Expansion Slot	1 interface card				
		User-Accessible Flash Slot	No				

		Memory	4 GB				
		Inspection throughput	1 Gbps				
		Multiprotocol firewall throughput	500 Mbps				
		VPN throughput (3DES/AES)	200 Mbps				
		Acoustic Noise	64.2 dBa max				
		Temperature	-13 to 158ºF (-25 to 70ºC)				
		Relative Humidity	10 to 90 percent noncondensing				
		AC Range Line Voltage	100 to 240 VAC				
		AC Normal Line Voltage	100 to 240 VAC				
		Steady State	65W				
		Maximum Peak	70W				
		Maximum Heat Dissipation	239 BTU/hr				
		Form Factor	1 RU, 19-in. rack-mountable				
6	**Switch (Core - 24 Ports)**	enclosure type	Rack-mountable - 1U	4			
		10/100/1000 or SFP or SFP+ Ports	24 1/10G				
		AC Power Supply	715 WAC				
		Available PoE Power	630W				
		StackWise-480	Yes				
		StackPower	Yes				
		Jumbo frame	9198 bytes				
		Total number of IPv4 routes (ARP plus learned routes)	24000				
		Total number of MAC addresses	32000				
		Network management Interface	Ethernet management port: RJ-45 connectors, 4-pair Cat-5 UTP cabling				
		Switching Capacity	640 Gbps				
		Stack Bandwidth	480Gbps				
		Forwarding Performance	454.55Mpps				
		FNF entries	48,000 flows				
		Maximum VLANs IDs	4000				
		MAC Address Table Size	32K				
		CPU	Multicore CPU				
		RAM	4 G				
		Flash Memory	4 G				
		Total switched virtual interfaces (SVIs)	1000				
		Wireless bandwidth per switch	20 Gbps				
		Expansion Slot(s)	1 network module slot and 1 power redundant slot				
		Stack Power Cable (recommended)	CAB-SPWR-30CM stack power cable with a 30CM length				
		Power supply	PWR-C1-715WAC				
		Power Redundancy	Optional				
		Voltage range (Auto)	100V-240V				

		Power Consumption of standalone(in Watts)	205.5 (Max)				
		AC power supply Operating environment and altitude	-5ºC to +45ºC				
		Relative humidity	10% to 95%, noncondensing				
		Features	IP Services feature set, RPS Support ; Jumbo Frames ; VLANS ;Voice Vlan ;VTPv2 ;CDPv2 ;LLDP ; 802.3ad LACP and PAgP ; PVST/PVST+ ; 802.1 W/802.1S ;Port Fast/Uplink Fast ;Dynamic Trunking Protocol (DTP) ; port CoS Trust and Override ; Trusted Boundary ; ACL Classification ;ingress Policing ;Auto QoS ; Per VLAN policies ; 802.1p queues ;Scheduling ; Priority Queuing ; Configure CoS Priority Queues ;Configure CoS Priority Queues ;Configure Queue Weights ; Configure Buffers and Thresholds ;Class & Policy Maps ; Modify CoS and DSCP Mapping ; Weighted Tail Drop ;IGMPv1,v2,v3 and MLDv1, v2 ; DHCP server ;DSCP transparency ; HSRP, VRRP ; RIPv1, v2 EIGRP stub, PIM stub, OSPF stub ; IPV6 management				
		Advanced Network security	Port security ; DHCP snooping ;Dynamic ARP inspection (DAI) ; IP source guard ;The Unicast Reverse Path Forwarding (uRPF) ; Bidirectional data support on a SPAN ; User authentication ; Private VLAN ;Router and VLAN ACLs ;complete identity and security ; Multidomain authentication ; MAC address notification ; IGMP filtering ; security VLAN ACL ; Secure Shell (SSH) Protocol, Kerberos, and Simple Network Management Protocol Version 3 (SNMPv3) ; Port-based ACLs ; TrustSec SXP ; IEEE				

			802.1ae ; TACACS+ and RADIUS authentication ; standard and extended IP security router ACLs ; Bridge protocol data unit (BPDU) Guard ; Spanning Tree Root Guard (STRG) ; Wireless end-to-end security				
7	**Switch (Access 24 ports)**	Enclosure type	Rack-mountable - 1U	3			
		10/100/1000 Ethernet Ports	24				
		Uplinks	4 SFP				
		Feature Set	LAN Base				
		PoE+ Power	370W				
		Network management Interface	10/100 Mbps Ethernet (RJ-45)				
		Forwarding bandwidth(Gbps)	108Gbps				
		Maximum stacking number	8				
		Stack Bandwidth	80G				
		Forwarding Performance	71.4Mpps				
		Switching bandwidth	216Gbps				
		Maximum active VLANs	1023				
		MAC Address Table Size	16K (default)				
		RAM	512 MB				
		Flash Memory	128 MB				
		Status Indicators	Per-port status: Link integrity, disabled, activity, speed, and full duplex System status: System, RPS, Stack link status, link duplex, PoE, and link speed				
		Console ports	USB (Type-B), Ethernet (RJ-45)				
		Stacking cable	Optional				
		Power Redundancy	Option (PWR-RPS2300)				
		Voltage range (Auto)	110V-240V				
		Power Consumption Operational	0.039KVA				
		Rack Mounting Kit	Mandatory				
		MTBF in hours	622350				
		Compliant Standards	; IEEE 802.1D Spanning Tree Protocol ; IEEE 802.1p CoS Prioritization ; IEEE 802.1Q VLAN ; IEEE 802.1s ; IEEE 802.1w ; IEEE 802.1X ; IEEE 802.1ab (LLDP) ; IEEE 802.3ad ; IEEE 802.3af and IEEE 802.3at ; IEEE 802.3ah (100BASE-X single/multimode fiber only) ; IEEE 802.3x full duplex on				

			10BASE-T, 100BASE-TX, and 1000BASE-T ports				
8	**Switch (Access 48 ports)**	Enclosure type	Rack-mountable - 1U	2			
		10/100/1000 Ethernet Ports	48				
		Uplinks	4 SFP				
		Feature Set	LAN Base				
		PoE+ Power	370W				
		Network management Interface	10/100 Mbps Ethernet (RJ-45)				
		Forwarding bandwidth(Gbps)	108Gbps				
		Maximum stacking number	8				
		Stack Bandwidth	80G				
		Forwarding Performance	107.1Mpps				
		Switching bandwidth	216Gbps				
		Maximum active VLANs	1023				
		MAC Address Table Size	16K (default)				
		RAM	512 MB				
		Flash Memory	128 MB				
		Status Indicators	Per-port status: Link integrity, disabled, activity, speed, and full duplex System status: System, RPS, Stack link status, link duplex, PoE, and link speed				
		Console ports	USB (Type-B), Ethernet (RJ-45)				
		Stacking cable	Optional				
		Power Redundancy	Option (PWR-RPS2300)				
		Voltage range (Auto)	110V-240V				
		Power Consumption Operational	0.039KVA				
		Rack Mounting Kit	Mandatory				
		MTBF in hours	476560				
		Compliant Standards	; IEEE 802.1D Spanning Tree Protocol ; IEEE 802.1p CoS Prioritization ; IEEE 802.1Q VLAN ; IEEE 802.1s ; IEEE 802.1w ; IEEE 802.1X ; IEEE 802.1ab (LLDP) ; IEEE 802.3ad ; IEEE 802.3af and IEEE 802.3at ; IEEE 802.3ah (100BASE-X single/multimode fiber only) ; IEEE 802.3x full duplex on 10BASE-T, 100BASE-TX, and 1000BASE-T ports				
9	**Tape Library**	2 x LTO 6 or higher SAS Drives		1			
		HBA card with SAS cabbles (Backup Server connectivity)					
		Upto 48 cartridge slots or higher					
		Redundant power					
		20 pack cartridges LTO6					

		Backup Software capacity based lic – source data capacity 3TB					
		Support for Windows, Linux & Mac OS X					
		Support for Exchange & SharePoint					
		Support for SQL Server, MySQL, Oracle & PostgreSQL					
		Support for VMware & Hyper-V					
		Support for tape, VTL & disk-based backups					
		Support for workstations					
		Bare metal recovery for Windows & Linux - support for "cold" (offline) BMR backups for Linux and Windows servers					
		Support for Network Data Management Protocol (NDMP)					
		Cluster support for third-party databases					
		Support for UNIX, Solaris Intel & FreeBSD					
		Support for SAP, Informix, DB2, Oracle RAC & Sybase					
10	**UPS (5 KVA)**	Rating (VA/W)	6kVA/4.8kW	1			
		Format	Tower				
		Technology	Online double conversion				
		Input voltage	220/230/240V				
		Input voltage range without using batteries	176-276V without derating (up to 110-276V with derating)				
		Output voltage/THDU	220V/230V/240V ±2 %, THDU<3%				
		Input frequency range	45Hz-66Hz, 50/60Hz auto selection				
		Efficiency	Up to 93% in Online mode, 97% in ECO mode				
		Short circuit current	82A				
		Overload capacity	105%-110% : 5min, 110%-130% : 1min, 130%-150% : 10s, >150% : 100ms				
		Input	Terminal block				
		Outputs	Terminal block				
		Typical backup times at 50% and 75% load	60/36				
		Communication ports	1 USB port + 1 RS232 serial port (USB and RS232 ports cannot be used simultaneously)				
		Communication slot	1 slot for Network-MS, ModBus-MS or Relay-MS cards				
		Software	Intelligent Power Software				
		Operating temperature	0 to 40°C				
		Noise level	<55dB				
		Safety	IEC/EN 62040-1				
		EMC, Performance	IEC/EN 62040-2				
		Approvals	CE, CB report (TUV)				
		UPS Dimensions (mm)	612.9 x 708.5 x 262.4				
		Backup Time	1 Hour (Minimum)				
11	**UPS (10 KVA)**	Rating (VA/W)	10kVA/8kW	1			
		Format	Tower				
		Technology	Online double conversion				
		Input voltage	220/230/240V				
		Input voltage range without using batteries	176-276V without derating (up to 110-276V with derating)				

		Output voltage/THDU	220V/230V/240V ±2 %, THDU<3%				
		Input frequency range	45Hz-66Hz, 50/60Hz auto selection				
		Efficiency	Up to 93% in Online mode, 97% in ECO mode				
		Short circuit current	137A				
		Overload capacity	105%-110% : 5min, 110%-130% : 1min, 130%-150% : 10s, >150% : 100ms				
		Input	Terminal block				
		Outputs	Terminal block				
		Typical backup times at 50% and 75% load	60/36				
		Communication ports	1 USB port + 1 RS232 serial port (USB and RS232 ports cannot be used simultaneously)				
		Communication slot	1 slot for Network-MS, ModBus-MS or Relay-MS cards				
		Software	Intelligent Power Software				
		Operating temperature	0 to 40°C				
		Noise level	<55dB				
		Safety	IEC/EN 62040-1				
		EMC, Performance	IEC/EN 62040-2				
		Approvals	CE, CB report (TUV)				
		UPS Dimensions (mm)	612.9 x 708.5 x 262.4				
		Backup Time	1 Hour (Minimum)				
12	**UPS (1 KVA)**	Nominal Input Voltage	115V (Low-Voltage) , 220V (High Voltage)	5			
		Input Voltage Window	60V to 138V (Low Voltage), 122V to 300V (High Volt)				
		Nominal Output Voltage	115V (Low-Voltage), 220V (High Voltage)				
		Output Voltage on Battery	115V (Low-Voltage), 220V (High Voltage)				
		Frequency	50/60Hz, auto-detection				
		Data Line Protection	Input / output jacks included for telephone / modem / internet line surge protection				
		Output Receptacles (HV)	4 IEC style (two output cables included)				
		Output Receptacles (LV)	4 NEMA 5-15 style				
		Input Connection (HV)	IEC 10A style,for use with computer power cable				
		Input Connection (LV)	IEC 10A style,for use with computer power cable				
		Battery Quantity	3				
		Charge Capacity	Five hours to 90% (LV 1K-3K std.) / 7 Hrs to 90% (LV 6K std.) / Eight hours to recover 90% capacity (LV 10K and HV models std.)				
		Battery Monitoring	Battery replacement indicator				

		Audible and Visual Alarms	Battery Operation Mode, Low Battery, General Fault, Overload, On Bypass				
		Control	Two buttons for On/Off and Alarm Silence				
		Connection Type	Standard RS232				
		SNMP Interface	Optional SNMP card				
13	**Switch Cabinet**	4U		5			
All above items are inclusive of any type of license required.							