
TENDER DOCUMENT

Tender Memo N.O –AC/072/16-17



JUNE 7, 2016

NETAJI SUBHAS OPEN UNIVERSITY
DD 26, Sector-I, Salt Lake City, Kolkata-700 064.

Inviting Tenders

FOR

Supply, Installation and Implementation of Networking Active & Passive Items at Kalyani Campus of NSOU (Netaji Subhas Open University)

University intends to setup LAN at Kalyani Campus phase wise by procuring and installing Networking Equipment's (Active & Passive) setup as per the scope of work along with Technical spec defined in the enclosed Annexure –I & Annexure – II.

The tender covers two types of bidding as noted below.

1 COVER A containing **TECHNICAL BID** should be sealed in a separate envelope Subscribing "**Technical Bid**".

2 COVER B containing **COMMERCIAL BID** should be sealed in a separate Envelope subscribing "**Commercial Bid**".

All Technical and Commercial Bid envelopes should be enclosed and Sealed in separate envelopes subscribing the Tender Number and due date. ***Bidders may drop their quotation latest by 17-06-2016 upto 3.00 p.m addressed to " The Finance Officer, Netaji Subhas Open University,4th floor, DD-26, Sector-I, Salt Lake City, Kolkata-700 064" in the Box earmarked kept in the Department of Finance.***

Technical bid will be the pre-condition criteria for opening of commercial bid.

Eligibility Criteria:

1. The firm should be a registered company under the Indian Companies Act 1956 and should have valid Income Tax clearance certificate from Income tax department, valid Service Tax/ Sales Tax Registration certificates from appropriate Tax Authorities. The Contract should enclose attested photocopies of such certificates with their Bid.
2. The firm should have annual revenue turnover of Rs.5 crore or above from businesses relating to sales and support for computers / Networking Systems, Computer Hardware in India during the last 3 years. Company should furnish copies of audited balance sheets for the last two years in support of annual revenue turnover or Certificates issued by Accounts Auditors.
3. The Bidders should be an Authorized System Integrator having a direct purchase and support agreement with the original equipment manufacturer (OEM) for Network active components. Proof for the same to be enclosed.
4. The bidder company should be ISO 9001 certified. Certificates to this effect should be enclosed with the Bid.
5. The Bidder should be Provide bid specific MAF from the Original Equipment Manufacturer. Proof of the same shall be enclosed with the Bid.
6. The bidder should have similar experience of executing and maintaining LANs in Government Sector i.e. Public Sector Undertakings, Autonomous Bodies, Research and Educational Institutions etc.
7. The Bidder should have at least 3 years of proven experience of supplying and installation of at least one LAN of 80% of the bid value in each year in India.
8. Notwithstanding the above, NSOU reserves the right to accept or reject any bidder(s) and to cancel the bidding process and reject all bids at any time prior to the award of contract.

Company should furnish copies of documents which would establish successful execution and implementation of work of similar nature. Purchase Orders/Work Orders/Certificate of Customers where network has been implemented during the past two years is to be enclosed in following format:

List of Clients of Similar Project

| Sl. No | Client Contact Person, Email Id & Full Address | Designation | Contact Numbers/fax numbers | Current Status |
|---------------|---|--------------------|------------------------------------|-----------------------|
| | | | | |
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Documents to be enclosed:

1. COVER A: The following Documents signed by the Authorized Signatory should to be enclosed with the Technical Bid:

- a. Compliance to the Scope of Work (As per the format given in Annexure– I)
- b. Compliance to the Technical Specifications (As per the format given in Annexure–II)
- c. Documents required as Per “Eligibility Criteria”
- d. Technical Literature of the Products quoted as Per the Technical Specifications.

2. COVER B: Price sheet as per enclosed the Price Format in Annexure -III

Annexure – I

Scope of Work Include:

- 1. Laying & Termination of Cat6 UTP Cable through PVC Pipe, Casing etc.
- 2. Outdoor/Indoor OFC laying through HDPE/PVC pipe (including digging, filling, concrete filling, overhead etc.
- 3. Rack Installation
- 4. Crimping and Punching I/O, Patch Panel etc.
- 5. Installation and Configuration of Switch as per requirement (will be defined by NSOU)
- 6. UTP Cable laying must be in Structured Laying
- 7. Proper Document
- 8. The Bidder shall be responsible for providing all materials, equipment's, and services, specified or otherwise, which are required to fulfill the intent of ensuring operability, maintainability, and reliability of the complete equipment covered under this specification within his quoted price. This work shall be in compliance with all applicable standards, statutory regulations and safety requirements in force of the date of award of this contract

9. The bidder shall also be responsible for deputing qualified personnel for installation, testing, commissioning and other services under his scope of work as per this specification. All required tools and tackles for completing the scope of work as per the specification is also the responsibility of the bidder

10. The bidder's proposal shall include the list of tools (such as crimping tool, Krone punch tool) and other accessories, which are required for installation of the connection. No separate charges for fixing/crimping/other connection charges would be paid by NSOU

11. Any other work required for making the network functional is up to the satisfaction of Netaji Subhas Open University.

ANNEXURE-II

Technical Specifications:

1. CAT 6 Cable

| Unshielded Twisted Pair, Category 6, TIA / EIA 568-C.2 | |
|---|---|
| Material: | |
| Conductors | 23 AWG solid bare copper or better |
| Insulation | Polyethylene |
| Jacket | Sheath Fire retardant PVC Compound (FRPVC) Flame Rating : 60 deg. C As per UL 1685 CM/CMR |
| Pair Separator | Cross-member fluted member |
| Approvals | UL tested for TIA/EIA-568C.2 |
| | |
| | ETL verified to Cat 6 |
| | Zero Bit Error verified by ETL. |
| Operating temperature | -20 Deg. C to +60 Deg. C |
| Frequency tested up to | Minimum 600 MHz |
| Packing | Box of 305 meters |
| Delay Skew | 35ns MAX. |
| Impedance | 100 Ohms + / - 6 ohms |
| Performance characteristics to be provided along with bid | Pair-to-pair and PS NEXT, ELFEXT and PSELFEXT, Return Loss, ACR and PS ACR |
| Attenuation | 22.8dB/100m at 250MHz |
| | 29.4dB/100m at 400MHz |
| | 39dB/100m at 600MHz |

2. UTP Jacks

| Type | <u>Unshielded Twisted Pair, Category 6, TIA / EIA 568-C.2</u> |
|---|---|
| Durability | |
| Modular Jack | 750 mating cycles |
| Wire terminal | 200 termination cycles |
| Accessories | Strain relief and bend-limiting boot for cable It should have a Dust cover to cover the keystone.. |
| Approval | UL |
| Housing | Polyphenylene oxide, 94V-0 rated |
| Wiring blocks | Polycarbonate, 94V-0 rated |
| Jack contacts | Phosphorous bronze, plated with 1.27micro-meter thick gold |
| Approvals | UL , ETL and 3P |
| Performance Characteristics to be provided with bid | Attenuation, NEXT, PS NEXT, FEXT and Return Loss |
| Material | Spring Contact: 50m" goldover 100m" nickel |
| | ROHS compliant |

3. UTP Jack Panels

| Type | <u>24-port, Unshielded Twisted Pair, Category 6, TIA / EIA 568-C.2</u> |
|---|---|
| Ports | 24 |
| Port arrangement | Keystone type. Ports must be individually replaceable. |
| Category | Category 6 |
| Circuit Identification Scheme | Icons on each of 24-ports |
| Port Identification | 9mm or 12mm Labels on each of 24-ports (to be included in supply) |
| Height | 1 U (1.75 inches) |
| Durability | |
| Modular Jack | 750 mating cycles |
| Wire terminal (110 block) | 200 termination cycles |
| Accessories | Strain relief and bend limiting boot for cable |
| Materials | ROHS compliant |
| Housing | Polyphenylene oxide, 94V-0 rated |
| Wiring blocks | Polycarbonate, 94V-0 rated, Spring Contact: Phosphor bronze 50µ" gold |
| Jack contacts | Phosphorous bronze |
| Panel | Black, powder coated steel |
| Approvals | UL , ETL |
| Termination Pattern | TIA / EIA 568 A and B; |
| Performance Characteristics to be provided along with bid | Attenuation, NEXT, PS NEXT, FEXT and Return Loss |

4. Faceplates

| Type | <u>1-port, White surface box</u> |
|--------------|--|
| Material | ABS / UL 94 V-0 |
| No. of ports | One / two |
| | High Impact Plastic Body ABS FR Grade 86 x 86 mm |

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| | Flush mountable or surface mountable with a back mount frame |
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5. Workstation / Equipment Cords

| Type | Unshielded Twisted Pair, Category 6, TIA / EIA 568-C.2 |
|---------------------|---|
| Conductor | 24-26 AWG stranded copper. |
| Length | 1 meter, 2 meter and 3 meter |
| Plug Protection | Matching colored snag-less, boot to maintain bend radius |
| Warranty | 25-year component warranty |
| Category | Category 6 |
| Plug | |
| Housing | Clear polycarbonate |
| Terminals | Phosphor Bronze with gold plating , 50 micron" gold over nickel |
| Load bar | PBT polyester |
| Jacket | PVC |
| Insulation | Flame Retardant Polyethylene |
| End point connector | Factory standard connector |
| Approvals | UL, ETL |
| Material | ROHS compliant |

6. Multimode Fiber optic Cable

| | |
|--------------------|--|
| Cable Type | 6/12-core, Multimode, 10G Ethernet OM3, Armored, loose-tube, CST armour, Gel Filled |
| Fiber type | 50 / 125, Laser Grade, 250 micron primary coated buffers |
| No. of cores | 6/12 |
| Cable Construction | BELLCORE GR 20 / IEC 794-1 |
| Attenuation | |
| @850nm | 3.0 dB / KM |
| @1300nm | 1.0 dB / KM |
| Bandwidth | |
| @850nm | 1500 MHz-KM |
| @1300nm | 500 MHz-KM |
| Network Support | |
| 10 / 100 Ethernet | 2000m |
| 155 Mbps ATM | 2000m |

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|---------------------------|--|
| 1000 Base SX | 900m |
| 1000 Base Lx | 550m without Mode Conditioning launch patch cord. |
| Tensile rating | 1000N |
| Maximum Crush resistance | 2000N |
| Operating Temperature | -40 Degree C to +70 Degree C |
| Armor | Corrugated Steel tape Armor |
| Colour | Black |
| Outer jacket | High density polyethylene, anti - termite, anti - rodent suitable for direct burial application. |
| Secondary Buffer Material | Gel filled Loose Tube. |
| Min Bend | 20 X Outer Diameter. Fiber Core macrobending performance should be below 10 mm radius. |
| Test (Must pass) | IEC794-1-E1 , IEC794-1-E2 , IEC794-1-E3 , IEC794-1-E4 , EIA-455-104 , IEC794-1-E7 , IEC794-1-E10 , IEC794-1-F1 , IEC794-1-F3 and IEC794-1-F5 |
| Marking | Identification marking at regular intervals of 1 meter |
| Length of cable drum | standard factory length and can be supplied is max 4 Kms |

7. Fiber Optic Patch panels

| | |
|-----------------------------------|---|
| Fiber optic patch panel | <u>19-inch, Rack mounted Fiber optic patch panel</u> |
| Height | 1 U, 1.75 inches |
| No. of fibers | 6,12,24 |
| Dimensions | 44 * 410 * 280 mm (H*W*D) |
| Material | Complete Aluminium Alloy housing, fully powder coated |
| | Splice tray and cable spools to be included |
| | Fully cushioned splice holder containing grooves for fixing splice protective sleeves |
| No. of OSP Cables for termination | Minimum 2 |
| Grounding | 2 Nos. of earthing lugs, pre-loaded |

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| Cable Management rings | Front and rear cable management rings, pre-loaded |
| No. of 6-port adapter plates | 4 max |
| Sliding | Panel cover is of slide out for easy maintenance |

8. Fiber Optic Adapter plates

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|----------------------------------|-------------------------------|
| <u>Fiber Optic adapter plate</u> | <u>6-port, SC-Style, MM</u> |
| Attenuation | Max of 0.75 Db per mated pair |

9. Fiber Optic Patch Cord LC-SC TYPE.

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|----------------------------------|--|
| <u>Fiber Optic Patch Cords</u> | <u>OM3 Patch Cord MM patch cord LC-SC TYPE</u> |
| Type | 1.6mm or 3mm simplex or Duplex Zipcord. Fiber Patch cord must have Clear Curve Feature for more flexibility. Qualifies as per ITU-T G652 D Fiber, and ITU-T G.657.A1 |
| Outside Diameter | (Simplex): 1.6mm x 3.0mm (Duplex): 1.6mm x 3.3mm |
| Minimum Cable Retention Strength | 1.6mm: 11.24 lbs (50 N) |
| Insertion Loss | Less than 0.5 dB for MM and 0.3 dB for SM |

10. SPECIFICATION FOR LAYER-2 POE SWITCH (24-PORT)

| S. No. | DESCRIPTION | COMPLIED (YES/NO) | DEVIATIONS, IF ANY |
|----------|--|-------------------|--------------------|
| A | Architecture | | |
| 1 | Shall have 24 x 10/100/1000 Base-T PoE ports and additional 2 x 1/10G SFP+ ports and 2 x 1/10G Base-T ports. Switch should be supplied with 1 nos 10G-SR module. | | |
| 2 | Shall have IPv6 management readiness from day-1 | | |

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| 3 | Shall have minimum switching capacity of 128Gbps | | |
| 4 | Shall have minimum forwarding throughput of 95Mpps | | |
| 5 | Shall support minimum of 16000 MAC address entries | | |
| 6 | Shall be rack mountable with required accessories and shall have a suitable management port | | |
| 7 | Shall have minimum 1GB RAM and adequate flash for enabling all the routing and management features | | |
| 8 | Shall have virtual switching system (VSS) or equivalent feature to allow clustering up to minimum four physical switches together into a single logical managed fabric. Shall support up to 40 bps stacking bandwidth using either front-port or back-port stacking | | |
| 9 | Shall have suitable power supply for minimum 370W PoE budget per-switch. | | |
| B | Layer-2 & Layer-3 Features | | |
| 1 | Shall support IEEE 802.1Q and IEEE 802.1ad | | |
| 2 | Shall support IEEE 802.1s MSTP, IEEE 802.w RSTP and IEEE 802.1d STP | | |
| 3 | Shall have minimum of 4000 active VLANs | | |
| C | Quality of Service & Convergence | | |
| 1 | Shall have QoS features based on L2, L3 and L4 information including IPv6 based ACL and QoS | | |
| 2 | Shall support CAR | | |
| 3 | Shall have minimum 8 queues per-port | | |
| 4 | Shall have LLDP, LLDP-MED, & Voice VLAN | | |
| 5 | Shall have IGMP snooping (data driven IGMP) & MLD snooping | | |
| D | Security | | |
| 1 | Shall support port security methods like 802.1x & RADIUS | | |

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| 2 | Shall support TACACS and Guest VLAN | | |
| 3 | Shall have built-in protection features such as: | | |
| | a) Protection from DoS attacks or equivalent | | |
| | b) STP Root guard & STP BPDU guard | | |
| | c) Hardware-based ACLs (L2, L3 and L4 based and per-user) | | |
| | d) MAC authentication | | |
| E | Management | | |
| 1 | Shall support LLDP and LLDP-MED | | |
| 2 | Shall support redundant flash images | | |
| 3 | Shall support secure management access methods (CLI, GUI or MIB) through SSH, SSL, and/or SNMP | | |
| 4 | Shall support RMON | | |
| 5 | Shall support port mirroring of ingress/egress traffic from a switch port or VLAN to a local or remote switch port anywhere on the network | | |
| 6 | Shall support IPv6 management features | | |
| 7 | Should have software modularity with process modules running independently in their own protected memory space and with the ability to do individual process restart. Should allow individual software modules to be upgrade for enhanced serviceability. | | |
| F | Warranty | | |
| 1 | Shall have NBD replacement support of Hardware for 5 years | | |

11. SPECIFICATION FOR LAYER-2 SWITCH (48-PORT)

| S. No. | DESCRIPTION | COMPLIED (YES/NO) | DEVIATIONS, IF ANY |
|----------|---------------------|-------------------|--------------------|
| A | Architecture | | |

| | | | |
|----------|--|--|--|
| 1 | Shall have 48 x 10/100/1000 Base-T ports and additional 4 x 1G SFP ports. | | |
| 2 | Shall have IPv6 management readiness from day-1 | | |
| 3 | Shall have minimum switching capacity of 104Gbps | | |
| 4 | Shall have minimum forwarding throughput of 77Mpps | | |
| 5 | Shall support minimum of 16000 MAC address entries | | |
| 6 | Shall be rack mountable with required accessories and shall have a suitable management port | | |
| 7 | Shall have minimum 256MB RAM and adequate flash for enabling all the routing and management features | | |
| B | Layer-2 Features | | |
| 1 | Shall support IEEE 802.1Q and IEEE 802.1ad | | |
| 2 | Shall support IEEE 802.1s MSTP, IEEE 802.w RSTP and IEEE 802.1d STP | | |
| 3 | Shall have minimum of 500 active VLANs | | |
| C | Quality of Service & Convergence | | |
| 1 | Shall have QoS features based on L2, L3 and L4 information including IPv6 based ACL and QoS | | |
| 2 | Shall support CAR | | |
| 3 | Shall have minimum 4 queues per-port | | |
| 4 | Shall have LLDP, LLDP-MED, & Voice VLAN | | |
| 5 | Shall have IGMP snooping (data driven IGMP) & MLD snooping | | |
| D | Security | | |
| 1 | Shall support port security methods like 802.1x & RADIUS | | |
| 2 | Shall support TACACS and Guest VLAN | | |

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| 3 | Shall have built-in protection features such as: | | |
| | e) Protection from DoS attacks or equivalent | | |
| | f) STP Root guard & STP BPDU guard | | |
| | g) Hardware-based ACLs (L2, L3 and L4 based and per-user) | | |
| | h) MAC authentication | | |
| E | Management | | |
| 1 | Shall support LLDP and LLDP-MED | | |
| 2 | Shall support redundant flash images | | |
| 3 | Shall support secure management access methods (CLI, GUI or MIB) through SSH, SSL, and/or SNMP | | |
| 4 | Shall support RMON | | |
| 5 | Shall support port mirroring of ingress/egress traffic from a switch port or VLAN to a local or remote switch port anywhere on the network | | |
| 7 | Shall support IPv6 management features | | |
| F | Warranty | | |
| 1 | Shall have NBD replacement support of Hardware for 5 years | | |

ANNEXURE-III

COMMERCIAL OFFER FOR NETWORK EQUIPMENTS (IN INDIAN RUPEES)

| S/N | Materials Description | Qty | Unit | Unit Rate | Tax | Unit Rate Incl.Tax | Total |
|-----|---|------|------|-----------|-----|--------------------|-------|
| 1 | OM3 MM OFC | 250 | Mtr | | | | |
| 2 | LIU 12port loaded | 2 | Nos | | | | |
| 3 | Patch Cord SC-LC | 2 | Nos | | | | |
| 4 | Patch Cord SC-SC | 2 | Nos | | | | |
| 5 | Fiber laying (digging, filling ,concrete filling, overhead through HDPE Pipe/PVC) | 200 | Mtr | | | | |
| 6 | Cat6 Cable UTP | 4 | Nos | | | | |
| 7 | Cat6 Patch Panel loaded | 1 | Nos | | | | |
| 8 | Cat6 Patch cord (1 mtr) | 30 | Nos | | | | |
| 9 | Cat6 Patch cord (3 mtr) | 30 | Nos | | | | |
| 10 | Cat6 I/O with Faceplate & Backbox | 30 | Nos | | | | |
| 11 | 12 U Network Rack | 1 | Nos | | | | |
| 12 | Cat6 Cable laying Including PVC / casing pipe | 1000 | Mtr | | | | |
| 13 | Layer2 24G POE switch | 2 | Nos | | | | |
| 14 | 10G SFP+ Transceiver | 2 | Nos | | | | |
| 15 | Layer2 48G Switch | 1 | Nos | | | | |

Note: The bidders are required to fill all the columns in the price schedule in numeric INR only (No NA/blank column/ - / NIL etc.).

Finance Officer

Netaji Subhas Open University.

