Indian Institute of Technology, Kharagpur
Kharagpur 721 302, WB, India

Sub: CAMC FOR CAMPUS NETWORK OF IIT KHARAGPUR

Ref: Tender Notice No. IIT/CIC/AMC/NETWORK/2017-18/2 dated 7th April, 2017

Indian Institute of Technology Kharagpur, an Institute of National Importance, invites sealed bids for the Comprehensive Annual Maintenance Contract (CAMC) for their Campus Networking Components from competent vendors who have adequate credential for similar type of work in large organizations. Initially the contract will be for **one year from June 27, 2017 to June 26, 2018,** which will be extended on a year to year basis for **another two years** on satisfactory performance.

Interested vendors are requested to send their sealed bids under a **two cover system** as per requirement mentioned in tender document.

Tender document can be downloaded from Institute website www.iitkgp.ac.in (Link: Tenders), the same is also available on CPP Portal (https:// eprocure.gov.in). Any Corrigendum/addendum shall only be published on the Institute website and CPP Portal.

The proposal has to be sent in a sealed packet, containing two separate sealed envelopes (**Technical Bid** and **Price Bid**) duly superscripted with Reference Number (**Tender Notice No. IIT/CIC/AMC/NETWORK/2017-18/2 dated 07.04.2017),** to the Office of the **Head, Computer & Informatics Centre, Indian Institute of Technology, Kharagpur, P.O. Kharagpur Technology, PIN : 721 302 on or before 5th May 2017 by 3:00 p.m.**

The **technical bids (should also contain detailed un-priced bill of material) will be opened on 5th May 2017 by 3:30 p.m.** in the presence of the authorized representatives of Vendors and price bids will be opened (to be notified separately), only of those firms, who will be found technically qualified/short listed, after evaluation of their technical bids.

Head
Computer & Informatics Centre
IIT Kharagpur

Copy to:

1. Institute website
2. Notice Board
3. News Papers
4. CPP Portal

ANNUAL MAINTENANCE CONTRACT FOR CAMPUS NETWORK OF IIT KHARAGPUR

1. Introduction

Indian Institute of Technology Kharagpur has a large campus network consisting of both wired and wireless network which includes academic, hostel and residential areas. There are approximately 30,000 information outlets (academic: 15000, Halls: 12000 & Residential: 3000) present in the campus LAN. This hybrid network is capable of providing data, voice, and video services (residential area only) through 10 gigabit optical backbone along with wireless connectivity through indoor & outdoor access points. Academic and hostel area of the campus network is based on Gigabit Ethernet technology whereas Residential area network is based on Gigabit Passive Optical network (GPON) technology to support quadruple play network (QPN) features where users are facilitated with data, voice, video and wireless access service.

Adequate redundancies have been made in the critical resources located at the core and distribution layer of the network for service continuation in case of faults. Institute has its own Network/System support team to configure, monitor, and troubleshoot the networking infrastructure on 8x5x365 basis. In addition, CIC has four field technician to attend the first level network maintenance calls and one helpdesk operator to record network complains. CIC undertakes any passive expansion and maintenance work (new information outlets, fiber laying, repair of physical damages of passive network component such as Fiber cut, UTP cable cut, casing/conduit damage, broken I/O etc.) itself. All materials for such work are provided by CIC from its own stock and additional labor is engaged for such work by CIC independently.

Presently, the Institute is looking for a suitable experienced service provider / system integrator to provide onsite annual campus network maintenance support in the following broad areas.

a. Academic area network (Wired and indoor Wireless LAN)
b. Student Hostel Network(Wired and indoor Wireless LAN)
c. Core network at CIC
d. Outdoor Wireless LAN
e. Residential Network (GPON)

2. Scope of Work

I. Items specified in the **Annexure-1** need to be covered under Comprehensive AMC by the vendor. The vendor will need to operate, monitor, reconfigure if needed, troubleshoot and resolve problems with the support from OEM, and replace faulty items with back to back arrangement with OEM. Certain items in Annexure-1 that are declared by OEM as End of Support item (declaration from OEM must be enclosed) may be covered with best-effort services without back to back arrangement with

OEM in which the vendor will need to operate, monitor, reconfigure if needed, troubleshoot and resolve problems, and replace faulty items with available spare with CIC. Vendor must provide a list of such items with OEM declaration of end of support along with the bid.

II. Items specified in the **Annexure-2** need to be covered under non-comprehensive AMC by the vendor. The vendor will need to operate, monitor, reconfigure if needed, troubleshoot and resolve problems, and replace faulty items with available spare with CIC.

III. Vendor will ensure the availability of professionally experienced team to provide the required on-site operation and maintenance on 12x7x365 basis. Vendor has to ensure the availability of necessary support team at CIC on on-call basis for Extended Business Hours (EBH), from 8PM to 8AM, everyday including Saturdays, Sundays and all other holidays.

IV. Vendor has to perform day-to-day network administration and maintenance of the entire networking infrastructure of Institute campus in coordination with Institute in-house team. Detailed list of equipment are provided in attached annexure. Vendor will ensure the availability of following level of experienced manpower for entire period of contract. IIT will assess the experience of the proposed manpower before awarding the order to the selected vendor.

a. To provide support for all Cisco equipment (as mentioned in the list) like Core switches, ASA Firewall, distribution switches, access switches, wireless controllers, wireless access points, Call manager, and IP telephony services to the highest level of satisfaction, vendor has to ensure the availability of at least **four technical support persons** at IIT Kharagpur with average experience of 5 years with this skill set dedicated for the Cisco devices.

b. To provide support for all GPON equipment (as mentioned in the list) like OLT, EDFA, ONT, MDU and EMS and integration issues with the institute network to ensure the highest uptime level of QPN, vendor has to ensure the availability of at least **two technical support persons** at IIT Kharagpur with average experience of 5 years with this skill set dedicated for GPON equipment.

c. Institute has laid large amount of underground optical fiber cable (48core, 24core, 12core and 6core) by micro tunneling and normal trenching method for campus network and installed fiber distribution boxes with optical splitters in the campus area. A large amount of indoor single core fiber drop cable is also laid inside the residential buildings. Outdoor wireless access points connected with fiber are installed on selected electrical poles in the campus to cater to outdoor Wi-Fi connectivity. All these fiber connections involve more than 20000 OFC terminations and splicing. The vendor has to ensure the availability of at least **two cable plant technicians** with average experience of 5 years in managing cabling plant similar to this network for this purpose. The technicians will be dedicated for troubleshooting problems with the fiber network and performing minor repairs if needed. For major repairs such as repair of fiber cut etc., CIC will

depute its own team and engage its own labor for such work. The vendor's technicians will have to work in coordination with the CIC deputed team to resolve all problems. These persons together should have practical experience on operating OTDR and splicing machines for network maintenance and monitoring purposes, as well as experienced on troubleshooting and route maintenance of similar infrastructure.

d. Maintaining, troubleshooting and replacing components of Institute campus network including Academic area, Halls area and Residential area of such a huge network plays an important role to achieve high network uptime. Vendor has to ensure at least **four field technicians** with average experience of 3 years for smooth functioning of campus network dedicated for this purpose. The persons should have handholding experience on operating optical meter for network monitoring purposes. These technicians will be in addition to the field technicians that are already present in CIC.

e. One project manager/lead has to be deployed for managing the issues and he/she will be the single point of contact (SPOC) for any communication from Institute end. Project manager should have a graduate degree with more than 10 years of experience in managing similar kind of network and with a team leading capability to achieve the targeted SLA.

V. Vendor will be responsible for coordinating with the Technology Telecom Centre (TTC) Kharagpur for successful operation of VoIP services over GPON. VENDOR will also be responsible to resolve the cross functional issues with respect to telephone calls in between existing Telephone exchange (MD110) and GPON.

VI. The Helpdesk of CIC is kept open for Prime Business Hour (PBH), from 9AM to 7PM, everyday (including Saturdays, Sundays, and all other holidays i.e. 12x7x365 basis). Institute has one helpdesk operator, whose primary responsibility is to record all calls coming to the helpdesk during Institute hours over telephone and Email. Vendor need to use their own resources to record all calls coming beyond Institute hours or in absence of the helpdesk operator.

VII. As a part of problem management Project Manager (PM) of the vendor will assign calls to all the field technicians in consultation with the helpdesk operator. Once field related problem is resolved call should be closed. If any support is required from CIC to close that field call, PM will escalate the matter to CIC. If the problem is related with critical network resources, then PM will escalate the problem to their own technical Lead (TL) and also Institute Network/System support team. Such call for critical network resources will be closed in the call register by Institute Network/System support team.

VIII. Adequate redundancies have been made in the critical resources located at the core and distribution layer of the network. It is the responsibility of the vendor to check the inbuilt redundancies within the network devices on weekly basis. In case any

hardware fault is identified during weekly checkup, faulty item needs to be replaced within five working days to bring back the original redundancies. Vendor has to depute engineers to ensure one hour call response time (on 24X7X365 days basis) to critical network equipment across the campus. Critical network equipment across the campus means two Core switches at CIC, all Distribution switches, ASA Firewalls, head end of GPON network, IP PBX, Voice Gateway, Wireless LAN Controller (WLC), Network Management Software, etc. Call for such critical resource should be resolved within 2 hours from the reporting time. For all other edge equipment like L2 Switches, Indoor/Outdoor APs, GPON access devices (ONTs / MDUs) response and resolution time (on 12X7X365 days basis) of any call will be 1 hour and 4 hours respectively from the reporting time of failure. Vendor has to maintain a log book to record all faults reported and their response and resolution times, as well as resolution status. Log book will be checked by the CIC officials on regular basis.

IX. In case of any IT service failure within the campus, vendor will check the network part. In case of network failure, vendor will ensure that the network is made operational to the full satisfaction of the Institute within the stipulated response time & resolution time mentioned in 2(VII) above. Network will be deemed to have failed if it is disrupted at multiple remote sites due to failure of any centrally installed equipment. The uptime of the entire campus network should not be less than 99% calculated on quarterly basis. If quarterly network uptime is less than 99% then penalty will be imposed per percent of shortfall of uptime at the rate of 1% of the ordered value calculated on a quarterly basis. The minimum acceptable uptime is 95%, calculated on a quarterly basis. If the uptime falls below 95% calculated on a quarterly basis, IIT will have discretion to terminate the contract as per Clause-7 of the tender document. Maximum upper limit of the penalty will 5% of the order value. A Service Level Agreement (SLA) will have to be signed by the selected vendor before starting the AMC.

X. Vendor will be have to maintain adequate spares at CIC to restore network service within the stipulated resolution time in the SLA, but the faulty item covered under comprehensive AMC need to be replaced in the stores kept within 5 working days from the time of failure.

XI. Vendor has to check the power condition, UPS backup, UPS load etc. across the campus for all network racks and outdoor AP locations. **CIC will engage separate team for repairing of raw power supply, UPS, replacement of batteries** etc. but Vendor has to coordinate with the CIC deputed team in such cases.

XII. CIC will provide the sitting arrangements to deputed manpower of the Vendor, but adequate number of two wheelers / transport arrangement should be available with the team to attend calls at Hall residences, Departments, Outdoor AP locations and residences to maintain the call resolution and response time.

XIII. Most of the Access Network Racks, Outdoor APs and Indoor APs are installed at high locations. Maintenance activity at those locations will need suitable ladders. CIC will ensure availability of ladders at the nearest possible locations but Vendor has to ensure that adequate safety measures are taken during repairs and take the responsibility in case of any accident.

XIV. Vendor has to keep the following tools within the campus apart from the regular tools required for the maintenance for the passive maintenance work.

a. Optical Fiber Fusion Splicer
b. Visual Fault Locator
c. Optical Loss Test Set
d. Optical Power Meter

Using those tools vendor has to generate status of all spare fiber cores on half yearly basis. In case of faults, CIC will engage its own team and provide all materials for such repair. The vendor's team will have to assist and coordinate with the CIC team to ensure that the fault is repaired.

XV. Vendor should regularly monitor the physical status of all network racks and report any need for cleaning/dressing to CIC.

XVI. Based on the expansion plan of the Institute, CIC procures different network devices from different vendors. Many of the network devices are under warranty with different vendors and integrated with different network devices which will be covered under this AMC. Vendor has to provide all necessary co-operation and co-ordination with those existing vendors. In case of future expansion also Vendor has to provide similar co-operation and co-ordination with the future vendors.

XVII. Vendor will develop and maintain Known Error Database (KEDB) for the entire campus network during their operation. At the end of the contract vendor has to submit the Database to the Institute.

XVIII. Vendor will circulate the call status (including closed call) report performed by Helpdesk on weekly basis to the respective stakeholders as defined by the Institute.

XIX. Vendor will also circulate the status of item replacement report of all defective Items on weekly basis.

XX. Networking requirements in the campus are dynamic. During Student fests and other Institute functions Vendor may need to assist the CIC in-house team in installing temporary network. During Computer laboratory based test Vendor may need to reconfigure the network for access control.

XXI. Vendor will have to implement and verify the network configuration to adhere to the Institute IT security policy.

XXII. Vendor will have to maintain the network asset base of equipment covered under the AMC deployed across the campus.

XXIII. Vendor has to maintain a performance log of all critical network devices and alert CIC in advance if there is any irregularity.

XXIV. Vendor has to give free software patches and upgrades for network devices to resolve any technical problem.

XXV. Vendor should report immediately if any existing manpower goes on leave or is replaced. New manpower on specific role should be approved by the Institute. Also the Institute reserves the right to call for replacement of manpower if the deployed manpower is not up to the satisfaction of the Institute.

XXVI. Vendor should maintain the confidentiality of the network topology including campus Wi-Fi & GPON network, configurations of all devices, administrative password of the devices and other sensitive documents/ reports related to Institute campus network. VENDOR should not share any of these to any other organization or personnel without explicit permission of Head, CIC. A non-disclosure agreement needs to be signed with IIT Kharagpur for this purpose.

3. Vendor Credentials and Service Criteria

I. Vendor should be an Indian Company and must have at least 5 years of experience in networking projects in India.

II. Vendor should be ISO 9001:2000 certified.

III. The bidder should not have been blacklisted by any IITs or similar Autonomous Institutions /Universities, Government /Public Sector Undertakings on the date of submission of this bid. A declaration from the bidder must be submitted.

IV. In the last three financial year, bidder must have at least one order of value 3 crores or higher for networking implementation and services. Supporting PO copy needs to be submitted.

V. Average annual turnover should be more than Rs.10 Crores for last three years.

VI. Bidder should be profitable organization in each year for last three years. Audited statement should be submitted.

VII. The vendor deputed team should have the direct access to the OEM Technical Assistance Center (TAC) on 24x7 basis.

VIII. Given the large size of the network and the different types of equipments, the vendor may tie up with at most one service partner. In that case, the following needs to be satisfied:

a. Both the vendor and its service partner must individually satisfy the criteria mentioned above (documentary evidence must be attached for both the vendor and its service partner).
b. Details should be provided as to breakup of services to be provided by the vendor and its service partner.
c. The service partner must provide in writing that it is willing to provide the services. However, the vendor should certify that it remains primarily responsible for providing the entire services specified under this contract.
d. Purchase Order will be issued only to the vendor and all payments will be made only to the vendor.

IX. The Vendor or their service partner should have adequate backend team to provide the technical support to the onsite team.

X. Successful vendor or its service partner must have to enter in back to back service support arrangement with OEMs for items listed for in the Annexure – 1 as per clause 2(I) of this tender. Vendor needs to submit MAF from respective OEMs for this tender.

4. Submission of bids

I. Vendors should submit both the Technical & Commercial bids in separate sealed covers.

II. Commercial bid will be opened only for those Vendors who are Technically Qualified.

III. Technical bid must consist of the following documents.

- ❖ Signed tender document as a token of acceptance of the terms and conditions.
- ❖ MAF from OEMs for this tender
- ❖ Supporting documents from the OEMs must be attached for the list of items under non-comprehensive AMC
- ❖ CVs of the proposed manpower
- ❖ Technical Write-up for the practice followed by the Vendor
- ❖ Deliverables by the vendor in details
- ❖ Supporting document for Vendor credential mentioned in Sec. 3
- ❖ Details of Escalation Matrix and call handling procedure
- ❖ Current Income Tax & Sales Tax Clearance certificates and PAN NO.

- ❖ Banker's Solvency Certificate.
- ❖ Summary of Audited Statement of Accounts for the last three years
- ❖ Name and address of minimum one client to whom such services have been provided within the last three years should be mentioned in the technical bid**.** PO Copies/Customer satisfaction certificate is to be attached with the technical bid.

[Tender may not be considered in absence of the above documents]

IV. Price bid should be submitted strictly in the format given as stated in the tender. Price should be for onsite comprehensive maintenance inclusive of all statutory duties, Taxes, and other charges if applicable. Tax components should be clearly shown separately, showing both the tax rates and the total tax for each component.

V. Technical bid should contain the tender document signed by authorized signatory of the bidder as a token of acceptance of specifications, requirements and terms and conditions.

VI. Past Performance of the vendors will be judged at the time of technical evaluation.

VII. Incomplete and/or conditional bid or bid not confirming to the terms and conditions would be rejected.

VIII. Bid once submitted would be the property of IIT Kharagpur and shall not be returned to the vendor in future.

IX. A bid submitted with false information will not only be rejected and the vendor may also be debarred from participation in future tendering process.

X. Canvassing in any form not only invites disqualification in this tender but also debar the vendor participation in the future tendering processes too.

5. General Terms & Conditions

I. Last Date of Submission of Sealed Bids: 5th May, 2017, by 3:00 pm (In the Office of the Head, Computer & Informatics Centre, Indian Institute of Technology Kharagpur).

II. Date of opening of the Technical Bids: 5th May, 2017, at 3:30 pm (In the Office of the Head, Computer & Informatics Centre, Indian Institute of Technology Kharagpur).

III. Payment Terms:

Option A: Quarterly payment will be made on successful maintenance after each quarter on submission of Quarterly bill duly certified by Head CIC after each quarter.

Or

Option B: 50% advance payment (half yearly basis) on submission of 50% of Bank Guarantee of the total purchase order value from any Nationalized Bank in India valid for a period of 15 months from the date of starting of AMC on submission of Proforma Invoice (PI). After six month from the starting date of AMC, adjustment bill duly certified by Head CIC to be submitted for the adjustment of previous 50% advance along with the PI for the next 50% advance.

IV. **Period of AMC:** Initially for one year, which will be extended on a year to year basis for another two years on satisfactory performance.

V. **Tender Fee:** An amount of Rs. 10000/- (Rupees Ten Thousand only) as tender fee (non-refundable) is to be paid. The payment may be made by Demand Draft in favor of IIT Kharagpur. Without Tender Fee quotation will not be accepted. Tender fee should be enclosed with the Technical Bid documents.

VI. **Earnest Money Deposit:** An amount of Rs. 4,00,000/- (Rupees Four Lakhs only) in the form of Demand Draft or BG is to be enclosed along with the bid. The EMD will be in favor of IIT Kharagpur. The validity of the EMD should be 06 months from the date of submission of bid. Any bid without EMD will not be considered. EMD should be enclosed with the Technical Bid documents.

VII. **Price:** Price should be quoted in Indian Rupees only. L1 will be decided on the grand total of prices for all components.

VIII. **Bid:** Technical Bid and Price Bid should be submitted in two separate sealed envelopes quoting reference number on the top of the envelope. Tender Fee & EMD should be enclosed with the Technical Bid documents.

IX. **Conditional Offer will not be accepted.**

X. **Period of Validity:** Bids shall remain valid for acceptance for a period of 120 days from the date of opening of the price bid.

XI. The Institute does not bind itself to offer any explanation to those bidders whose technical bids have not been found acceptable by the Evaluation Committee of the Institute.

XII. Limitation of Liability: Notwithstanding anything contained herein, neither party shall be liable for any indirect, special or consequential damages like loss of profits or business interruptions even if the Parties had advance notice of the same. The total liability of the either party shall not in any circumstances, exceed the Total Order/Contract Value.

XIII. All tenders are to be submitted to the office of the Head, Computer & Informatics Centre, Indian Institute of Technology Kharagpur, and acknowledgement to be obtained.

XIV. Opening of Price Bids: The Price Bid(s) of only those vendor(s) who are found technically qualified will be opened.

XV. IMPORTANT

Director may accept or reject any or all the bids in part or in full without assigning any reason and does not bind himself to accept the lowest bid. The Institute at its discretion may change the quantity/upgrade the criteria/drop any item or part thereof at any time before placing the Purchase Order.

In case of any dispute, the decision of the Director of this Institute shall be final and binding on the Bidders.

6. Governing Laws

This Tender Document and the Contract shall be governed by and interpreted in accordance with Laws in force in India. The Courts at West Midnapur shall have exclusive jurisdiction in all matters arising under the contract.

7. Termination for Default

IIT may without prejudice to any other remedy or right of claim for breach of contract, by giving not less than 30 days written notice of default sent to the Vendor, terminate the Contract in whole or in part if

I. The Vendor materially fails to render any or all the services specified in this tender within the specified time period or any extension thereof granted by IIT in writing and fails to remedy its failure within a period of thirty (30) days after receipt of the default notice from IIT

II. The Vendor in the judgment of Head, Computer & Informatics Centre, Indian Institute of Technology Kharagpur has engaged in corrupt or fraudulent practices in competing or in executing the contract.

For any query pertaining to this tender, correspondence may be addressed to:

The, Head, Computer & Informatics Centre
Indian Institute of Technology, Kharagpur-721 302
Email: head@cc.iitkgp.ernet.in

In case the due date for submission and/or opening of the tender happens to be a holiday, the same will be accepted on the next working day. The timings will however remain unchanged. Please Note that the Institute remains closed on Saturdays, Sundays and public holiday.

8. Price Bid Format

SN	Description	AMC Cost (Rs.)
1	Onsite maintenance contract for Campus Network of IIT Kharagpur (list of items described in Annexure -1 & Annexure -2)	
2	Applicable Taxes	
	Total Cost inclusive of all taxes	

ANNEXURE - 1

Item No. 1: 2 nos. Core Switches			
Sl. No.	**Product**	**Description**	**Qty**
1.	N7K-C7010-BUN-R	Nexus 7010 Bundle (Chassis,(2)SUP1,(3)FAB1,(3)AC-6KW PSU)	2
2.	N7KS1K9-51	Cisco NX-OS Release 5.1	2
3.	N7K-LAN1K9	Nexus 7000 LAN Enterprise License (L3 protocols)	2
4.	N7K-M132XP-12	Nexus 7000 - 32 Port 10GbE, 80G Fabric (req. SFP+)	4
5.	SFP-10G-LR	10GBASE-LR SFP Module	48
6.	SFP-10G-SR	10GBASE-SR SFP Module	20
7.	N7K-M148GS-11	Nexus 7000 - 48 Port 1G, SFP, 40G Fabric	4
8.	GLC-LH-SM	GE SFP, LC connector LX/LH transceiver	88
9.	GLC-SX-MM	GE SFP, LC connector SX transceiver	88
10.	CAB-AC-2500W-INT	Power Cord, 250Vac 16A, INTL	12
11.	N7K-C7010-AFLT	Nexus 7010 Air Filter	2
12.	N7K-C7010-FD-MB	Nexus 7010 Front Door Kit	2
13.	N7K-SUP1-BUN	Nexus 7000 - Supervisor 1, Includes External 8GB Flash	2
14.	N7K-SUP1-BUN	Nexus 7000 - Supervisor 1, Includes External 8GB Flash	2
15.	N7K-C7010-FAB1-BUN	Nexus 7000 - 10 Slot Chassis - 46Gbps/Slot Fabric Module	6
16.	N7K-AC-6.0KW	Nexus 7000 - 6.0KW AC Power Supply Module	6

Item No. 2: 9 nos. Chassis based distribution switches			
Sl. No.	**Product**	**Description**	**Qty**
1.	WS-C4507R+E	Catalyst4500E 7 slot chassis for 48Gbps/slot	9
2.	PWR-C45-1300ACV	Catalyst 4500 1300W AC Power Supply (Data and PoE)	9
3.	PWR-C45-1300ACV/2	Catalyst 4500 1300W AC Power Supply (Data and PoE)	9
4.	CAB-SABS-C19-IND	SABS 164-1 to IEC-C19 India	18
5.	WS-X4448-GB-SFP	Catalyst 4500 48-Port 1000Base-X (SFPs Optional)	10
6.	WS-X4612-SFP-E	Catalyst 4500 E-Series 12-Port GE (SFP)	2
7.	GLC-LH-SM	GE SFP, LC connector LX/LH transceiver	408
8.	WS-X45-SUP6L-E	Catalyst 4500 E-Series Sup 6-E Lite, 2x10GE(X2) w/ Twin Gig	9
9.	X2-10GB-LR	10GBASE-LR X2 Module	18
10.	WS-X45-SUP6L-E/2	Catalyst 4500 E-Series Sup 6-E Lite, 2x10GE(X2) w/ Twin Gig	9
11.	S45EIPBK9-12254SG	Cisco CAT4500E IOS IP BASE SSH	9
12.	CVR-X2-SFP	Cisco TwinGig Converter Module	18

Item No. 3: 8 nos. Distribution switches with 28 SFP slots, 2x 10GBase-X			
Sl. No.	**Product**	**Description**	**Qty**
1.	WS-C4928-10GE	Catalyst 4928, no p/s, 28x 1GBase-X SFP, 2x 10GBase-X X2	8
2.	PWR-C49-300AC	Catalyst 4948 300-Watt AC Power Supply	8
3.	PWR-C49-300AC/2	Catalyst 4948 300-Watt AC Power Supply Redundant	8
4.	CAB-BS546-C15-SA	BS 546 to IEC-C15 6ft South Africa, India	16
5.	S49ESK9-12254SG	Cisco CAT4900 IOS ENTERPRISE SERVICES SSH	8
6.	X2-10GB-LR	10GBASE-LR X2 Module	16
7.	GLC-LH-SM	GE SFP, LC connector LX/LH transceiver	91
8.	GLC-T	1000BASE-T SFP	55

Item No. 4: 5 nos. Distribution switches with 12 SFP slots , 2x 10GBase-X			
Sl. No.	**Product**	**Description**	**Qty**
1.	WS-C3560E-12SD-S	Catalyst 3560E 12 SFP+2*10GE(X2),IPB s/w	5
2.	S356EVK9T-12255SE	CAT 3560E IOS UNIVERSAL WITH WEB BASED DEV MGR	5
3.	C3K-PWR-300WAC	Catalyst 3560E-12D and 3560E-12SD 300WAC power supply	10
4.	CAB-IND-10A	10A Power cable for India	10
5.	X2-10GB-LR	10GBASE-LR X2 Module	10
6.	GLC-LH-SM	GE SFP, LC connector LX/LH transceiver	20
7.	GLC-T	1000BASE-T SFP	22

Item No. 5: 3 nos. Distribution switches with 48x10/100/1000 base T, 2x 10GBase-X			
Sl. No.	**Product**	**Description**	**Qty**
1.	WS-C4948-10GE-E	Catalyst 4948, ES Image, 48*10/100/1000+2*10GE(X2), 1 AC p/s	3
2.	CAB-CEE77-C15-EU	CEE 7/7 to IEC-C15 8ft Europe	6
3.	PWR-C49-300AC/2	Catalyst 4948 300-Watt AC Power Supply Redundant	3
4.	X2-10GB-LR	10GBASE-LR X2 Module	6
5.	PWR-C49-300AC	Catalyst 4948 300-Watt AC Power Supply	3
6.	S49IPB-12253SG	Cisco CAT4900 IOS IP BASE W/O CRYPTO	3

Item No. 6: 1 no. Distribution switches with 48x10/100/1000 base T, 4x SFP+ slots			
Sl. No.	**Product**	**Description**	**Qty**
1.	WS-C4948-10E-E	Catalyst 4948E, ES 48*10/100/1000+4*SFP+ AC p/s	1
2.	CAB-CON-C4K-RJ45	Console cable 6ft with RJ45 to RJ45	1
3.	PWR-C49E-300AC-R=	Catalyst 4948E 300-WAC Power Supply	1
4.	SFP-10G-LR=	10GBASE-LR SFP Module	2
5.	CAB-BS-546-C15-SA	BS 546 to IEC-C15 6ft South Africa India	2

Item No. 7: 20 nos. Distribution switches with 48x10/100/1000 base T, 4x SFP			
Sl. No.	**Product**	**Description**	**Qty**
1.	WS-C3560G-48TS-S	Catalyst 3560 48 10/100/1000T + 4 SFP + IPB Image	20
2.	CAB-IND-10A	10A Power cable for India	20
3.	GLC-LH-SM	GE SFP, LC connector LX/LH transceiver	56
4.	GLC-SX-MM	GE SFP, LC connector SX transceiver	4

Item No. 8: 5 nos. Wireless LAN Controller			
Sl. No.	**Product**	**Description**	**Qty**
1.	AIR-CT5508-500-K9	Cisco 5508 Series Wireless Controller for up to 500 APs	5
2.	SWC5500K9-70	Cisco Unified Wireless Controller SW Release 7.0	5
3.	AIR-PWR-CORD-AP	AIR Line Cord Asia Pacific (APAC)	10
4.	LIC-CT5508-500	500 AP Base license	5
5.	LIC-CT5508-BASE	Base Software License	5
6.	AIR-CT5508-500-K9Z	5508 Series Controller for up to 500 APs	5
7.	AIR-PWR-5500-AC	Cisco 5500 Series Wireless Controller Redundant Power Supply	5
8.	GLC-LH-SM	GE SFP, LC connector LX/LH transceiver	12
9.	GLC-T=	Gigabit Ethernet	8

Item No. 9: 1475 nos. Indoor Wireless Access Point			
Sl. No.	**Product**	**Description**	**Qty**
1.	AIR-LAP1262N-N-K9	802.11a/g/n Ctrlr-based AP; Ext Ant; N Reg Domain	1475
2.	S126RK9W8-12423JA	Cisco 1260 Series IOS Wireless LAN Controller-based Recovery	1475
3.	AIR-ANT2422DB-R	2.4 GHz 2.2 dBi Swivel Dipole Antenna Black, RP-TNC	4425
4.	AIR-AP-BRACKET-2	1040/1140/1260/3500 Universal Mounting Bracket	1475
5.	AIR-AP-T-RAIL-F	Ceiling Grid Clip for Aironet APs - Flush Mount	1475
6.	AIR-PWRINJ4=	Power Injector - AP1140/1250/1260/3500 Series-SPARE	1475
7.	AIR-PWR-CORD-AP	AIR Line Cord Asia Pacific (APAC)	1475

Item No. 10: 250 nos. Outdoor Wireless Access Point			
Sl. No.	**Product**	**Description**	**Qty**
1.	AIR-CAP1552E-N-K9	Cisco Aironet 1552E 802.11n Outdoor Mesh Access point	250
2.	AIR-ACCPMK1550=	1520 Series Pole Mount Kit	250
3.	AIR-CORD-R3P-40NA=	1520 Series AC Power Cord, 40 ft. N. Amer Plug	250
4.	REN 62451X DBODN	Third party Dual band antenna (REN make)	750

Item No. 11: 1 no. Wireless Control System			
Sl. No.	**Product**	**Description**	**Qty**
1.	WCS-STANDARD-K9	WCS Top Level SKU for AP capacity options.	1
2.	WCS-APBASE-500	Option Of WCS-Standard-K9 500 APs. One License.	1
3.	AIR-BAND-INST-TL=	1520 Series Band Installation Tool for the Pole Mount Kit	2
4.	UCS-C210-M2 (48GB RAM, 7.2K SATA 500GB x 8 HDD)	NMS, Cisco hardware for Cisco WiFi Mesh	1

Item No. 12: 1 no. LAN Management System			
Sl. No.	**Product**	**Description**	**Qty**
1.	UCS-C210-M2 (32 GB RAM, 7.2K SATA 500GB x 4 HDD)	NMS, Cisco hardware for Cisco LMS	1
2.	CWLMS-4.0-5K-K9	LMS 4.0 Med to Large Ent, networks of 1500 to 5000 devices	1

Item No. 13: 318 no. 52 port Access Switch			
Sl. No.	**Product**	**Description**	**Qty**
1.	SRW2048-K9	Cisco SG 300-52 - 52-Port Gigabit Managed Switch	318
2.	MGBLX1	1000BASE-LX SFP transceiver, for single-mode fiber, 1310 nm wavelength, support up to 10 km	270
3.	MGBSX1	1000BASE-SX SFP transceiver, for multimode fiber, 850 nm wavelength, support up to 550 m	20

Item No. 14: 260 nos. 28 port Access Switch			
Sl. No.	**Product**	**Description**	**Qty**
1.	SRW2024-K9	Cisco SG 300-28 - 28-Port Gigabit Managed Switch	260
2.	MGBLX1	1000BASE-LX SFP transceiver, for single-mode fiber, 1310 nm wavelength, support up to 10 km	130

Item No. 15: 170 nos. 10 port Access Switch			
Sl. No.	**Product**	**Description**	**Qty**
1.	SRW2008-K9-G5	Cisco SG 300-10 - 10-Port Gigabit Managed Switch	170
2.	MGBLX1	1000BASE-LX SFP transceiver, for single-mode fiber, 1310 nm wavelength, support up to 10 km	20

Item No. 16: 20 nos. 48port PoE Access Switch			
Sl. No.	**Product**	**Description**	**Qty**
1.	WS-C2960S-48LPS-L	Catalyst 2960S 48 GigE PoE 370W, 4 x SFP LAN Base	20
2.	CAB-IND	Power cable for India	20
3.	GLC-LH-SM	GE SFP, LC connector LX/LH transceiver	40

Item No. 17: 42 nos. 48port Access Switch			
Sl. No.	**Product**	**Description**	**Qty**
1.	WS-C2960S-48TS-S	Catalyst 2960S 48 GigE, 2 x SFP LAN Lite	42
2.	CAB-IND	Power cable for India	42
3.	GLC-LH-SM	GE SFP, LC connector LX/LH transceiver	84

Item No. 18: 10 nos. 24port Access Switch			
Sl. No.	**Product**	**Description**	**Qty**
1.	WS-C2960S-24TS-S	Catalyst 2960S 24 GigE, 2 x SFP LAN Lite	22
2.	CAB-IND	Power cable for India	22
3.	GLC-SX-MM	GE SFP, LC connector SX transceiver	30
4.	GLC-LH-SM	GE SFP, LC connector LX/LH transceiver	24

Item No. 19: 2 nos. Firewall			
Sl. No.	**Product**	**Description**	**Qty**
1.	ASA5580-20-8GE-K9	ASA 5580-20 Appliance with 8 GE, Dual AC, 3DES/AES	2
2.	CAB-SABS-C19-IND	SABS 164-1 to IEC-C191ndia	4
3.	SF-ASA5580-8.2-K8	ASA 5580 Series Software v8.2	2
4.	ASA-VPN-CLNT-K9	Cisco VPN Client Software (Windows, Solaris, Linux, Mac)	2
5.	ASA5580-4GE-FI	ASA 5580 4-Port Gigabit Ethernet Interface Card, SR, LC	4
6.	ASA5500-ENCR-K9	ASA 5500 Strong Encryption License (3DES/AES)	2
7.	ASA-ANYCONN-CSD-K9	ASA 5500 Any Connect Client + Cisco Security Desktop Software	2
8.	ASA5580-PWR-AC	ASA 5580 AC Power Supply	2
9.	ASA5580-4GE-CU	ASA 5580 4-Port 10/100/1000 Interface Card, RJ-45	2
10.	ASA5580-4GE-CU	ASA 5580 4-Port 10/100/1000 Interface Card, RJ-45	2

Item No. 20: Software for Communication Manager			
Sl. No.	**Product**	**Description**	**Qty**
1.	CUCM-USR-LIC	Top Level Sku For User License	1
2.	LIC-CUCM-USR-B	Unified Comm. Manager Enh Single User-1000 to 10K	3000
3.	CUCM-UCS-7500-85	CUCM 8.5 - For UC on UCS 7500 user VM	1
4.	CCX-85-CMBUNDLE-K9	CCX 8.5 5 Seat CCX ENH CM Bundle - AVAILABLE ONLY FOR NEW CM	1
5.	CM85-UCS-7500-KIT	CUCM 8.5 Media Kit for UCS	1
6.	CUCM-PAK	Include PAK Auto-expanding PAK for CUCM	1
7.	CUCM-USR	Include PAK Auto-expanding User for CUCM	18000
8.	UCM-L-UCS-NODE	CUCM CUCM-UCS-7500 Node	1
9.	CON-ESW-CUCMUSR	ESSENTIAL SW Top Level Sku For User License	1
10.	CON-ESW-EUSRB1K	ESSENTIAL SW Unified CommMgr Enh Sgl User 1001 to 10K	3000
11.	UCSS-UCM	Top level SKU, Unified Call Manager Software Subscription	1
12.	UCSS-UCM-3-1-B	UC Manager Enh UCSS 1K to 10K users - 1 user	3000

Item No. 21: 2 nos. Communication Manager Server Hardware			
Sl. No.	**Product**	**Description**	**Qty**
1.	UCS-C210M2-VCD2	Bare Metal UCS C210M2 Svr.,2xE5640 CPU,48GB RAM,10x146GB HDD	2
2.	SFS-250V-10A-ID	SFS Power Cord - 250V, 10A , India	4
3.	UC-A01-X0109	2.66GHz Xeon E5640 80W CPU/12MB cache/DDR3 1066MHz	4
4.	UC-A03-D146GC2	146GB 6Gb SAS 15K RPM SFF HDD/hot plug/drive sled mounted	20
5.	UC-N01-M304GB1	4GB DDR3-1333MHz RDIMM/PC3-10600/dual rank 1Gb DRAMs	24
6.	UC-N2XX-ABPCI03	Broadcom BCM5709 Quad Gig E card (10/100/1GbE)	2
7.	UC-R210-ODVDRW	DVD-RW Drive for UCS C210 M1 Rack Servers	2
8.	UC-R2XX-PL003	LSI 6G MegaRAID PCIe Card (RAID 0, 1, 5, 6, 10, 60) - 512WC	2
9.	UC2-R2X0-PSU2-650W	650W power supply unit for UCS C210 M1 Rack Server	4
10.	CON-UCS1-C210M2VC	UC SUPPORT 8X5XNBD Bare Metal UCS C210M2 Svr.,2xE5640 CPU,4	2
11.	VMW-UC-STD-K9-1A	VMware ESXi 4.0 Standard (2 CPU)	2
12.	VMW-VS-STD-1A	VMware vSphere Standard (1 CPU)	4
13.	CON-ISV1-UCSTD1A	ISV 24X7 VMware vSphereESXi 4.0 Std,2 CPU	2
14.	CON-ISV1-VSSTD1A	ISV 24X7 VMware vSphere Std (1 CPU)	4

Item No. 22: 2 nos. Voice Gateway Router			
Sl. No.	**Product**	**Description**	**Qty**
1.	C3945-VSEC-SRE/K9	Cisco 3945 SRE Bundle, SRE 700, PVDM3-64, UC, SEC Lic. PAK	2
2.	FL-CUE-MBX-5	Unity Express License - 5 Mailbox - CUCM and CUCME	40
3.	VWIC2-2MFT-T1/E1	2-Port 2nd Gen Multiflex Trunk Voice/WAN Int. Card - T1/E1	4
4.	PVDM3-64U256	PVDM3 64-channel to 256-channel factory upgrade	2
5.	PWR-3900-AC/2	Cisco 3925/3945 AC Power Supply (Secondary PS)	2
6.	CAB-ACSA	AC Power Cord (India/South Africa), C13, BS 546, 1.8m	4
7.	S39UK9-15001M	Cisco 3925-3945 IOS UNIVERSAL	2
8.	PWR-3900-AC	Cisco 3925/3945 AC Power Supply	2
9.	3900-FANASSY	Cisco 3925/3945 Fan Assembly (Bezel included)	2
10.	C3900-SPE150/K9	Cisco Services Performance Engine 150 for Cisco 3945 ISR	2
11.	FL-CUE-PORT-2	Unity Express License - 2 Port	20
12.	MEM-3900-1GB-DEF	1GB DRAM (512MB+512MB) for Cisco 3925/3945 ISR (Default)	2
13.	MEM-CF-256MB	256MB Compact Flash for Cisco 1900, 2900, 3900 ISR	2
14.	SL-39-IPB-K9	IP Base License for Cisco 3925/3945	2
15.	SL-39-UC-K9	Unified Communication License for Cisco 3900 Series	2

Item No. 23: GPON Items (Alphion Solution)		
Sl. No.	**Descriptions**	**Qty**
1.	AOLT-4000 Chassis with Fan Tray & Fan Filter Cartridge	4
2.	Power Cables Kit for AOLT-4000 Chassis	4
3.	AOLT-4000 Installation Material Kit	4
4.	AOLT-4000 System Software (CD)	4
5.	AOLT System Software License	4
6.	AOLT-4000 Control Card	8
7.	Software License for Control (CTL) Card with Redundancy Support	8
8.	AOLT-4000 Switch Card	8
9.	Transceiver, XFP, 10-GBE, 10GBASE-SR, DUAL LC connector, 850 nm, 300m, -40 to +85 C	12
10.	Transceiver, SFP, 1-GBE, 1000BASE-SX, DUAL LC connector, 850 nm, 550m, 0C to +85 C	64
11.	Alphion Software License for Switch (SWT) Card with Redundancy Support	8
12.	AOLT-4000 GPON Protected Path Line Card without SFP's	39
13.	SFP GPON 2.5Gb/1.25Gb Optical Transceiver Module, B+ Optics, SC/UPC connector, RSSI, with Alphion private label	152
14.	Alphion Software License for GPON Line (GLCP) Card with Redundancy Support	39
15.	Alphion EMS Server Software Bundle for Windows x86 Platforms - Includes the Base EMS Software + Sun Java + JBoss for Windows x86 Platforms	1
16.	Alphion EMS Client Software & License Bundle – Includes the EMS Client Software and License	2
17.	Alphion EMS LCT Software and License Bundle - the LCT Client Software and License	2
18.	Alphion SFU UPS, Hardwired barrel plug and Hardwired India	1461
19.	Network Management License per AONT-1000 Family	1546
20.	Network Management License per AONT-3000 Family	82
21.	Optical Transmitter for Broadcast Signal Amplification	1
22.	EDFA Amplifier for Analog TV Broadcast	9
23.	Alphion Indoor Wall Mount Splitter 1:8 SC/UPC	2
24.	Alarm Panel Interface Cable	4
25.	Alarm Panel assembly, DR42 series	2
26.	AONT-100 SFU with RF Coax, four (4) 10/100BT ports & two (2) Voice ports, with India Power Adapter	1550
27.	AONT-100Z OUTDOOR ONT with RF Coax, four (4) 10/100BT ports & two (2) Voice ports, with India Power Adapter	30
28.	AONT-1240 SFU with 4 GE Ports and 2 Voice Ports, India Power Cord	65
29.	AONT-3330 MDU with 24 FE ports and 24 Voice Ports, AC power, India power cord	90
30.	Alphion Software License for AONT-1000 Family	1546
31.	Alphion Software License for AONT-3000 Family	82
32.	SMPS (Emerson Netsure 701IE4)	1
33.	Sun Server Hardware and Cable (for Alphion EMS SW)in cluster mode	2

ANNEXURE - 2

Item No. 1: 124 nos. Access Switches			
Sl. No.	**Product**	**Description**	**Qty**
1.	WS-C3750-48TS-E	Cisco Catalyst 3750-48TS-48 Ethernet 10/100 ports and four SFP uplinks	5
2.	WS-C3750-24TS-E	Cisco Catalyst 3750G-24TS-24 Ethernet 10/100/1000 ports and four Small Form-Factor Pluggable (SFP) uplinks	4
3.	WS-C2960-48TC-S	Cisco Catalyst 2960-Plus 48TC-S**:** 48 Ethernet 10/100/1000 ports and 2 (SFP or 1000BASE-T)	**30**
4.	WS-C2960-24TT-L	Cisco Catalyst 2960-24TT-L Switch	20
5.	WS-C3560-48PS-S	Cisco Catalyst 3560-48PS: 48 Ethernet 10/100 ports with PoE and 4 SFP-based Gigabit Ethernet ports	18
6.	WS-CE500-24TT	Cisco Catalyst Express 500-24TT: Twenty-four 10/100 ports for desktop connectivity and Two 10/100/1000BASE-T ports for uplink or server connectivity	24
7.	WS-C3560G-24TS-E	Cisco Catalyst 3560G-24TS: 24 Ethernet 10/100/1000 ports and 4 SFP-based Gigabit Ethernet ports	3
8.	WS-C3560G-48PS-S	Cisco Catalyst 3560G-48PS: 48 Ethernet 10/100/1000 ports with PoE and 4 SFP-based Gigabit Ethernet ports	3
9.	WS-CE500G-12TC	Cisco Catalyst Express 500G-12TC: Eight 10/100/1000BASE-T and four 10/100/1000BASE-T or SFP ports for switch aggregation or server connectivity	2
10.	WS-C2960-48TT-L	Cisco Catalyst 2960-24TT-L: 24 Ethernet 10/100 ports and 2 Ethernet 10/100/1000 ports	3
11.	WS-CE500-24LC	Cisco Catalyst Express 500-24LC: Twenty 10/100 ports for desktop connectivity, Four 10/100 Power over Ethernet (PoE) ports Two and 10/100/1000BASE-T or Small Form-Factor Pluggable (SFP) ports	4
12.	WS-C2960-24PC-L	Cisco Catalyst 2960-24PC-L: 24 Ethernet 10/100 PoE ports and 2 dual-purpose ports (10/100/1000 or SFP)	8