

Bharat Heavy Electricals Limited

ITX, HEEP, RANIPUR, HARIDWAR-249403 (Uttarakhand, India)

Phone: 01334-281399, FAX: 01334-223948 E-mail: ajaipal@bhelhwr.co.in

NIT Ref: HW/ITX/2/1328 Date: 08.10.2015

Subject: NIT for 2 years AMC of 10G Backbone Network and addition of network sites & network points at BHEL Haridwar

Sir,

1. 10G Backbone network were installed in BHEL Haridwar on lease basis in 2010. This network has to be covered under AMC for two years. In addition to this new Network sites and network points also has to be added to meet user requirement. The scope of work is given in detail in Annexure III. The Annexure details are as follows:

Annexure I	Technical Pre-qualification Compliance Sheet
Annexure II	Technical specifications of 10G Backbone Campus Wide network
Annexure III	Format of Certificate by Chartered Accountant on letter head
Annexure IV	Scope of work and Terms & Conditions
Annexure V	Price Bid Format

2. You are requested to submit techno-commercial offer in two parts as per the scope of supply indicated therein. The tender offer should be sealed in two separate envelopes with 'Technical bids' / 'Commercial bids', Tender no., opening date duly super scribed on the envelopes.
3. The technical bid envelope should enclose your technical offer comprising Technical Pre-qualification Compliance Sheet (Annexure-I), Technical specifications of 10G Backbone Campus Wide network(Annexure-II), Format of Certificate by Chartered Accountant on letter head(Annexure-III) if applicable duly signed/stamped, Scope of work and Terms & conditions (Annexure-IV), duly signed/stamped and unpriced bid as per Annexure-V. **All documents/ certificates / data sheets required as per Annexure-I and Annexure-V must be submitted in the Technical bid.** The EMD and tender document fee will also be submitted alongwith this part of bid. However, vendors who participated in the tender ref. HW/ITX/2/1310 Dated 01.08.15 and have submitted the tender fee & EMD for the same, are exempted from submitting the tender fee & EMD again. Tender fee & EMD for those vendors will be converted for this tender.
4. Vendor must meet prequalification criteria as per Annexure-I. The offers not meeting these criteria will not be evaluated further and will be rejected summarily.
5. The commercial bid envelope should enclose Price bid (As per format in Annexure V) only.
6. The technical bids will be opened on the last day of submission of the offers at 2.00 P.M. in the presence of the tenderers or their authorized representatives who may like to be present. Incomplete offers are liable to be rejected.
7. The terms and conditions given at Annexure-IV will be adhered to by the tenderer. Please do not remain silent on any point and if you are not accepting any terms/condition please clearly state so. Any deviation/remarks should be clearly specified by the tenderer in separate sheets.

8. Earnest money of Rs. 2,00,000/- and tender document charges of Rs. 2000/- in the form of demand draft (two separate drafts) in favor of BHEL, Haridwar or cash deposit (to the extent admissible in Income Tax Act) with Accounts officer, BHEL, Ranipur, Haridwar is to be furnished with the tender offer. BHEL reserves the right to reject any or all tenders without assigning any reason there- of.
9. The offers in sealed envelopes (as stated in para-2 above) should be submitted latest by **1.45 P.M. on 23/10/2015** at the following address:

**Head of Material Management
Heavy Electricals Equipment Plant
Bharat Heavy Electricals Limited
Ranipur Haridwar (Uttarakhand)
PIN – 249403**

IMPORTANT: Any vagueness / incomplete detail in the offers shall make it liable to be rejected as these shortcomings in the offers shall be interpreted as incompetence on the part of vendor to meet the requirements of BHEL.

Checklist for submitting the bid is as under:

To be submitted with Technical Bid

Sl.	Annexure	Description	Remarks
1	--	Your Technical Offer	
2	Annexure I	Technical Pre-qualification Compliance Sheet.	All referred documents/proofs/ data sheets, if applicable to be submitted should be duly signed and stamped.
3	Annexure II	Technical Specifications sheet.	All referred documents/proofs/ data sheets, if applicable, to be submitted should be duly signed and stamped.
4	Annexure III	Valid Certificates as per clause 4 of annexure-IV	If applicable
5	Annexure IV	Scope of Work and Terms & Conditions	Signed & Stamped
6	Annexure V	Unpriced Bid	Signed & Stamped, Mention all applicable taxes corresponding to each item without prices.
7		Earnest Money Deposit (EMD)	
8		Tender document fee	

To be submitted with Price Bid:

Sl.	Annexure	Description	Remarks
1	Annexure V	Price Bid	In a separate sealed envelope

Thanking you,

Yours faithfully,

**(Ajai Pal Singh)
Deputy Manager/ITX**



Annexure I Technical Pre-qualification Compliance Sheet		
Sr. No	Description	Compliance (Y/N)
1.	<p>The Bidder or its parent/subsidiary company should have successfully executed similar projects during last 7 years, ending September 30, 2015 , in any one of the following:</p> <p>a. Single On-site One Year Annual Maintenance Contract (AMC) having minimum value of Rs. 46 Lakhs. or</p> <p>b. Two nos. on-site One Year Annual Maintenance Contract (AMC) having minimum value of Rs. 29 Lakhs per annum each. or</p> <p>c. Single 5 year lease contract which includes on-site comprehensive maintenance. Contract value should be minimum Rs 3 Crores. One year of onsite comprehensive maintenance should have been completed after successful installation of hardware / equipment. or</p> <p>d. Two nos. 5 year lease contract which includes on-site comprehensive maintenance. Contract value of each contract should be minimum Rs 1.5 Crores. One year of onsite comprehensive maintenance should have been completed after successful installation of hardware / equipment.</p> <p>The contract should include support of networking equipment / passives in a distributed environment. Proof of AMC orders / lease orders as applicable having the full customer address, mail id, contact number and order value is to be submitted.</p>	
2.	Average Annual financial turnover during the last 3 years ending March 31, 2015 is at least Rs 39 lakhs. Proof to be provided.	
3.	Authorization letter from Cisco, Eaton & Zyxel specific to this tender.	



LIST OF ITEMS

ANNEXURE II

Part -1 : List of Items for AMC

S.No.	ITEM DESCRIPTION	QUANTITY
Active Components		
1	Cisco Catalyst 6509 Switch with modules	2
2	Cisco Catalyst 4507 Switch with modules	2
3	Cisco Catalyst 4506 Switch with modules	13
4	Cisco Catalyst 3560	1
5	Cisco Catalyst 4948	2
6	Cisco Catalyst 2690G-48Port	50
7	Cisco Catalyst 2690G-24Port	74
8	48 Port 10/100/1000 Module on Cisco 6500 Series Switch	2
9	48 Port 10/100/1000 Module on Cisco 4500 Series Switch	23
10	10G SR Fiber Transceivers in Cisco 6500 Series Switch	7
11	10G LR Fiber Transceivers in Cisco 6500 Series Switch	29
12	1G SX Fiber Transceivers in Cisco 6500 Series Switch	1
13	1G LX Fiber Transceivers in Cisco 6500 Series Switch	3
14	1G UTP Transceivers in Cisco 6500 Series Switch	8
15	10G SR Fiber Transceivers in Cisco 4500 Series Switch	5
16	10G LR Fiber Transceivers in Cisco 4500 Series Switch	25
17	1G SX Fiber Transceivers in Cisco 4500 Series Switch	53
18	1G LX Fiber Transceivers in Cisco 4500 Series Switch	6
19	1G UTP Transceivers in Cisco 4500 Series Switch	38
20	10G SR Fiber Transceivers in Cisco 4900 Series Switch	2
21	10G LR Fiber Transceivers in Cisco 4900 Series Switch	2
22	1G SX Fiber Transceivers in Cisco 2900 Series Switch	99
23	1G LX Fiber Transceivers in Cisco 2900 Series Switch	13
24	Cisco Ironport S360	1
25	Cisco LWAPP AIR-LAP1252AG-N-K9	20
26	Wireless LAN Controller 4404	1
27	DSLAM-Zyxel IES-1248	1
28	CPE	20
29	UPS 10 KVA-Eaton Make	2
30	UPS 6 KVA-Eaton Make	15
31	UPS 1 KVA-Eaton Make	108
32	42U Rack- Rittal make	2
33	24U Rack-Rittal Make	15
34	12U Rack- Rittal / HCL Make	111



Passive Networking		
38	Cat5E/Cat6 UTP Network nodes which include Face plate, Surface mount boxes, I/Os, Jack Panels, Patch Cords Cables are laid in PVC/MS Conduits in buildings and shop floor areas	4000
39	24 core SM SC-SC Armored Fiber segments which include dark fiber, LIUs, Fiber Patch Cords, Pigtails, Adapter plates etc Cables are laid in GI Pipes either underground or in buildings / shop floor areas	2
40	6 core SM/MM (SC-LC or SC-SC) Armored / Unarmored Fiber segments which include dark fiber, LIUs, Fiber Patch Cords, Pigtails, Adapter plates etc. Cables are laid in GI Pipes either underground or in buildings / shop floor areas	130



Part 2: BOM for New Network Sites / Points

Sl. No.	Item Description	Unit	Qty
1	6 CORE MM ARMoured FIBER OPTIC CABLE	METER	650
2	SC-LC MM FIBER PATCH CABLES	NOS	6
3	CAT 6 FACE PLATE WITH I/O AND SMB	NOS	215
4	CAT 6 RJ 45 I/O	NOS	215
5	24 PORT UNLOADED UTP JACK PANEL	NOS	13
6	CAT 6 UTP	METER	13115
7	CAT 6 UTP PATCH CORD- 3 FEET	NOS	215
8	1" MS CONDUIT MEDIUM STRENGTH, ISI MARK	METER	4800
9	1" GI CONDUIT MEDIUM STRENGTH, ISI MARK	METER	330
10	1" PVC CONDUIT MEDIUM STRENGTH, ISI MARK	METER	5400
11	INSTALLATION OF 12U NETWORK RACK	NOS	4
12	FIXING/LAYING OF 1"MS CONDUIT ON STEEL COLUMNS IN FACTORY AREA	METER	4800
13	FIXING/LAYING OF 1"PVC CONDUIT ON WALLS	METER	5400
14	SPLICING AND TESTING OF FIBER SEGMENTS(6X6)	NOS	36
15	CONNECTRIZATION/PENTASCANNER TESTING OF UTP SEGMENTS(215X2)	NOS	430
16	LAYING OF UTP THROUGH PVC/MS/GI	METER	13115
17	CUTTING OF SOFT SURFACE, DIGGING OF TRENCH 300X800MM, LAYING OF BRICK, GI CONDUIT, OPTICAL FIBER CABLE THROUGH GI CONDUIT, SAND AND REFILLING OF TRENCH	METER	250

18	CUTTING OF HARD SURFACE, DIGGING OF TRENCH 300X800MM, LAYING OF BRICK, GI CONDUIT, OPTICAL FIBER CABLE THROUGH GI CONDUIT, SAND AND REFILLING OF TRENCH	METER	80
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Part 3 : Broad Specifications

A Active components		Quantity
A.1	Item Name	Core Switch
	Make & Model	Cisco Catalyst 6509 Switch
	Module for Core Switch1	
	Module 1	WS-X6708-10GE
	Module 2	WS-X6708-10GE
	Module 3	WS-X6724-SFP
	Module 4	VS-S720-10G
	Module 5	WS-X6708-10GE
	Module for Core Switch2	
	Module 1	WS-X6708-10GE
	Module 2	WS-X6708-10GE
	Module 3	WS-X6708-10GE
	Module 4	WS-X6724-SFP
	Module 5	VS-S720-10G
A.2	Item Name	Distribution Switch Type I
	Make & Model	Cisco Catalyst 4507
	Module for Switch1	
	Module 1	WS-X4506-GB-T
	Module 2	WS-X45-SUP6-E
	Module 3	WS-X45-SUP6-E
	Module for Switch2	
	Module 1	WS-X4506-GB-T
	Module 2	WS-X45-SUP6-E
	Module 3	WS-X45-SUP6-E
A.3	Item Name	Distribution Switch Type II
	Make & Model	Cisco Catalyst 4506
	Module for Distribution Switch Type II-1	
		WS-X45-SUP6-E
		Cisco/I WS-X4506-GB-T
	Module for Distribution Switch Type II-2	
		WS-X45-SUP6-E
		WS-X4506-GB-T
		WS-X4612-SFP-E
	Module for Distribution Switch Type II-3	
		WS-X45-SUP6-E
		WS-X4506-GB-T
		WS-X4612-SFP-E
	Module for Distribution Switch Type II-4	
		WS-X45-SUP6-E
		WS-X4506-GB-T
	Module for Distribution Switch Type II-5	
		WS-X45-SUP6-E
		WS-X4506-GB-T

		WS-X4506-GB-T	
	Module for Distribution Switch Type II-6	WS-X45-SUP6-E	
		WS-X4506-GB-T	
	Module for Distribution Switch Type II-7		
		WS-X45-SUP6-E	
		WS-X4612-SFP-E	
	Module for Distribution Switch Type II-8		
		WS-X45-SUP6-E	
		WS-X4506-GB-T	
		WS-X4612-SFP-E	
	Module for Distribution Switch Type II-9		
		WS-X45-SUP6-E	
		WS-X4612-SFP-E	
	Module for Distribution Switch Type II-10		
		WS-X45-SUP6-E	
		WS-X4506-GB-T	
	Module for Distribution Switch Type II-11		
		WS-X45-SUP6-E	
		WS-X4506-GB-T	
		WS-X4506-GB-T	
	Module for Distribution Switch Type II-12		
		WS-X45-SUP6-E	
		WS-X4506-GB-T	
	Module for Distribution Switch Type II-13		
		WS-X45-SUP6-E	
		WS-X4506-GB-T	
A.4	Item Name	Distribution Switch Type III	1
	Make & Model	Cisco Catalyst 3560	
	Module	WS-C3560E-24TD-S	
A.5	Item Name	Aggregation Switch	2
	Make & Model	CISCO Catalyst 4948	
	Aggregation Switch		
		WS-C4948-10GE	
		WS-C4948-10GE	
A.6	Item Name	Access Switch Type I	
	Make & Model	CISCO Catalyst 2960 48 port	
	Access Switch Type I	WS-C2960G-48TC-L	50
A.7	Item Name	Access Switch Type II	
	Make & Model	CISCO Catalyst 2960 24 port	
	Access Switch Type II	WS-C2960G-24TC-L	74
A.8	Item Name	48 Port 10/100/1000 Module on Cisco 6500 Series Core Switches	2
		WS-X6748-GE-TX	2
A.9	Item Name	48 Port 10/100/1000 Module on Cisco 4500 Series Distribution Switches	
		WS-X4548-GB-RJ45	23
A.10	Item Name	10G SR Fiber Transceivers in Cisco 6500 Series Core Switches	7

A.11	Item Name	10G LR Fiber Transceivers in Cisco 6500 Series Core Switches	29
A.12	Item Name	1G SX Fiber Transceivers in Cisco 6500 Series Core Switches	1
A.13	Item Name	1G LX Fiber Transceivers in Cisco 6500 Series Core Switches	3
A.14	Item Name	1G UTP Transceivers in Cisco 6500 Series Core Switches	8
A.15	Item Name	10G SR Fiber Transceivers in Cisco 4500 Series Distribution Switches	5
A.16	Item Name	10G LR Fiber Transceivers in Cisco 4500 Series Distribution Switches	25
A.17	Item Name	1G SX Fiber Transceivers in Cisco 4500 Series Distribution Switches	53
A.18	Item Name	1G LX Fiber Transceivers in Cisco 4500 Series Distribution Switches	6
A.19	Item Name	1G UTP Transceivers in Cisco 4500 Series Distribution Switches	38
A.20	Item Name	10G SR Fiber Transceivers in Cisco 4900 series Aggregation Switches	2
A.21	Item Name	10G LR Fiber Transceivers in Cisco 4900 series Aggregation Switches	2
A.22	Item Name	1G SX Fiber Transceivers in Cisco 2900 Series Access Switches	97
A.23	Item Name	1G LX Fiber Transceivers in Cisco 2900 Series Access Switches	11
A.24	Item Name	Web Security Solution Ironport S360 including licenses for 1000 concurrent users for Cisco IronPort Web Usage Controls, Anti-Malware, Cisco Web Reputation Filters during entire contract period. Cisco IronPort L4 Traffic Monitor, Cisco IronPort HTTPS Proxy, Cisco IronPort Web Proxy & DVS Engine, Cisco AnyConnect Secure Mobility Perpetual licenses are already available.	1
A.25	Item Name	Lightweight Indoor Wireless Access Point CISCO Air-Lap 1252 AG-N-K9 CISCO Air-Lap 1262 AG-N-K9	20
A.26	Item Name	Wireless LAN Controller	

		Wireless LAN Controller 4404-100-K9	1
A.27	Item Name	DSLAM	1
		IP DSLAM-Zyxel IES-1248	
A.28	Item Name	CPE	20
		Zyxel P600 series	
A.29	Item Name	UPS 10 KVA	2
		Eaton Make E series DX C6KS	
A.30	Item Name	UPS 6 KVA	15
		Eaton Make E series DX	
A.31	Item Name	UPS 1 KVA	108
		Eaton Make E series DX	
A.32	Item Name	42U Rack-Rittal make including PDUs, cooling fans and locks	2
A.33	Item Name	24U Rack-Rittal make including PDUs, cooling fans and locks	15
A.34	Item Name	12U Rack-Rittal / HCL make including PDUs, cooling fans and locks	111

Part 2 : Detailed Specifications

	<p>The structured cabling solution shall be from AMP/ Systimax/ Avaya/ Molex/ Panduit. All passive cabling shall be from single OEM. All UTP Cabling shall be Category 6 type. All Multimode optical fiber shall be of 50 micron. New passive network shall integrate with existing passive network. The vendor shall label all cables and cords, LIUs, jack panels, SMBs etc according to industry standards. The actual quantities of various passive items (UTP /fiber/ Pipes/ digging/ labour) shall depend upon their actual consumption at the time of installation. Payment for these items shall be done on actual.</p>		
1	6 CORE MM ARMOURED FIBER OPTIC CABLE	METER	650
2	SC-LC MM FIBER PATCH CABLES	NOS	6
3	CAT 6 FACE PLATE WITH I/O AND SMB	NOS	215
4	CAT 6 RJ 45 I/O	NOS	215
5	24 PORT UNLOADED UTP JACK PANEL	NOS	13
6	CAT 6 UTP		
	4 Pair Cat 6, 23 AWG UTP Cable	METER	13115
7	CAT 6 UTP PATCH CORD- 3 FEET	NOS	215
8	1" MS CONDUIT MEDIUM STRENGTH, ISI MARK		
	1" MS Pipe, Medium Strength, ISI Mark, Minimum Wall Thickness 1.6mm	METER	4800
9	1" GI CONDUIT MEDIUM STRENGTH, ISI MARK	METER	330
10	1" PVC CONDUIT MEDIUM STRENGTH, ISI MARK		
	1" PVC Pipe, Medium Strength. ISI Mark	METER	5400
11	INSTALLATION OF 12U NETWORK RACK	NOS	4
12	FIXING/LAYING OF 1"MS CONDUIT ON STEEL COLUMNS IN FACTORY AREA	METER	4800
13	FIXING/LAYING OF 1"PVC CONDUIT ON WALLS	METER	5400
14	SPLICING AND TESTING OF FIBER SEGMENTS(6X6)	NOS	36
15	CONNECTRIZATION/PENTASCANNER TESTING OF UTP SEGMENTS(215X2)	NOS	430
16	LAYING OF UTP THROUGH PVC/MS/GI	METER	13115
17	CUTTING OF SOFT SURFACE, DIGGING OF TRENCH 300X800MM, LAYING OF BRICK, GI CONDUIT, OPTICAL FIBER CABLE THROUGH GI CONDUIT, SAND AND REFILLING OF TRENCH	METER	250
18	CUTTING OF HARD SURFACE, DIGGING OF TRENCH 300X800MM, LAYING OF BRICK, GI CONDUIT, OPTICAL FIBER CABLE THROUGH GI CONDUIT, SAND AND REFILLING OF TRENCH	METER	80

Certificate by Chartered Accountant on letter head

This is to Certify that M/S,
(hereinafter referred to as 'company') having its registered office at
....., is registered under MSMED Act 2006, (Entrepreneur
Memorandum No (Part-II) dtd:.....,
Category: (Micro/Small)). (Copy enclosed).

Further verified from the Books of Accounts that the investment of the company as per the latest audited financial year as per MSMED Act 2006 is as follows:

1. **For Manufacturing Enterprises:** Investment in plant and machinery (i.e. original cost excluding land and building and the items specified by the Ministry of Small Scale Industries vide its notification No.S.O.1722(E) dated October 5, 2006 :
Rs.....Lacs
2. **For Service Enterprises:** Investment in equipment (original cost excluding land and building and furniture, fittings and other items not directly related to the service rendered or as may be notified under the MSMED Act, 2006:
Rs.....Lacs

(Strike off whichever is not applicable)

The above investment of Rs.....Lacs is within permissible limit of Rs.....Lacs forMicro / Small (Strike off which is not applicable) Category under MSMED Act 2006.

Or

The company has been graduated from its original category (Micro/ Small) (Strike off which is not applicable) and the date of graduation of such enterprise from its original category is (dd/mm/yyyy) which is within the period of 3 years from the date of graduation of such enterprise from its original category as notified vide S.O. No. 3322(E) dated 01.11.2013 published in the gazette notification dated 04.11.2013 by Ministry of MSME.

Date:

(Signature)

Name -

Membership number -

Seal of Chartered Accountant



TERMS AND CONDITIONS

1 SCOPE OF WORK:

Comprehensive onsite two year Annual Maintenance Contract (AMC) for networking equipment installed across BHEL Haridwar and installation of new network sites/ points at various locations (Details as per Annexure –II).

- a) Supply, laying, installation, testing, commissioning and maintenance of networking passives as onetime network sites / points installation.
- b) Supply and installation of all passive components including I/O boxes, Patch panels, Patch cords, connectors etc required to complete the work on structured cabling concept.
- c) All passive components should be of single make.
- d) Supply and installation of all cable laying accessories including GI/MS conduits, PVC pipes/channels, supporting structures, clamps, identification tags, ferules etc required for laying of cables. The vendor shall include in his scope, any digging work required for laying of cables.
- e) Minor civil works such as chipping / cutting of floors for making grooves, making holes/opening through walls, ceiling or floors, drilling of holes through steel structures and frames, grouting of frames, hooks on walls/ceiling etc. required for execution of work. After erection, surface shall be made good by plastering / painting to their original shape and finish. Road cutting, if any, shall also be resurfaced and brought to their original shape and finish.
- f) Acceptance Testing based on agreed ATP document.
- g) Maintenance and configuration of network devices / software / UPS etc including Inter VLAN routing, Multitrunk linking, network segregation, firewall configuration, separate security zones etc. Replacement of faulty battery replacement will be in BHEL's scope.
- h) LAN/WAN IP schemes configuration.
- i) Maintenance and repair of network passives and network rack equipment including dressing of cables, rodent control etc in the racks. Racks should be kept properly sealed to protect the cables from damages by rodents.
- j) Comprehensive maintenance shall include Repair / Replacement of all faulty equipment including but not limited to cables, jack panels, cable managers, I/Os, faceplates, LIUs, Patch Cords, Pigtails, Adapter plates etc.
- k) Comprehensive maintenance shall include repairing/replacement of any fiber/UTP, cut due to any reason whatsoever. BHEL shall not bear any cost for the same.
- l) BHEL's involvement during each stage of implementation shall be ensured by the vendor.

2 GENERAL:

- a) The comprehensive AMC maintenance contract will be for the period of 2 years. No escalation of cost, due to any reason, will be admissible during this period. The payment will be made quarterly, at the end of the quarter. Invoices are to be



Annexure IV

submitted in triplicate along with other necessary documents. Deduction of downtime, if any, shall be made from quarterly AMC charges. Along with invoices, copy of the latest periodical challans of taxes, deposited to government accounts linked to the taxes charged in the given invoices is to be submitted to process the invoices. (Service tax / VAT)

- b) No interest whatsoever shall be payable by BHEL on any amount due to the vendor.
- c) Maintenance coverage for networking equipment (Annexure II) shall be on 24x7 basis with 4 hours response time with back to back support from OEM. Vendor will ensure back to back AMC support from OEMs i.e. Cisco, Eaton & Zyxel. Authorization from OEMs for back to back support for Items in Annexure II should be submitted along with Techno-commercial bid.
- d) For rest of the items, normal maintenance coverage will be for prime shift (Monday to Saturday 8 AM to 5 PM). However, maintenance coverage shall be provided on call basis after the prime shift, if required.
- e) Successful bidder shall enter into AMC agreement with BHEL on non-judicial stamp paper of required value as per extant rules, at their own cost.
- f) The successful bidder should fulfill all statutory and safety requirements for personnel engaged while executing the contract. If BHEL has to incur any expenditure due to non-compliance of the applicable statutory provisions, the same will be compensated by the vendor.
- g) Successful bidder should submit back to back OEM support letter within 30 working days of award of work.
- h) Payment against first quarter bill will be released only after submission of back-to-back support document.
- i) Prices are net F.O.R destination, inclusive of freight, handling and packing charges, transit insurance, installation, and commissioning, on-site comprehensive maintenance during the entire AMC period and shall remain firm without any variation during entire AMC period. Taxes and government levies shall be extra as per actuals during the AMC period.

3 EARNEST MONEY DEPOSIT (EMD):

- a) EMD is to be deposited by the bidder as per tender document.
- b) EMD given by unsuccessful bidders shall be refunded normally within 15 days of acceptance of work by the successful bidder.
- c) EMD shall not carry any interest.



- d) EMD by the bidder will be forfeited if after opening of the tender, the bidder revokes his tender within validity period or increases his earlier quoted rates or the successful bidder does not commence the work within the period as per LOI/Contract.

4 EXEMPTION:

- a) Benefits will be provided to Medium and Small Enterprises as per Public Procurement Policy for Micro and Small Enterprises (MSEs), 2012 issued by Government of India.
- b) Note: MSE suppliers can avail the intended benefits only if they submit along with offer, attested copies of either EM II certificate having deemed validity (Five years from the date of issue of acknowledgement in EM II) or valid NSIC certificate or EM II certificate along with attested copy of CA certificate (format enclosed as per annexure-III where deemed validity of EM II certificate of five years has expired) applicable for the relevant financial year (latest audited). Date to be reckoned for determining the deemed validity will be the date of bid opening (part 1 in case of two part bid). Non submission of such documents will lead to consideration of their bids at par with other bidders. No benefit shall be applicable for this enquiry if any deficiency in the above required documents are not submitted before price bid opening. If the tender is to be submitted through e-procurement portal then the above required documents are to be uploaded on the portal. Documents should be notarized or attested by a Gazetted Officer.

5 SECURITY DEPOSIT:

- a) Security Deposit should be deposited by the successful bidder at BHEL Haridwar. The Security Deposit shall be collected before start of the work by the vendor. The rate of Security Deposit will be as below based on the Tender Order value:
1. Up to 10 lakhs: 10%
 2. Above Rs. 10 lakhs upto 50 lakhs: Rs. 1 lakh + 7.5% of amount exceeding Rs. 10 lakhs.
 3. Above Rs. 50 lakhs: Rs 4 lakhs + 5 % of the amount exceeding Rs. 50 lakhs
- b) Security Deposit may be furnished in any one of the following forms
- i. Cash (as permissible under the Income Tax Act)
 - ii. Pay Order, Demand Draft in favor of BHEL
 - iii. Local cheques of scheduled banks, subject realization.
 - iv. Securities available from Post Offices such as NSC, Kisan Vikas Patras etc.
- (Certificates should be held in the name of Vendor furnishing the security and duly pledged in favor of BHEL and discharged on the back).



Annexure IV

- v. Bank Guarantee from Scheduled Banks/Public Financial Institutions as defined in the Companies Act. The Bank Guarantee format should have the approval of BHEL.
- vi. Fixed Deposit Receipt issued by Scheduled Banks/Public Financial Institutions as defined in the Companies Act. The FDR should be in the name of the contractor, A/C BHEL, duly discharged on the back.
- c) EMD of the successful bidder can be converted and adjusted against the security deposit.
- d) The security deposit shall be refunded after the successful completion of the contract.
- e) The security deposit shall not carry any interest.
- f) Security deposit shall be liable to be forfeited in case of breach / nonfulfillment of liabilities in contract by vendor.

6 TENDER EVALUATION:

- a) After the process of Techno-commercial Bid evaluation, Price Bid opening will be done for all technically qualified bidders.
- b) The valuation will be on the basis of delivered cost i.e. "total cost to BHEL".
- c) Optional item, quoted if any, will not be considered in evaluation as well as during the tender execution.
- d) Vendor has to quote for all items in the Price Bid (Annexure – V). The comparative statement for selecting the L1 Vendor shall be made on the basis of total charges for two years AMC plus one time charges for installation of new sites/points including all taxes (except Service Tax).

7 REVERSE AUCTION (RA):

Against this enquiry for the subject item/ system with detailed scope of supply as per enquiry specifications, BHEL may resort to "REVERSE AUCTION PROCEDURE" i.e., ON LINE BIDDING (THROUGH A SERVICE PROVIDER). The philosophy followed for reverse auction shall be English Reverse (No ties).

- a) For the proposed reverse auction, technically and commercially acceptable bidders only shall be eligible to participate.
- b) Those bidders who have given their acceptance for Reverse Auction (quoted against this tender enquiry) will have to necessarily submit 'online sealed bid' in the Reverse Auction. Non-submission of 'online sealed bid' by the bidder for any of the eligible items for which techno commercially qualified, will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines in vogue.



Annexure IV

- c) BHEL will engage the services of a service provider who will provide all necessary training and assistance before commencement of on line bidding on internet.
- d) In case of reverse auction, BHEL will inform the bidders the details of Service Provider to enable them to contact & get trained.
- e) Business rules like event date, time, bid decrement, extension etc. also will be communicated through service provider for compliance. Bidders have to fax the Compliance form before start of Reverse auction. Without this, the bidder will not be eligible to participate in the event.
- f) In line with the NIT terms, BHEL will provide the calculation sheet (e.g. EXCEL sheet) which will help to arrive at "Total Cost to BHEL" like Packing & forwarding charges, Taxes and Duties, Freight charges, Insurance, Service Tax for Services and loading factors (for non-compliance to BHEL standard Commercial terms & conditions) for each of the bidder to enable them to fill-in the price and keep it ready for keying in during the Auction.
- g) Reverse auction will be conducted on scheduled date & time.
- h) At the end of Reverse Auction event, the lowest bidder value will be known on auction portal.
- i) The lowest bidder has to fax/e-mail the duly signed and filled-in prescribed format for price breakup including that of line items, if required, as provided on case-to-case basis to Service provider within two working days of Auction without fail.
- j) In case BHEL decides not to go for Reverse Auction procedure for this tender enquiry, the Price bids and price impacts, if any, already submitted and available with BHEL shall be opened as per BHEL's standard practice.
- k) Bidders shall be required to read the "Terms and Conditions" section of the auctions site of Service provider, using the Login IDs and passwords given to them by the service provider before reverse auction event. Bidders should acquaint themselves of the 'Business Rules of Reverse Auction', which will be communicated before the Reverse Auction.
- l) If the Bidder or any of his representatives are found to be involved in Price manipulation/ cartel formation of any kind, directly or indirectly by communicating with other bidders, action as per extant BHEL guidelines, shall be initiated by BHEL and the results of the RA scrapped/ aborted.
- m) The Bidder shall not divulge either his Bids or any other exclusive details of BHEL to any other party.
- n) In case BHEL decides to go for reverse auction, the H1 bidder(s) (whose quote is highest in online sealed bid) may not be allowed to participate in further RA process.

8 ACCEPTANCE OF LOI/ORDER:

Letter of vendor's acceptance for the Letter of Intent (LOI)/Order from BHEL is to be submitted within one week of issue date of LOI/Order.



9 INSTALLATION AND DELIVERY:

- a) The vendor shall supply, install, test and commission new network sites/points in all respect within 14 weeks from the date of placement of order. Early delivery / commissioning is acceptable. BHEL reserves the right to ask for a delayed delivery of a part or whole of equipment.
- b) In case the delivery, installation and successful commissioning schedule for the onetime installation works is not adhered to, penalty at the rate of 0.5% per week (or part thereof) of the amount equivalent to one time charges for installation of new sites/points (subject to a maximum of 10% of one time charges) shall be levied by BHEL on the vendor. However, in the event that the delay occurs on account of fault of BHEL including on account of failure of BHEL to ensure site preparation, the period on this account will not be considered for penalty. For the purpose of this clause, part of the week is considered as a full week. Penalty, if any, shall be deducted from onetime payment of new network sites / points.
- c) The vendor hereto agree that timely delivery of Annual Maintenance Support is the essence of the order/contract. If the vendor fails to start the maintenance contract within the time period stipulated in the order/contract or within any extension of time granted by the BHEL, BHEL shall be under no obligation to accept the services. However, if accepted, Liquidated Damages at the rate of half percent per week of delay or part thereof shall be levied limited to ten percent of the total order/contract value excluding onetime payment and elements of taxes & duties, without prejudice to any other relief or compensation due to the purchaser under any other condition of the order/contract.
- d) The vendor shall nominate a Project Manager who on behalf of the vendor shall coordinate and be responsible for all the activities related to AMC of network equipment as well as installation of new network sites/points. He shall act as an interface between the vendor and BHEL.

The project manager shall:

- Carry out detailed site inspection
- Submit a complete layout plan for cabling system.
- Submit the detailed project schedule in consultation with BHEL.
- Monitor the progress vis-à-vis the project schedule.
- Coordinate for all required help and inputs necessary for the execution of the contract.
- Maintain logbook of the cabling work carried out.
- Submit a detailed drawing of cable layout, position of nodes, test reports for newly installed sites/points etc.



Annexure IV

- e) Any equipment, fitting, material, software or supplies which may not be specifically mentioned in Annexure II but which are necessary for carrying out the contract works within the scope of the tender are to be provided for and rendered to by the vendor. Such items not quoted by the vendor, if found necessary during execution of the contract, shall have to be supplied at no extra charge on BHEL.
- f) The vendor shall ensure that the structured cabling system work is carried out by an experienced contractor of the proposed system.
- g) The vendor should fulfill all statutory and safety requirements for personnel engaged while executing the contract. If BHEL has to incur any expenditure due to noncompliance of the applicable statutory provisions, the same will be compensated by the vendor.
- h) The vendor shall provide the following certificates at the time of supply and installation:
 - Test Certificate of the fiber/UTP.
 - The cabling system installed by the vendor shall meet the specifications as prescribed in ANSI/EIA/TIA, ISO 11081 standards and to that effect shall submit a certificate after the completion of the work that the work has been done as per standards.

10 SUPPORT:

- a) The vendor shall keep the sufficient spares at BHEL Haridwar during entire AMC period to ensure immediate replacement to keep the equipment downtime at minimum.
- b) The vendor shall provide comprehensive maintenance support during entire AMC period by posting minimum three qualified resident engineers at BHEL Haridwar without payment of extra charges. Out of three resident engineers, at least one should hold CCNP certification and the other two should hold minimum IT hardware/ Network certification.
- c) To maintain the quality of service, the vendor should not sign with any partner or subcontract this contract further for manpower hiring. All manpower deployed in this project should be on payroll of the vendor. All deployed personnel should be direct employee of the Vendor with a valid Employee code and good skills in their area of service delivery.
- d) Vendor should pay PF, ESI etc to deployed manpower and follow all labour laws.
- e) Resident engineers
 - Shall follow the BHEL normal office timings including holidays and mark their presence in BHEL attendance register. However, if required, services of resident engineers may also be availed during off-working hours.
 - Shall leave the station only after seeking written permission from BHEL and arranging for proper substitute.



- Shall ensure network connectivity up to the desktop level.
- Shall have their own accommodation and other facilities like mobile phone, vehicle etc.

11 DOWNTIME PENALTY

- a) The vendor shall maintain the overall uptime of network to minimum 99% during the AMC period.
- b) A deduction from the overall quarterly rental shall be made at the rate of 1% for each 1% fall of uptime from 99%, e.g. if the uptime is 98%, one percent of quarterly rental for the particular quarter shall be deducted. The calculation for uptime shall be made on monthly basis for network. The downtime calculation shall be based on 24x7 hours. Deduction of downtime shall be restricted to maximum 10% of quarterly AMC charges on per quarter basis. In case downtime exceeds the maximum limit, BHEL reserves the right to terminate the contract and forfeit the security deposit.
- c) There shall be no downtime due to mutually agreed scheduled maintenance of equipment or due to power outage.
- d) Downtime of network shall be the period (in hours) during which expected connectivity is not available on the network or part of network. The downtime factors for calculation of the penalty shall be as follows:
- | | |
|------------|------|
| Category 1 | 0.5 |
| Category 2 | 0.2 |
| Category 3 | 0.02 |

Category 1 includes core switches, aggregation switches, firewall modules

Category 2 includes distribution switches, Network analysis module, Correlation engine, DSLAM, web security solution, NMS, wireless controller, 6 & 10 KVA UPSs

Category 3 includes access switches, ADSL CPEs, Wi-Fi access points, 1 KVA UPSs

- e) Downtime calculation will be applicable for non-availability of Network services arising due of malfunctioning of either switches, fiber, backbone UTP, fiber patch cords, converters, connectors etc.
- f) If any equipment is down due to fiber/UTP cut, vendor has to repair/replace the faulty fiber/UTP within 48 hours. After 48 hours, downtime shall be assumed till fiber/UTP is repaired/replaced.
- g) The downtime factor for the network shall be assumed to be 1.0 only, even if it exceeds 1.0 (e.g. 6 distribution switches are down at a particular time which amounts to downtime factor to 1.2 however it shall be assumed as 1.0).
- h) If the uptime of a particular equipment/system falls below 95% continuously for 3 months, the equipment/system shall have to be replaced with the new equipment by the vendor without any extra cost to BHEL.
- i) Downtime shall be calculated on the basis of NMS reports/log book.
- j) In the case of any equipment/service being down, the same may be temporarily replaced by the vendor provided there is no loss of functionality/configuration in the



network. The equipment/service shall be considered up in this case and no downtime shall be counted. All efforts shall be made by the vendor to limit such temporary replacements to less than 15 days else it shall be counted as down.

k) Example of Downtime Calculation

If one core switch remains down for 10 hours (cumulative) in a particular month and total quarterly rental value for network is Rs. A Lakhs.

Acceptable downtime in a month (in hours) = 0.01 * 24 hours * 31 days = 7.44 hours

Downtime factor of core switch = 0.5

$$\text{Downtime in Rs. Lakhs} = (0.5 \times A \times (10-7.44)) / ((24 \times 31) \times 3)$$

12 VALIDITY OF OFFER:

Offer shall be valid for four months from tender opening date.

13 PAYMENT TERMS:

- a) **AMC Payment:** Quarterly payment will be made in arrears at the end of each quarter after adjusting any penalties/deduction according to the tender conditions.
- b) **Onetime Payment:** The payment for the installation of new sites/points will only be made after successful completion of work. This payment will be made after successful installation and commissioning of new network sites / points.

14 MODE OF PAYMENT:

Payment will be made by way of Electronic Fund Transfer.

15 TERMINATION/EXTENSION OF THE CONTRACT:

- a) BHEL reserves the right to terminate the AMC contract either whole or in part before expiry of two year AMC. BHEL shall give one month's notice to vendor in this regard. No AMC charges shall be payable to vendor from the date of termination of AMC.
- b) The contract shall have equipment wise foreclosure option. In case AMC is partially terminated for some equipment / hardware, vendor shall continue to provide AMC for rest of the hardware / equipment according to terms & conditions of this contract. Payment for AMC of remaining covered hardware / equipment shall continue according to terms & conditions of this contract.
- c) The vendor will give at least one month notice prior to discontinuation of the maintenance service due to obsolescence / non-availability of the spare parts etc.
- d) BHEL reserves the right to extend the contract for further period after successful completion of the contract period. The extension will be done on mutually agreed terms between vendor and BHEL.



16 SUBCONTRACTING:

The vendor shall not sub-contract, assign or otherwise transfer the Order/Contract or any part thereof without prior written consent of the BHEL.

17 CONFIDENTIALITY:

Seller/Contractor shall, at all times, undertake to maintain complete confidentiality of all data, information, software, drawings & documents, etc. belonging to the purchaser and also of the Systems, procedures, reports, input documents, manuals, results and any other company documents discussed and/or finalized during the course of execution of the order/contract.

18 CLAIMS:

All the claims etc. lodged with the underwriters, if any, shall be dealt with by the vendor directly.

19 ARBITRATION:

In all cases of disputes emanating from and in references to this agreement the matter shall be referred to the arbitration. All disputes or differences between the parties will be resolved through arbitration governed by Arbitration & Conciliation Act 1996 as amended from time to time. The venue of arbitrator shall be Haridwar only.

20 JURISDICTION:

All disputes or differences arising out of, under or in connection with this contract shall be subject to the exclusive jurisdiction of the courts having jurisdiction over BHEL, Haridwar.

21 GOVERNING LAW:

This contract shall be governed in all respects by Indian law.

22 FORCE MAJEURE:

Neither BHEL nor the vendor shall be responsible for delays/failures in performance resulting from acts beyond the control of either. Such acts shall include but not be limited to acts of God, strikes, lockouts, riots, acts of war, epidemics, governmental regulations superimposed after the agreement, fire, earthquakes or other such disasters.



23 LIMITATION OF LIABILITY:

The vendor's liability will be limited to the one year AMC charges.

24 INDEMNITY:

Bidder shall fully indemnify and keep indemnified the purchaser against all claims which may be made in respect of the of System / Software /Item(s) / Services supplied / rendered by the Bidder, for infringement of any rights protected by patent, registration of designs or trademarks and legality of the software. However the bidder will have no obligation for any claim of infringement arising from third party products not supplied in the order, modifications and technical information/ instructions advised by purchaser and use of products prohibited by product manuals.

All such claims in this regard will be settled as per Indian laws.

In the event of any such claims being made against the purchaser, purchaser will inform in writing to the bidder who shall at his own risk and cost either settle any such dispute or conduct any litigation that may arise there from.

25 INFORMATION SECURITY REQUIREMENTS:

- a) BHEL Haridwar has implemented Information Security Management System (ISMS) and has taken certificate for the same based on ISO 27001 standard.
- b) BHEL Information Security Policy is as follows:
"BHEL is committed to ensure Integrity, Confidentiality, Availability and Security of its information at all times for serving the needs of the organization in line with its Vision, Mission & Values while meeting all regulatory requirements."
- c) In line with the ISMS requirements, vendor and its staff shall ensure the protection of BHEL information assets / information processing facilities at all times with respect to confidentiality, integrity and availability.
- d) The vendor / personnel deputed by vendor shall comply with following requirements:
 - i. Personnel deputed by vendor shall follow the ISMS system requirements.
 - ii. Personnel deputed by vendor shall present his / her identity proof to BHEL for getting proper authorization from BHEL. He/she shall not enter into BHEL premises without proper authorization.
 - iii. Vendor and personnel deputed by vendor shall sign Non-Disclosure Agreement (NDA) in the specified format of BHEL Haridwar.



Annexure IV

- iv. When allowed by proper authority, he / she shall work in secure area only in the presence of BHEL staff.
- v. If he /she has to work on any server / network device in secure area, the work shall only be allowed in presence of system administrator or any other person authorized by ITX.
- vi. He / she shall maintain and service only that equipment which comes under his /her scope of contract.
- vii. Vendor / personnel deputed by vendor shall ensure the return or destruction of information / data at the end of AMC agreement and as and when required.
- viii. Access to information assets, which is not explicitly authorized, shall be treated as forbidden.
- ix. Any information security incident and / or security breaches shall be immediately reported to BHEL.
- x. In case of any violation of the above, it will amount to non-fulfillment of terms & conditions of the contract.



Information Technology Centre
 Bharat Heavy Electricals Limited, HEEP, Ranipur, Haridwar-249403
 NIT Ref: HW/ITX/2/1328 Date: 08.10.2015

	PRICE BID	ANNEXURE V
Note:	1. All values are to be quoted in Indian Rupees (INR).	
	2. AMC Price should be quoted for all items. AMC will be for two years	
	3. Refer Item details in Detailed Specs Sheet Annexure II	
	4. Back to back support from OEMs i.e. Cisco, Eaton and Zyxel will be required for respective items for entire contract period.	
	5. New network segments to be installed as per Part-2 will also be covered under comprehensive AMC.	
	6. Comparative Sheet will take into account all taxes except Service Tax to arrive at "Landed Cost to BHEL". Vendor should clearly mention all applicable taxes .	
	7. Payment on account of cables and pipes shall be made on actual consumption basis, however for comparative statement, quantities under various heads have been mentioned.	

Part -1 : AMC Charges of Equipment for Two Years

	Item	Quantity	Per Unit Quarterly AMC Charges (Excluding Taxes) (Rs.)	Service Tax (In %)	Any Other taxes (In %), Mention the type of tax	Total AMC Charges for 2 years for the total Quantity (Excluding Taxes) (Rs.)
A	B	C	D	E	F	G=C x D x 8 Quarters
S.No.	Active Components					
1	Cisco Catalyst 6509 Switch with modules	2				
2	Cisco Catalyst 4507 Switch with modules	2				
3	Cisco Catalyst 4506 Switch with modules	13				
4	Cisco Catalyst 3560	1				
5	Cisco Catalyst 4948	2				
6	Cisco Catalyst 2690G-48Port	50				
7	Cisco Catalyst 2690G-24Port	74				
8	48 Port 10/100/1000 Module on Cisco 6500 Series Switch	2				
9	48 Port 10/100/1000 Module on Cisco 4500 Series Switch	23				
10	10G SR Fiber Transceivers in Cisco 6500 Series Switch	7				
11	10G LR Fiber Transceivers in Cisco 6500 Series Switch	29				
12	1G SX Fiber Transceivers in Cisco 6500 Series Switch	1				
13	1G LX Fiber Transceivers in Cisco 6500 Series Switch	3				
14	1G UTP Transceivers in Cisco 6500 Series Switch	8				
15	10G SR Fiber Transceivers in Cisco 4500 Series Switch	5				
16	10G LR Fiber Transceivers in Cisco 4500 Series Switch	25				
17	1G SX Fiber Transceivers in Cisco 4500 Series Switch	53				
18	1G LX Fiber Transceivers in Cisco 4500 Series Switch	6				
19	1G UTP Transceivers in Cisco 4500 Series Switch	38				
20	10G SR Fiber Transceivers in Cisco 4900 Series Switch	2				
21	10G LR Fiber Transceivers in Cisco 4900 Series Switch	2				
22	1G SX Fiber Transceivers in Cisco 2900 Series Switch	99				
23	1G LX Fiber Transceivers in Cisco 2900 Series Switch	13				
24	Cisco Ironport S360	1				
25	Cisco LWAPP AIR-LAP1252AG-N-K9	20				
26	Wireless LAN Controller 4404	1				
27	DSLAM-Zyxel IES-1248	1				
28	CPE	20				
29	UPS 10 KVA-Eaton Make	2				
30	UPS 6 KVA-Eaton Make	15				
31	UPS 1 KVA-Eaton Make	108				
32	42U Rack- Rittal make	2				
33	24U Rack-Rittal Make	15				
34	12U Rack- Rittal / HCL Make	111				

Passive Networking						
35	Cat5E/Cat6 UTP Network nodes which include Face plate, Surface mount boxes, I/Os, Jack Panels, Patch Cords Cables are laid in PVC/MS Conduits in buildings and shop floor areas	4000				
36	24 core SM SC-SC Armored Fiber segments which include dark fiber, LIUs, Fiber Patch Cords, Pigtails, Adapter plates etc Cables are laid in GI Pipes either underground or in buildings / shop floor areas	2				
37	6 core SM/MM (SC-LC or SC-SC) Armored / Unarmored Fiber segments which include dark fiber, LIUs, Fiber Patch Cords, Pigtails, Adapter plates etc. Cables are laid in GI Pipes either underground or in buildings / shop floor areas	130				
Total						



Part 2: Items on One Time Charges							Annexure V
Price for New Network Sites / Points							
Sl. No.	Item Description	Unit	Qty	Unit Price(₹) without taxes	Service Tax (In %)	Any Other taxes (In %), Mention the type of tax	Total Cost(₹) without taxes
A	B	C	D	E	F	G	H=DxE
1	6 CORE MM ARMoured FIBER OPTIC CABLE	METER	650				
2	SC-LC MM FIBER PATCH CABLES	NOS	6				
3	CAT 6 FACE PLATE WITH I/O AND SMB MOLEX MAKE	NOS	215				
4	CAT 6 RJ 45 I/O MOLEX MAKE	NOS	215				
5	24 PORT UNLOADED UTP JACK PANEL MOLEX MAKE	NOS	13				
6	CAT 6 UTP MOLEX MAKE	METER	13115				
7	CAT 6 UTP PATCH CORD- 3 FEET	NOS	215				
8	1" MS CONDUIT MEDIUM STRENGTH, ISI MARK	METER	4800				
9	1" GI CONDUIT MEDIUM STRENGTH, ISI MARK	METER	330				
10	1" PVC CONDUIT MEDIUM STRENGTH, ISI MARK	METER	5400				
11	INSTALLATION OF 12U NETWORK RACK (RACKS WILL BE PROVIDED BY BHEL)	NOS	4				
12	FIXING/LAYING OF 1"MS CONDUIT ON STEEL COLUMNS IN FACTORY AREA	METER	4800				
13	FIXING/LAYING OF 1"PVC CONDUIT ON WALLS	METER	5400				
14	SPLICING AND TESTING OF FIBER SEGMENTS(6X6)	NOS	36				
15	CONNECTRIZATION/PENTASCANNER TESTING OF UTP SEGMENTS(215X2)	NOS	430				
16	LAYING OF UTP THROUGH PVC/MS/GI	METER	13115				
17	CUTTING OF SOFT SURFACE, DIGGING OF TRENCH 300X800MM, LAYING OF BRICK, GI CONDUIT, OPTICAL FIBER CABLE THROUGH GI CONDUIT, SAND AND REFILLING OF TRENCH	METER	250				
18	CUTTING OF HARD SURFACE, DIGGING OF TRENCH 300X800MM, LAYING OF BRICK, GI CONDUIT, OPTICAL FIBER CABLE THROUGH GI CONDUIT, SAND AND REFILLING OF TRENCH	METER	80				
Total							