



**Bharat Heavy Electricals Limited**  
Information Technology Centre, HEEP, Ranipur, Haridwar-249403  
UTTARAKHAND (INDIA)  
Phone: 01334-281399, FAX: 223948 E-mail: ajaipal@bhelhwr.co.in

Ref: HW/ITX/2/1122

Date: 25/09/2013

**Subject: NIT for Provisioning of 32 Mbps (1:1) Internet Leased Line Services at BHEL,  
Haridwar**

Sir,

1. BHEL, Haridwar plans to procure 32 Mbps (1:1) Internet Leased Services from reputed and qualified ISPs as per the tentative scope of work enclosed. Scope of work and Technical specifications are given in detail in Annexure-II & III respectively. The tender document comprises of following:

Annexure I	Technical Prequalification Criteria
Annexure II	Terms & Conditions
Annexure III	Technical Specifications
Annexure IV	Prequalification Criteria Compliance Sheet
Annexure V	Technical Compliance Sheet
Annexure VI	Price Bid Sheet

2. You are requested to submit techno-commercial offer in two parts in the enclosed formats strictly as per the scope of work indicated therein. The tender offer should be sealed in separate envelopes with 'Technical bids' / 'Commercial bids', tender no., opening date duly super scribed on the envelopes. The technical bid envelope should enclose your technical offer, pre-qualification criteria compliance sheet (Annexure-IV), Technical compliance sheet (Annexure V), Terms and conditions (Annexure-II) and un-priced bid (Annexure VI). All documents should be filled in with required details duly signed & stamped. **All documents/proofs/ certificates / data sheets required as per Annex-IV and V must be submitted in the Technical bid.** The EMD and tender document fee will also be submitted alongwith this part of bid.

The commercial bid envelope should enclose price bid (Annexure VI) only.

4. Technical bid will be opened on the last day of submission of the tender 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.
5. The terms and conditions given at Annexure-II will be adhered to by the tenderer. Please do not remain silent on any point and if you are not accepting any terms/conditions please clearly state so. Any deviation/remarks should be clearly specified by the tenderer in separate sheets.



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6. Vendor must meet prequalification criteria as per Annexure-I. The offers not meeting these criteria will be rejected summarily.
7. Earnest money of Rs. 1,50,000/- and tender document charges of Rs. 2000/- in the form of demand draft (two separate drafts) in favour of BHEL, Haridwar, Pay order or cash deposit (as permissible under 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. EMD of unsuccessful vendors will be refunded within 15 days of awarding the tender.
8. The offers in sealed envelope should be submitted latest by **1.45 P.M. on 18/10/2013** at the following address through registered post / speed post:

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

The quotation must be posted taking the allowance for postal transit delays.

Alternatively, the tender duly sealed and superscribed, clearly mentioning the 'Technical/Commercial Bid', tender no., opening date as mentioned above may be deposited in the **tender box situated at fourth floor, Main Administrative Building, HEEP, BHEL, Ranipur, Haridwar.**

Quotation not received in time is likely to be ignored.

Tender opening is scheduled to start in the tender room at 2 PM on due date. Therefore quotation must reach the above mentioned office / tender box latest by 1:45 PM on due date.

**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	Annexure II	Standard Terms & Conditions	Signed copy
2	Annexure IV	Pre-Qualification Criteria Compliance	<b>All referred documents / proof / data sheets to be</b>



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3	Annexure V	Technical Compliance Sheet	<b>submitted</b>
4		EMD	
5		Tender document fee	
6	Annexure VI	Un-priced Bid	<b>Mention Tax Rates</b>

### To be submitted with Price Bid:

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

### Annexure List:

Annexure I	Technical Prequalification Criteria
Annexure II	Terms & Conditions
Annexure III	Technical Specifications
Annexure IV	Prequalification Criteria Compliance Sheet
Annexure V	Technical Compliance Sheet
Annexure VI	Price Bid Sheet

Thanking you,

Yours faithfully,

**(Ajaipal Singh)**  
**Dy Manager/ITX**



### **Technical Pre-Qualification Criteria**

1. Bidder should have a valid class A ISP license. Documentary evidence is to be provided.
2. Bidder shall provide proof of provisioning of Internet Leased line services of the capacity of 32 Mbps or more for minimum one customer during last three years or 16 Mbps or more for minimum two customers during last three years. Documentary proof showing existing customers availing these services continuously for more than three years will also be accepted.
3. Bidder should have its own multiple International Peering Gateways, multiple landing stations for international traffic on international fiber. The gateways shall be peered with international peering points through different OFC in two different directions. Documentary evidence is to be provided.
4. Bidder shall have local peering for national traffic. Proof to be submitted.
5. Bidder will not use BSNL optical fiber network for its backbone as well as last mile.
6. Bidder will have the single point of contact for any communication and should have their own NOC (Network Operating Centre) to manage the services on 24\*7\*365 basis.
7. Bidder network shall be fully dual stacked IPv4 / IPv6 protocol compliant as BHEL will host IPv6 enabled servers / machines on Internet.



## **TERMS & CONDITIONS**

### **1 General**

- 1.1 The term vendor shall apply to successful Internet Service Provider (ISP).
- 1.2 The vendor shall supply, install, commission and maintain on a turn-key basis Internet Leased Line and required equipment, detailed in the order placed by BHEL on the vendor which will fulfill the functional requirements as defined in scope of work and technical specifications.

### **2 Prices**

- 2.1 Minimum commitment period will be three years after the successful commissioning and acceptance of the complete system which may be extended for the subsequent year(s) with mutual consent based on prevailing rates at that time.
- 2.2 Successful vendor shall enter into rental agreement with BHEL on non-judicial stamp paper of required value as per extant rules, at their own cost.
- 2.3 Rental payment will be paid on quarterly basis, at the end of each quarter. Invoices are to be submitted in triplicate alongwith other necessary documents. Deduction of downtime if any shall be made from quarterly rental charges.
- 2.4 After two years from the date of commissioning, if there is downward price trend in bandwidth charges, ISP may be asked for negotiation of prices or bandwidth upgradation on same rental.
- 2.5 During the contract period, BHEL may ask for bandwidth upgradation on negotiated prices. ISP shall upgrade the desired bandwidth within one month of upgradation order.
- 2.6 Prices are net F.O.R destination, inclusive of freight, handling and packing charges, transit insurance, installation, commissioning, regular insurance, on-site comprehensive maintenance during the contract period. Service tax and government levies shall be extra as per actuals during the contract.
- 2.7 The vendor shall be responsible for payment of excise duty, custom duty, all other state/central/local govt. taxes, freight and insurance up to equipment-installation-sites in BHEL Haridwar and during the contract period.
- 2.8 No interest whatsoever shall be payable by BHEL on any amount due to the vendor.
- 2.9 The insurance coverage should be comprehensive with provisions for theft, fire, floods, riots etc. The responsibility for the insurance will rest with the vendor. Claim(s), if any, will be dealt with the underwriters directly by the vendor.
- 2.10 Price bid offer shall be valid for 120 days from the date of opening of technical bid.



### **3 Delivery**

- 3.1 The vendor shall supply, install, test and commission the whole work in all respect within 8 weeks from the date of placement of order. Early delivery / commissioning is acceptable. Leased line shall be provisioned at ITX building of BHEL Haridwar.
- 3.2 BHEL reserves the right to ask for a delayed delivery.
- 3.3 Hardware/software/services shall be deemed as incomplete or undelivered, if any component of hardware or software or services within the configuration or main documentation related thereto is not delivered and if delivered is not operational or not acceptable after testing/examination.
- 3.4 In case the delivery, installation and successful commissioning schedule for the works is not adhered to, penalty at the rate of 0.5% per week (or part thereof) of the amount equivalent to four quarterly charges (subject to a maximum of 5% of four quarterly 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.
- 3.5 Penalty, if any, shall be deducted from first quarterly charges. In case, the penalty amount is more than the first quarterly charges, the same shall be adjusted from the subsequent quarters.

### **4 Scope of Work**

- 4.1 Supply, Installation, Configuration, Commissioning, Testing and maintenance of dedicated 32 Mbps (1:1) uncompressed, symmetric Internet Leased Line on turnkey basis as per specified configuration.
- 4.2 Supply, installation, testing and commissioning of router & other terminal equipment as per technical specifications at no extra cost. Initial configuration/setup of router shall be done by vendor and later on it will be managed by BHEL.
- 4.3 Vendor will ensure that any cable laying is underground at the depth as per industry standards.
- 4.4 Any liability, due to damage done to the property of others, shall be responsibility of vendor.
- 4.5 Vendor would ensure that the local loop provisioning does not violate regulations as laid by Government / TRAI / local authorities in respect of such links/ networks. Vendor will be responsible for making all the payments towards the local loop charges / rentals / installation Charges etc.
- 4.6 Comprehensive Onsite AMC of router during contract period at no extra cost. After initial commitment period of three years, router will become property of BHEL. If contract is extended beyond three years, ISP will continue to provide comprehensive AMC of router without any additional cost.



- 4.7 Provisioning of secured web based portal to monitor the bandwidth utilization and performance of the internet link.
- 4.8 Delivery of IPv4 and IPv6 addresses as per technical specifications which are to be used at BHEL's network.
- 4.9 Configuration of Reverse DNS lookup entries at ISP's DNS servers.
- 4.10 BHEL's involvement during each stage of implementation shall be ensured by the vendor.
- 4.11 Acceptance Testing based on agreed ATP document.
- 4.12 Before submission of bid, bidder can visit the site at their own cost to assess the actual amount of work.
- 4.13 Vendor should quote only one make & model for router i.e. no alternatives of make and/or model is allowed.
- 4.14 Repairing/replacing any faulty cable/equipment during contract period, damaged due to any reason whatsoever, will be done by the vendor. BHEL shall not bear any cost for the same.
- 4.15 BHEL reserves the right to relocate the equipment. Shifting of equipment from one location to another within BHEL campus shall be the responsibility of the vendor. All the requisite works like dismantling of equipment, packing, transportation etc. shall be the responsibility of the vendor. A mutually agreed cost will be paid by BHEL to the vendor on this account. The time given for shifting and installation of equipment at new location will be mutually agreed and time taken beyond that period will be treated as downtime.
- 4.16 The vendor shall provide the certificate of newness of the equipment at the time of supply of equipment.
- 4.17 No items shall be offered, whose end-of-sale has been declared by the OEM or has been declared to be under phase out.
- 4.18 The vendor should fulfill all statutory, regulatory 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.

## **5 Acceptance Test Procedure**

- 5.1 The vendor shall submit project completion report to BHEL once the Internet leased line service is established so that BHEL can carry out the acceptance test. All manuals, documentation, accessories etc. will be handed over by vendor to BHEL.
- 5.2
- 5.3 The acceptance test which involves running standard vendor tests and/or BHEL tests immediately after completion of installation and documents submission as stated above. Some suggestive tests are as follows:



- 5.3.1 Running speed tests at random intervals.
- 5.3.2 Checking reverse DNS lookup entries through standard tools.
- 5.3.3 Checking local loop in ring by plugging out the fiber cable from one end of the loop.
- 5.3.4 Demonstration of web based portal report.

## **6 Training**

During installation and initial configuration of router at BHEL, the associated BHEL personnel shall be imparted user level training for administration of router. Other troubleshooting techniques shall be shared for pinpointing the fault for faster compliant resolution.

## **7. Downtime Penalty**

- 7.1. Vendor shall maintain the overall uptime of leased line to minimum 99.5. Latency should be less than 250ms from router installed at BHEL location to ISP's tier 1 peering point at USA. Packet Loss should be less than 1% (Average over 1000 pings) at any given point of time to any part of globe. In case latency and / or packet loss exceed the above limits, downtime shall be assumed however there will be no downtime if limits are crossed due to over-utilisation of leased line at BHEL's end.
- 7.2. Non-availability of leased line due to fault of router will also be considered as downtime.
- 7.3. The availability of the link shall be computed on monthly basis. Downtime shall be calculated on pro-rata basis. If the link is down for more than 2 hours continuously, penalty amount equivalent to twice the amount of normal charges for the unavailable period will be charged and deducted from the vendor's invoice on pro-rata basis even-if the overall availability is more than 99.5%.
- 7.4. The downtime calculation shall be based on 24x7 hours.
- 7.5. There shall be no downtime due to mutually agreed scheduled maintenance of equipment etc. In normal circumstances, vendor will schedule the maintenance activities during night hours only.
- 7.6. Vendor will inform the BHEL in advance about scheduled maintenance activities.

## **8. Risk Purchase**

BHEL reserves the right to terminate the order / contract and purchase from elsewhere at the risk and cost of the vendor, either the whole or part of equipment, which the vendor has failed to deliver within the stipulated delivery period or if the same were not available, the best and nearest substitute(s) thereof. The vendor shall be liable to compensate the BHEL for any loss which BHEL may sustain by reason of such purchase. This clause will be operated only after completion of delivery period including extended period with penalty.



## **9. Patents & Trademarks**

Vendor shall at all times fully indemnify and keep indemnified the purchaser (BHEL) against all claims which may be made in respect of systems/ goods/ software / services supplied by the vendor, for infringement of any right protected by patent, registration of designs or trademarks and legality of usage of software. In the event of any such claims being made against the purchaser (BHEL), purchaser (BHEL) will inform the vendor who shall at his own cost either settle any such dispute or conduct any litigation that may arise there from.

However vendor will have no obligation for any claim or 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 will be settled as per Indian laws.

## **10. New / Better System**

During the contract period of this rental agreement, if new / better systems are available and if desired by BHEL, the existing system shall be replaced by the vendor on mutually agreed terms and price.

## **11. Arbitration**

In all cases of disputes emanating from and in references to this contract, 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 arbitration shall be Haridwar only.

## **12. 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.

## **13. Governing Law**

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

## **14. 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 limited to acts of God, strikes, lockouts, riots, acts of war, epidemics, and governmental regulations superimposed after the agreement, fire, earthquakes and other such disasters.

## **15. Termination of Order / Agreement & its Consequences**

- 15.1. Within the contract period, either party i.e. BHEL or the vendor can terminate the contract by giving three months' notice in advance to the other party.



- 15.2. In case the performance of the service is persistently below the agreed upon levels, the contract can be terminated by BHEL by giving one month' notice

**16. Limitation of Liability**

The vendor's liability will be limited to the scope of this contract only.

**17. Information Security Requirements**

BHEL Haridwar has implemented Information Security Management System (ISMS) and has taken certificate for the same based on ISO 27001 standard.

BHEL Information Security Policy is as follows:

“BHEL is committed to ensure Integrity, Confidentiality, Availability and Security of it information at all times for serving the needs of the organization in line with its Vision, Mission & Values while meeting all regulatory requirements.”

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.

The vendor / personnel deputed by vendor shall comply with following requirements:

- Personnel deputed by vendor shall follow the ISMS system requirements.
- 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.
- Vendor and personnel deputed by vendor shall sign Non-Disclosure Agreement (NDA) in the specified format of BHEL Haridwar.
- When allowed by proper authority, he / she shall work in secure area only in the presence of BHEL staff.
- 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 authorised by ITX.
- He / she shall maintain and service only those equipment which comes under his /her scope of contract.
- Vendor / personnel deputed by vendor shall ensure the return or destruction of information / data at the end of agreement and as and when required.
- Access to information assets, which is not explicitly authorized, shall be treated as forbidden.
- Any information security incident and / or security breaches shall be immediately reported to BHEL.
- In case of any violation of the above, it will amount to non-fulfillment of terms & conditions of the contract.



### **Technical Specifications of Dedicated 32 Mbps (1:1) Internet Leased Line**

1. ISP will setup dedicated 32 Mbps (1:1) Internet Leased line bandwidth on optical fiber for Internet access on turn-key basis at ITX building of BHEL Haridwar.
2. The ISP shall provide uncompressed (1:1) Symmetric Internet Bandwidth at ITX building of BHEL Haridwar. Committed access rate shall be upto International gateways.
3. The last mile for the delivery of Internet Leased Line would be over optical fiber Network, which will be backhauled over ISP's network to the nearest Internet PoP further to the Internet Gateways. Optical fiber connectivity, backbone as well as last mile shall be in complete ring topology to minimize the downtime. The two arms of the ring shall enter BHEL campus in two separate ducts, which shall be in separate trenches and in opposite directions. The ring should provide automatic failover of the last mile, so that if there is cut in one arm of the fiber, the link shall continue to work through the other arm without any disruption.
4. ISP will not use BSNL optical fiber network for its backbone as well as last mile.
5. ISP will ensure secured and protected Internet Leased Line from Internet based attacks.
6. ISP will provide and maintain all necessary terminal equipment at its own cost during the contract period.
7. ISP will provide secured web based portal to monitor the bandwidth utilization and performance of the internet link.
8. In the technical bid, detail of connectivity is to be mentioned along with proper diagrams and write-up of solution.
9. ISP will provide the single point of contact for any communication and should have their own NOC (Network Operating Centre) to manage the services on 24\*7\*365 basis. Escalation matrix with contact numbers and email IDs has to be provided.
10. ISP shall provide at least one class C IPv4 subnet of public IPv4 addresses (256 IP addresses) and one pool of Internet routable IPv6 subnet. ISP to specify no. of IPv4 and IPv6 addresses in the technical bid.
11. The Connectivity should be stable. The guaranteed uptime (including last mile availability) should be at least 99.5%.
12. Latency should be less than 250ms from router installed at BHEL location to ISP's tier 1 peering point located at USA. Packet Loss should be less than 1% (Average over 1000 pings) at any given point of time to any part of globe.
13. Bidder shall make necessary reverse DNS lookup entries in its DNS servers as per BHEL's requirements.



14. ISP will provide the router of reputed make with following specifications.

S.No.	Parameter / Feature	Detailed Specifications
1	Make & Model Offered	
2	Router Architecture	The router architecture should have following features:
		Should be based on high speed multicore processor
		Should be a multi-service capable router supporting data, voice and video.
3	Interface Modules Supported	Ethernet ports 100/1000 Mbps, V.35 WAN interfaces, Upto 4xE1 G.703 interfaces, 1 E3 interface, Console interface.
4	Ports Required	The following ports should be available from day one.
		At least 2 Nos. of Layer 3 10/100/1000 Mbps Ethernet or fibre WAN Ports
		At least 4 Nos. of Layer 3 10/100/1000 Mbps Ethernet LAN Ports
		1 No. Console Port with console cable.
5	Memory Required	1 GB DRAM or higher
6	Flash Memory Required	512 MB or higher
7	Performance Required	Should give a routing performance of at least 1250 Kpps with 64 byte packet size.
8	Router Functional Requirements	The router should come with the latest Operating System. The following features should be available from day one.
		Should support Standard Access Lists, Extended Access Lists & Named Access Lists.
		Should support Route Maps, Class Maps & Policy Maps.
		Class of Service, Prioritization, Low Latency Queuing, etc.
		Network Address Translation ( Static NAT, Dynamic NAT, PAT)
9	Routing Protocol Support Required	RIP (V1 & V2) , OSPF, BGP4, Policy based Routing, PPP, Multilink PPP, IPv6
10	Security Protocols Support Required	Should support IPSec DES, 3DES & AES based encryption. Should also support MD5 & SHA-1 authentication.
11	Firewall & IPS	Should come with firewall & IPS features



## Information Technology Centre

Bharat Heavy Electricals Limited, HEEP, Ranipur, Haridwar-249403

Tender No. HW/ITX/2/1122 Dated 25/09/2013

Annexure III

12	Multicasting and QoS	The router should have following multicasting and QoS features:
		Resource Reservation Protocol (RSVP)
		Support for QoS
		Support for WFQ, Committed Access Rate (CAR) , IP Precedence, DSCP
		Internet Group Management Protocol (IGMPv3)
		Multicast Routing support such as Protocol Independent Multicast (PIM) or MOSPF
13	IPv6 Support	Should be IPv6 compliant. Should support dual stack (IPv6 & IPv4).
14	Management Features	Should support Telnet, SSH, TFTP and BOOTP protocols.
		Should support SNMP V1 & SNMP V2c & SNMP v3 for remote management.
		Should be configurable usign CLI & GUI interface.
		Should support NTP & RADIUS protocols
		Should support syslog logs.
15	Power Supply	Should come with internal Redundant power supplies.
16	Operating System	Should come with the latest operating system supporting the above features.
17	Mounting	The offered router should be rack mountable. Rack mount kit to be given.
18	Accessories	Should come with all necessary power cords, adapters, data cables, connectors, CDs, manuals, brackets accessories, etc, required for installation and commissioning of the equipment.
19	Warranty	Onsite labour, parts warranty for the entire contract period



### Technical Pre-Qualification Criteria Compliance

Sl. No.	BHEL's Requirement	Bidder's Compliance (Y/N)
1.	Bidder should have a valid class A ISP license. Documentary evidence is to be provided.	
2.	Bidder shall provide proof of provisioning of Internet Leased line services of the capacity of 32 Mbps or more for minimum one customer during last three years or 16 Mbps or more for minimum two customers during last three years. Documentary proof showing existing customers availing these services continuously for more than three years will also be accepted.	
3.	Bidder should have its own multiple International Peering Gateways, multiple landing stations for international traffic on international fiber. The gateways shall be peered with international peering points through different OFC in two different directions. Documentary evidence is to be provided.	
4.	Bidder shall have local peering for national traffic. Proof to be submitted.	
5.	Bidder will not use BSNL optical fiber network for its backbone as well as last mile.	
6.	Bidder will have the single point of contact for any communication and should have their own NOC (Network Operating Centre) to manage the services on 24*7*365 basis.	
7.	Bidder network shall be fully dual stacked IPv4 / IPv6 protocol compliant as BHEL will host IPv6 enabled servers / machines on Internet.	



### Technical Specifications Compliance Sheet

Sl. No.	BHEL's Requirement	Bidder's Compliance (Y/N)
1.	ISP will setup dedicated 32 Mbps (1:1) Internet Leased line bandwidth on optical fiber for Internet access on turn-key basis at ITX building of BHEL Haridwar.	
2.	The ISP shall provide uncompressed (1:1) Symmetric Internet Bandwidth at ITX building of BHEL Haridwar. Committed access rate shall be upto International gateways.	
3.	The last mile for the delivery of Internet Leased Line would be over optical fiber Network, which will be backhauled over ISP's network to the nearest Internet PoP further to the Internet Gateways. Optical fiber connectivity, backbone as well as last mile shall be in complete ring topology to minimize the downtime. The two arms of the ring shall enter BHEL campus in two separate ducts, which shall be in separate trenches and in opposite directions. The ring should provide automatic failover of the last mile, so that if there is cut in one arm of the fiber, the link shall continue to work through the other arm without any disruption.	
4.	ISP will not use BSNL optical fiber network for its backbone as well as last mile.	
5.	ISP will ensure secured and protected Internet Leased Line from Internet based attacks.	
6.	ISP will provide and maintain all necessary terminal equipment at its own cost during the contract period.	
7.	ISP will provide secured web based portal to monitor the bandwidth utilization and performance of the internet link.	
8.	In the technical bid, detail of connectivity is to be mentioned along with proper diagrams and write-up of solution.	
9.	ISP will provide the single point of contact for any communication and should have their own NOC (Network Operating Centre) to manage the services on 24*7*365 basis. Escalation matrix with contact numbers and email IDs has to be provided.	
10.	ISP shall provide at least one class C IPv4 subnet of public IPv4 addresses (256 IP Addresses) and one pool of Internet routable IPv6 subnet. ISP to specify no. of IPv4 and IPv6 addresses in the technical bid.	
11.	The Connectivity should be stable. The guaranteed uptime (including last mile availability) should be at least 99.5%.	
12.	Latency should be less than 250ms from router installed at BHEL location to ISP's tier 1 peering point located at USA. Packet Loss should be less than 1% (Average over 1000 pings) at any given point of time to any part of globe.	
13.	Bidder shall make necessary reverse DNS lookup entries in	



	its DNS servers as per BHEL's requirements.	
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14.	<b>ISP will provide the router of reputed make with following specifications.</b>		
	<b>Parameter / Feature</b>	<b>Detailed Specifications</b>	<b>Vendor's Compliance</b>
14.1	Make & Model Offered	Please Specify Make & Model	
14.2	Router Architecture	The router architecture should have following features:	
		Should be based on high speed multicore processor	
		Should be a multi-service capable router supporting data, voice and video.	
14.3	Interface Modules Supported	Ethernet ports 100/1000 Mbps, V.35 WAN interfaces, Upto 4xE1 G.703 interfaces, 1 E3 interface, Console interface.	
14.4	Ports Required	The following ports should be available from day one.	
		At least 2 Nos. of Layer 3 10/100/1000 Mbps Ethernet or fibre WAN Ports	
		At least 4 Nos. of Layer 3 10/100/1000 Mbps Ethernet LAN Ports	
		1 No. Console Port with console cable.	
14.5	Memory Required	1 GB DRAM or higher	
14.6	Flash Memory Required	512 MB or higher	
14.7	Performance Required	Should give a routing performance of at least 1250 Kpps with 64 byte packet size.	
14.8	Router Functional Requirements	The router should come with the latest Operating System. The following features should be available from day one.	
		Should support Standard Access Lists, Extended Access Lists & Named Access Lists.	
		Should support Route Maps, Class Maps & Policy Maps.	
		Class of Service, Prioritization, Low Latency Queuing, etc.	
		Network Address Translation ( Static NAT, Dynamic NAT, PAT)	
14.9	Routing Protocol Support Required	RIP (V1 & V2) , OSPF, BGP4, Policy based Routing, PPP, Multilink PPP, IPv6	



14.10	Security Protocols Support Required	Should support IPSec DES, 3DES & AES based encryption. Should also support MD5 & SHA-1 authentication.	
14.11	Firewall & IPS	Should come with firewall & IPS features	
14.12	Multicasting and QoS	The router should have following multicasting and QoS features:	
		Resource Reservation Protocol (RSVP)	
		Support for QoS	
		Support for WFQ, Committed Access Rate (CAR) , IP Precedence, DSCP	
		Internet Group Management Protocol (IGMPv3)	
		Multicast Routing support such as Protocol Independent Multicast (PIM) or MOSPF	
14.13	IPv6 Support	Should be IPv6 compliant. Should support dual stack (IPv6 & IPv4).	
14.14	Management Features	Should support Telnet, SSH, TFTP and BOOTP protocols.	
		Should support SNMP V1 & SNMP V2c & SNMP v3 for remote management.	
		Should be configurable usign CLI & GUI interface.	
		Should support NTP & RADIUS protocols	
		Should support syslog logs.	
14.15	Power Supply	Should come with internal Redundant power supplies.	
14.16	Operating System	Should come with the latest operating system supporting the above features.	
14.17	Mounting	The offered router should be rack mountable. Rack mount kit to be given.	
14.18	Accessories	Should come with all necessary power cords, adapters, data cables, connectors, CDs, manuals, brackets accessories, etc, required for installation and commissioning of the equipment.	
14.19	Warranty	Onsite labour, parts warranty for the entire contract period	



### Technical Specifications Compliance Sheet

Sl. No.	BHEL's Requirement	Bidder's Compliance (Y/N)
1.	ISP will setup dedicated 32 Mbps (1:1) Internet Leased line bandwidth on optical fiber for Internet access on turn-key basis at ITX building of BHEL Haridwar.	
2.	The ISP shall provide uncompressed (1:1) Symmetric Internet Bandwidth at ITX building of BHEL Haridwar. Committed access rate shall be upto International gateways.	
3.	The last mile for the delivery of Internet Leased Line would be over optical fiber Network, which will be backhauled over ISP's network to the nearest Internet PoP further to the Internet Gateways. Optical fiber connectivity, backbone as well as last mile shall be in complete ring topology to minimize the downtime. The two arms of the ring shall enter BHEL campus in two separate ducts, which shall be in separate trenches and in opposite directions. The ring should provide automatic failover of the last mile, so that if there is cut in one arm of the fiber, the link shall continue to work through the other arm without any disruption.	
4.	ISP will not use BSNL optical fiber network for its backbone as well as last mile.	
5.	ISP will ensure secured and protected Internet Leased Line from Internet based attacks.	
6.	ISP will provide and maintain all necessary terminal equipment at its own cost during the contract period.	
7.	ISP will provide secured web based portal to monitor the bandwidth utilization and performance of the internet link.	
8.	In the technical bid, detail of connectivity is to be mentioned along with proper diagrams and write-up of solution.	
9.	ISP will provide the single point of contact for any communication and should have their own NOC (Network Operating Centre) to manage the services on 24*7*365 basis. Escalation matrix with contact numbers and email IDs has to be provided.	
10.	ISP shall provide at least one class C IPv4 subnet of public IPv4 addresses (256 IP Addresses) and one pool of Internet routable IPv6 subnet. ISP to specify no. of IPv4 and IPv6 addresses in the technical bid.	
11.	The Connectivity should be stable. The guaranteed uptime (including last mile availability) should be at least 99.5%.	
12.	Latency should be less than 250ms from router installed at BHEL location to ISP's tier 1 peering point located at USA. Packet Loss should be less than 1% (Average over 1000 pings) at any given point of time to any part of globe.	
13.	Bidder shall make necessary reverse DNS lookup entries in	



	its DNS servers as per BHEL's requirements.	
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14. ISP will provide the router of reputed make with following specifications.			
	Parameter / Feature	Detailed Specifications	Vendor's Compliance
14.1	Make & Model Offered	Please Specify Make & Model	
14.2	Router Architecture	The router architecture should have following features:	
		Should be based on high speed multicore processor	
		Should be a multi-service capable router supporting data, voice and video.	
14.3	Interface Modules Supported	Ethernet ports 100/1000 Mbps, V.35 WAN interfaces, Upto 4xE1 G.703 interfaces, 1 E3 interface, Console interface.	
14.4	Ports Required	The following ports should be available from day one.	
		At least 2 Nos. of Layer 3 10/100/1000 Mbps Ethernet or fibre WAN Ports	
		At least 4 Nos. of Layer 3 10/100/1000 Mbps Ethernet LAN Ports	
		1 No. Console Port with console cable.	
14.5	Memory Required	1 GB DRAM or higher	
14.6	Flash Memory Required	512 MB or higher	
14.7	Performance Required	Should give a routing performance of at least 1250 Kpps with 64 byte packet size.	
14.8	Router Functional Requirements	The router should come with the latest Operating System. The following features should be available from day one.	
		Should support Standard Access Lists, Extended Access Lists & Named Access Lists.	
		Should support Route Maps, Class Maps & Policy Maps.	
		Class of Service, Prioritization, Low Latency Queuing, etc.	
		Network Address Translation ( Static NAT, Dynamic NAT, PAT)	
14.9	Routing Protocol Support Required	RIP (V1 & V2) , OSPF, BGP4, Policy based Routing, PPP, Multilink PPP, IPv6	



14.10	Security Protocols Support Required	Should support IPSec DES, 3DES & AES based encryption. Should also support MD5 & SHA-1 authentication.	
14.11	Firewall & IPS	Should come with firewall & IPS features	
14.12	Multicasting and QoS	The router should have following multicasting and QoS features:	
		Resource Reservation Protocol (RSVP)	
		Support for QoS	
		Support for WFQ, Committed Access Rate (CAR) , IP Precedence, DSCP	
		Internet Group Management Protocol (IGMPv3)	
		Multicast Routing support such as Protocol Independent Multicast (PIM) or MOSPF	
14.13	IPv6 Support	Should be IPv6 compliant. Should support dual stack (IPv6 & IPv4).	
14.14	Management Features	Should support Telnet, SSH, TFTP and BOOTP protocols.	
		Should support SNMP V1 & SNMP V2c & SNMP v3 for remote management.	
		Should be configurable usign CLI & GUI interface.	
		Should support NTP & RADIUS protocols	
		Should support syslog logs.	
14.15	Power Supply	Should come with internal Redundant power supplies.	
14.16	Operating System	Should come with the latest operating system supporting the above features.	
14.17	Mounting	The offered router should be rack mountable. Rack mount kit to be given.	
14.18	Accessories	Should come with all necessary power cords, adapters, data cables, connectors, CDs, manuals, brackets accessories, etc, required for installation and commissioning of the equipment.	
14.19	Warranty	Onsite labour, parts warranty for the entire contract period	



Information Technology Centre, HEEP, BHEL Ranipur, Haridwar  
Tender No. HW/ITX/2/1122 Dated 25/09/2013

Annexure VI

<b>Price Bid</b>				
1	The Leased line charges are to be quoted for one quarter payable at the end of each quarter.			
2	There is no separate charges payable for supply & maintenance of router, terminal equipment, fiber laying, installation charges, one time charges etc. All charges have to be included in the quarterly charges.			
3	The comparative statement will be on quarterly charges x 12 quarters.			
4	Since service tax is cenvatable as per the present tax rules, all taxes except service tax will be loaded in the comparative statement to arrive at landed cost to BHEL			
5	All values are to be quoted in Indian Rupees.			
Sl. No.	Item Description	Unit	Qty	Per Quarter Charges Inclusive of all taxes except service tax
A	B		C	D
1	32 Mbps (1:1) Internet Leased Line Service	Nos.	1	
<b>Mention Service Tax Rate on column D</b>				