



# BHARAT HEAVY ELECTRICALS LIMITED

( A Government of India Undertaking )  
HIGH PRESSURE BOILER PLANT  
PURCHASE DEPARTMENT - FOSSIL BOILERS  
THIRUCHIRAPALLI - 620014  
TAMILNADU (INDIA)

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429-002/A

NETWORK	Collective No.	Enquiry Date	Due Date For Quotation
<b>IMPLEMENTATION FOR BHEL-THIRUMAYAM</b>	2651200025	14.06.2012	12.07.2012
Please quote Enquiry No, Date and due date in all correspondences. This is only a request for quotation and not an order			

Item	Description	Unit	Quantity	Delivery Quantity	Schedule Date
10	Procurement-active Network components for data network implementation under 5 years Lease Rental-As per enclosed Specifications (Annexure-A).	QTR	20	20	29.09.12
20	Supply of Network components for Thirumayam 1.Supply of 12 core SMF outdoor-18000 M 2.Supply of 24 port LIU 19" rack mountable-50 Nos. 3.Supply of pigtail-700 Nos. 4.Supply of SC-LC SM patch cord 2 meters-90 Nos. 5.Supply of SC-SC SM patch cord 2 meters-20 Nos. 6.Supply of route markers - 80 Nos. 7.Supply of wall mount rack 12U - 25 Nos. 8.Supply of floor mount rack 24U - 2 Nos. 9.Supply of floor mount rack 42U - 8 Nos 10.Supply of cat6 UTP cable - 70000M 11.Supply of I/O dual cat6 with mounting box - 1100 Nos. 12.Supply of 2Meters UTP cat6 patch cord - 800 Nos. 13.Supply of 5Meters UTP cat6 patch cord - 200 Nos. 14.Supply of patch panel cat6 - 110 Nos. 15.Supply of 10m long OFC Patch cord SC-SC - 4 Nos. Supply of Network components	QTR	20	20	29.09.12
30	Installation of Network components for Thirumayam. 1.Laying outdoor fibre in soft soil - 7000M. 2.Laying outdoor fibre in hard soil - 5000M. 3.Laying outdoor fibre in road - 100M. 4.Laying outdoor fibre in trunch - 1800M. 5.Splicing of pigtail- 700 Nos. 6.Fixing of wall mount rack 12U - 25Nos. 7.Fixing < (> &< )> Terminating information Outlet - 1100 Nos. 8.Terminating patch panel - 110 No. 9.Laying UTP Cable - 61000M. 10.Laying UTP Cable in wall/floor concealing -	QTR	20	20	29.09.12

The offers should reach us 30 minutes before the time of opening of tenders.  
The offers will be opened at 14.30 hrs on the due date of tender in the presence of tenderers who have submitted their offer and who may like to be present for the tender opening.Late and delayed offers are liable to be rejected.

Yours faithfully,  
For **BHARAT HEAVY ELECTRICALS LIMITED**

  
MANAGER / PURCHASE  
(FOSSIL BOILERS)

**S. RAMACHANDRAN**  
Dy. General Manager / MM / MFG  
Purchase / CP, SP & WC  
CHY - 620 014.



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9000M.  
Installation of Network  
components

**General Note:**

Note:

1. Please submit your detailed offer in two part bid system i.e  
Part-I. Technical and commercial (unpriced bid) in a sealed cover  
Part-II. Priced offer in another separate sealed cover.

All the two covers shall be duly super-scribed with tender reference and due date of opening. These covers shall be put in a single cover duly super-scribed with tender reference and due date of opening and addressed to us.

2. Point-to-point confirmation to BHEL's specification and commercial terms & conditions shall be provided Annexure-B. All the Annexures should be filled and submitted along with the technical bid (no row shall be left blank), else your offer is liable for rejection.
3. Offers with validity of less than 180 days and non-acceptance of LD, RP clause, PBG & Payment terms, will lead to rejection of submitted offer.
4. If the due date of tender opening happens to be a holiday, those tenders will be opened on the next working day.
5. All clarifications may be sought at least ten days prior to tender due date, from the undersigned with due written request.
6. BHEL reserves the right to go for a reverse auction (RA) instead of opening the submitted sealed bid, which will be decided after technical evaluation. Information and general terms and conditions covering RA are given in commercial terms and conditions (Annexure-B/Point no.17)
7. Vendors are requested to avoid the following in their Bid Documents:
  - a) Loose or spiral bound bid documents are not encouraged.
  - b) In case of any corrections/overwriting in the tender documents, the same shall be duly attested by the bid submitter.
8. Corrigendum if any, with respect to this tender will be hosted only in the website <http://www.bhel.com> or <http://tenders.gov.in>. You are requested to visit the website regularly for updates.

List of Attachments:

1. Annexure-A Tender Specifications-35 pages

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Yours faithfully,  
For **BHARAT HEAVY ELECTRICALS LIMITED**



MANAGER / PURCHASE  
(FOSSIL BOILERS)

Yours faithfully,

**S. RAMACHANDRAN**

Dy. General Manager / MM / MFG

Purchase / CP, SP & WC

BHEL, THIRUCHIRAPALLI - 620 014.



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2. Annexure-B Commercial Terms and Conditions-7 pages

**Enclosures:**

"LD clause has to be confirmed without fail."  
"Payment to vendors will be made only thro E-Payment mode."

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Yours faithfully,  
For **BHARAT HEAVY ELECTRICALS LIMITED**

  
MANAGER, PURCHASE  
(FOSSIL BOILERS)  
Yours faithfully,

**S. RAMAGHANDRAN**  
Dy. General Manager / MM / MFG  
Purchase / CP, SP & WC  
BHEL, TRICHY - 620 014.

ENQ. No.2651200025 DT:14.06.12

An ISO 9001  
Company

**Bharat Heavy Electricals Limited**  
**(High Pressure Boiler Plant)**  
 Tiruchirappalli – 620014, TAMIL NADU, INDIA  
**MATERIALS MANAGEMENT**

TITLE:  NETWORK IMPLEMENTATION FOR BHEL THIRUMAYAM	Phone: +91 431 2577331 Fax : +91 431 252 07 19 Email : srchandran@bheltry.co.in Web : www.bhel.com, <a href="http://tenders.gov.in">http://tenders.gov.in</a>
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	Reference Number: Enquiry <b>2651200025</b>	Enquiry Date: <b>14.06.12</b>	Due date for submission of quotation: <b>12.07.12</b>
You are requested to quote the Enquiry number date and due date in all your correspondences. This is only a request for quotation and not an order.			

**NETWORK IMPLEMENTATION**

BHEL commercial terms & conditions with Technical specifications can be downloaded from BHEL web site <a href="http://www.bhel.com">http://www.bhel.com</a> or from the Government tender website <a href="http://tenders.gov.in">http://tenders.gov.in</a> (public sector units) Bharat Heavy Electricals Limited under enquiry reference ""	
Tenders should reach us before 14:00 hours on the due date.  Technical bid will be opened at 14:30 hours on the due date Tenders would be opened in presence of the tenderers who have submitted their offers and who may like to be present.	Yours faithfully, For Bharat Heavy Electricals Limited  Manager / Capital Purchase/ Manufacturing

ENQ. No.2651200025 DT:14.06.12

**BHEL TIRUCHIRAPPALLI      INFORMATICS CENTRE**

RFQ for NETWORK IMPLEMENTATION at BHEL –THIRUMAYAM

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## 1 GENERAL

BHEL is the largest engineering and manufacturing enterprise in India in the energy-related/infrastructure sector. BHEL was established more than 50 years ago, ushering in the indigenous Heavy Electrical Equipment industry in India - a dream that has been more than realized with a well-recognized track record of performance.

Power Plant Piping Unit (PPPU) is a new manufacturing unit of BHEL located at Thirumayam, Tamilnadu. A new LAN is proposed to be implemented in BHEL-Thirumayam. All UTP and fibre links are to be newly laid and terminated. New switches are to be installed and configured and connectivity has to be established. The LAN will also carry the IP phone traffic. To increase network security and manageability, it is also planned to implement Access Control System. In near future BHEL is also planning to implement IPv6 in the campus.

This networking proposal consists of the following:

1. Supply and laying of fibre optic cables, UTP cables and cable terminations (Passives).
2. Supply, installation and configuration of data switches.
3. Establishment of connectivity, testing, commissioning and documentation.
4. Supply, installation and configuration of Hardware-based AAA Server.
5. Supply, installation and configuration of Network Management System (NMS).
6. Maintenance of the network for a period of 5 years.

The procurement of actives (Switches, AAA server and NMS) will be under a Financial lease rental contract for a period of 5 years. Passives will be purchased outright by BHEL. During the lease rental period of 5 years, the contractor shall maintain sufficient spares, to ensure the prescribed uptime of the items supplied under rental.

After completion of 5 years of contract period BHEL may opt for subsequent 2 years of Annual Maintenance Contract (AMC).

## 2 ELIGIBILITY CRITERIA

### Eligibility criteria for Bidders

1. The bidder should be a company registered in India.
2. The bidder should be an existing Network System Integrator for more than 5 years.
3. The bidder should have highest level of partnership with OEM of switches.
4. The bidder should possess ISO 9001 certification and ISO 27001 certification. The certifications should be current and the scope should include Network implementation.
5. The bidder should be profit earning for the last three years.
6. The bidder should not be involved in any bankruptcy Issues. The bidder should give a declaration to this effect.
7. The bidder should have experience in executing Enterprise Networks. The bidder should have successfully executed Enterprise LANs during the last 5 years in any one of the following categories:
  - a)
    1. At least Three Enterprise LANs, each with order value of not less than Rs. 1.5 Crores on Lease Rental or Rs. 1 Crore on outright purchase basis,  
Or
    2. At least Two Enterprise LANs, each with order value of not less than Rs. 2.5 Crores on Lease Rental or Rs. 1.5 Crores on outright purchase basis,  
Or
    3. At least One Enterprise LAN, with order value of not less than Rs. 4 Crores on Lease Rental or Rs. 2.5 Crores on outright purchase basis.

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And

- b) The bidder should also have successfully executed at least One Enterprise LAN before 5 years with order value of not less than Rs. 1.5 Crores on Lease Rental or Rs. 1 Crore on outright purchase basis.
8. At least one of these contracts (in a/b above) shall have minimum 10% of the contract value towards supply and installation of passives
  9. At least one of these contracts (in a/b above) or any other contract with order value of not less than Rs. 1.5 Crores, shall be on lease rental basis. The lease rental contract should have been successfully completed or if continuing, should have completed at least 3 years.
  10. PO copies and commissioning certificates (for points 7,8 and 9) should be enclosed. POs and evidences shall be in the name of bidder. POs and evidences in the name other than that of bidder shall not be considered. However, if the POs submitted by the bidder are not of the same OEM quoted for this tender, then the bidder shall submit 2 POs of 2000 node campus LAN installations in India, for the OEM make being quoted, along with performance report from the customer.
  11. The bidder should have certified professionals in its rolls who possess experience of implementing / maintaining Enterprise Network Solution. List of certified professionals should be submitted.
  12. The bidder should not be under Hold or Blacklist by any of BHEL units as on bid opening date, for any of product or service related to Enterprise Network. The bidder should give a declaration on this.
  13. The bidder should be able to provide committed support for quoted network actives for a minimum period of 5 years from OEM in writing. The bidder shall give commitment letter for additional 2 years support either through OEM or on their own.
  14. Authorisation letter from the OEM (for actives) shall be enclosed to participate in this tender.
  15. The OEM for passives shall be ISO 9000 certified for manufacture of passives.
  16. Authorisation letters from respective OEMs (for the products where vendor names are specifically mentioned) shall be enclosed to participate in this tender

#### Eligibility criteria for OEM of actives

1. OEM should possess ISO 9001 certification and should also be ISO 27001 certified.
2. The actives shall be minimum EAL-2 certified.
3. OEM should be profit earning for the last three years.
4. OEM should not be involved in any bankruptcy Issues. OEM should give a declaration to this effect.
5. OEM should have a Technical Assistance Center in India.
6. OEM should have at least one Spares Logistics Depot in South India within 500 Km from Thirumayam
7. All products should demonstrate interoperability with standards-based switches of other manufacturers

#### Note:

1. Certificates and evidences should be provided as a proof for all the above mentioned eligibility criteria.
2. If the bidder and OEM do not fulfill any of the eligibility criteria mentioned above, the offer will be rejected.

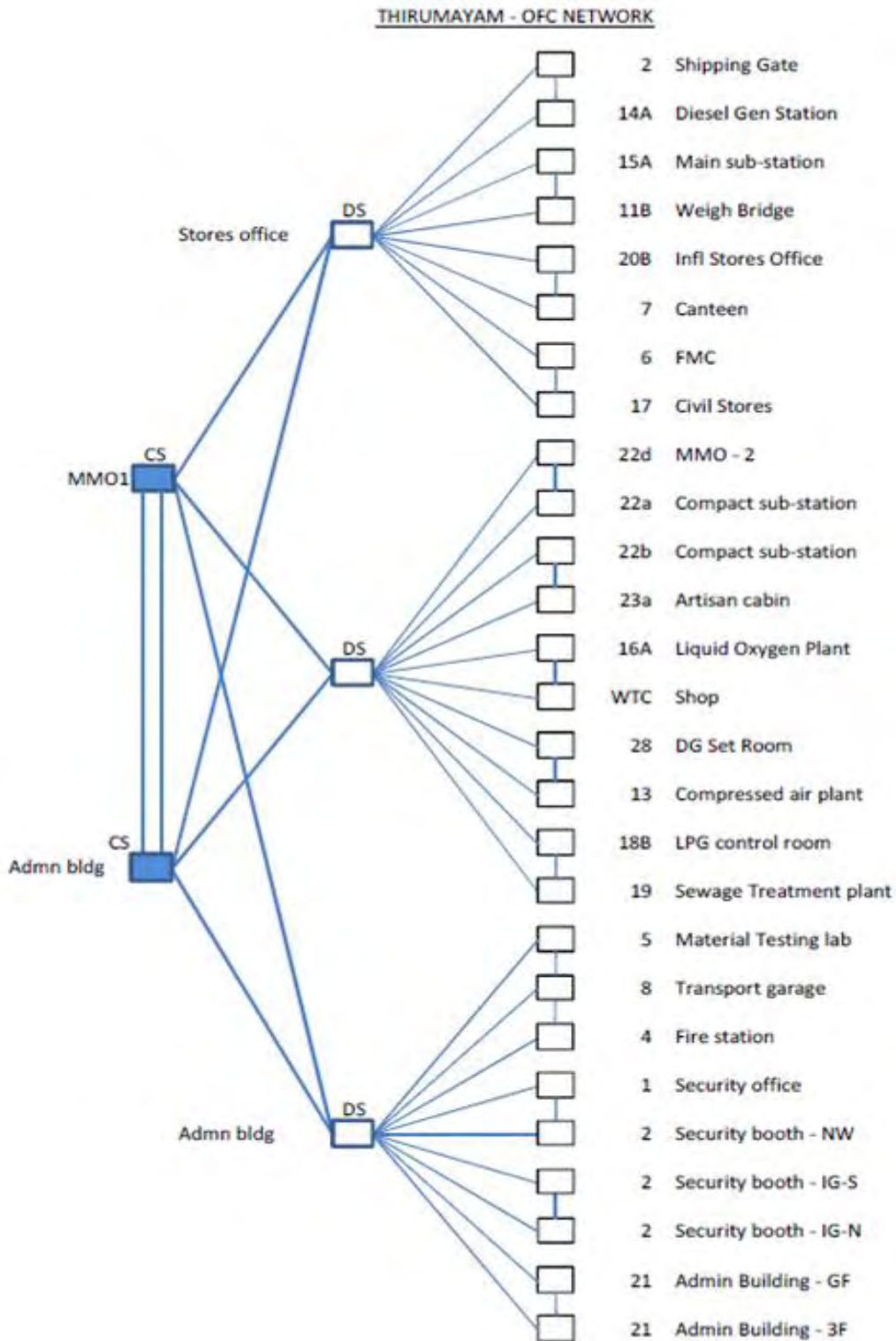
### 3 SPECIAL INSTRUCTIONS TO THE BIDDER

1. The offer shall be submitted in full, covering the total scope. Partial offer will not be accepted and will not be considered for evaluation.
2. The bidder shall sign all the pages of the Tender document and all the supporting documents. Signing of the document means that the bidder has fully understood the Tender and complies with all the requirements.
3. The bidder shall give cross reference for all the points, clearly mentioning the supporting document and highlight the reference portion in the document.
4. All Software updates and upgrades of Switches, and AAA servers shall be provided during the entire 5 year lease period at no extra cost. The bidder shall give commitment letter in this regard.
5. The total rental value shall not be less than 80% of the total of rental + outright value.
6. All actives should be from the same OEM. Mix and match with other OEMs is not allowed.

4 SCOPE OF WORK

The scope of work is given in the following sections.

4.1 Scope Of Work- Actives



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Switches:

1. Supply and installation of switches
2. Initial configuration of all switches as per BHEL's requirement
3. Configuring 802.1x in all the access switches as per the AAA server requirement
4. Configuring Quality of service for video and voice traffic
5. Implementing High availability features in the switches deployed, as per BHEL's requirement
6. Testing and documentation
7. Maintenance

AAA Server:

1. Supply of AAA server
2. Integrate AAA server with existing Active Directory Server Groups and DHCP server
3. Configure Dynamic VLAN, IP address and access list assignment to ADS user groups as per BHEL policies
4. Configure 30 access switches and approximately 250 clients for 802.1x authentication. Clients include PCs (Windows XP and Windows 7), printers, biometric devices and IP phones. Both IP phone and PC will be connected to the same switch port.
5. Integrate network switches with AAA server for AAA
6. Check AAA authentication mechanism works as per the BHEL policy
7. Two AAA servers should be configured in active / active or active / passive mode.
8. Document the complete configuration, VLAN details, dynamic access-list details and user groups to which the dynamic VLANs will be assigned
9. Document the switch configuration details
10. Customer orientation training for 2 days

Network Management System:

1. Supply of NMS
2. Installation and configuration (BHEL will provide the necessary hardware)
3. Maintenance

4.2 Scope Of Work – Passives

1. Supply and laying of fibre optic cables/ copper cables and cable terminations.
2. Supply and Installation of Racks, LIU's, IO's and Patch panels.
3. Termination of fibre / UTP cables at LIU's, IO's and Patch panels.
4. Establishment of connectivity, testing and commissioning.
5. The fibre / UTP cable and terminations, covered under the scope shall be tested and test report shall be submitted.
6. All installations shall be done by certified technicians and the bidder should submit the certification credentials of the technicians.
7. The fibre cable within the scope of the bidder should be certified for a life span of 20 years.
8. The materials shall be moved to the respective place of work within the campus by the bidder.
9. The bidder should provide sample for the passive components.

5 BILL OF MATERIAL

The bill of material for the active and passive components to be installed under this contract is given in the following sections.

5.1 Bill Of Material - Active

Sl. No	Description	Unit	Qty.
1	CoreSwitch	No	2

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2	DistributionSwitch – Type I	No	2
3	DistributionSwitch – Type II	No	1
4	AccessSwitch	No	35
5	AAA Server	No	2
6	Network Management System	No	1

### 5.1.1 Material Specification – Actives

#### 5.1.1.1 Core Switch:

Core Switch shall be Chassis based Multilayer architecture capable of redundant supervisory modules. One core switch shall be placed at Admin Building and other at MMO1 Building.

Each core switch shall have Two supervisory modules, Two power supplies, minimum 5No. 10Gbps SinglemodeFibre ports populated and 48 ports 10/100/1000 Mbps copper ports.

Switch shall be with following specifications:

<b>Generic Requirements</b>
The Switch should be Chassis based Multilayer Switch Architecture with minimum 8 slots and should support minimum of 6 payload slots
The Switch should have Two Supervisor Modules for redundancy
The switch should support Layer 2/Layer 3 switching/routing
The switch should be 100% passive back-plane
The Switch should have Power supply redundancy with a minimum of two hot-swappable power supplies
The Switch should support a minimum of 80 Gbps (Half Duplex) switching capacity per slot
The Switch should support online insertion and removal of the Supervisor
The Switch should support online insertion and removal of payload modules
The Switch should support hot-swappable fan trays
The Switch should support a distributed switching architecture
The Switch should support aggregate data forwarding rates up to 700 million packets per second (Mpps) for IPv4 traffic
The Switch should support 1 Gbps interfaces
The Switch should support 10 Gbps interfaces
The Switch should support 40 Gbps interfaces
<b>Performance &amp; Scalability</b>
The Switch should support single fabric throughput of 2 Tbps and when combined together the aggregate switching capacity of both the switches (in virtual switching mode) should be 4 Tbps
There should be no performance degradation on the event of failure of one switching fabric
The Switch should be able to dynamically buffer allocation in case of microbursts with >10msec of buffering on 10G uplinks
<b>Layer 2 Features</b>
The Switch should support Layer 2 switch ports
The Switch should support IEEE 802.1Q VLAN encapsulation
The Switch should support IEEE 802.3 ad Link aggregation across modules
The Switch should support move/add/changes of VLANs dynamically to reduce administrative burden of configuring VLANs on multiple switches in turn eliminating the configuration errors & troubleshooting in secure manner
The Switch Should be able to discover the neighboring device of the same vendor giving the details about the platform, IP Address, Link connected through etc, thus helping in troubleshooting

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connectivity problems or equivalent
The Switch should support a mechanism to detect connectivity issues with both fiber and copper cabling to ensure that a partially failed link is shut down on both sides, to avoid L2/L3 protocol convergence issues
The Switch should support Layer 2 trace route to ease troubleshooting by identifying the physical path that a packet takes from source to destination
The Switch should support extensive debugging including layer 2 debugging for troubleshooting
The Switch should have facility to display MAC Address Table and also clear the Table
The Switch Shall have IEEE compliance for 802.1Q VLAN, 802.1p QoS, 802.1d STP, 802.1w RSTP, 802.1s MSTP, 802.3ad LACP, IEEE 802.1ab Link Layer Discovery Protocol.
The Switch should support 802.1s - Per-VLAN Group Spanning Tree Protocol
<b>Layer 3 Features</b>
The Switch should support basic Routing-Static IP routing, RIP v1/v2, RIPng and policy based routing
The Switch should support hardware enabled advance IP routing protocols OSPF, OSPFv3, BGPv4, PIM-SM, PIM-DM , PIM-SSM etc.
The Switch should support Gateway Load Balancing Protocol or equivalent.
The Switch should support VRRP or equivalent for High Availability
The Switch should support Rapid convergence Layer 3 protocols
The switch should support the ability to configure Layer 3 Aggregate links
The Switch should support 1M IPv4 Routes
The Switch should support 512K IPv6 Routes
The Switch should support RFC 1771 - BGPv4
The Switch should support RFC 1745 - BGP/Open Shortest Path First (OSPF) interactions
The Switch should support RFC 2439 - Route flap dampening
The Switch should support RFC 1583, RFC 2328 - OSPFv2
The Switch should support RFC 1850 - OSPFv2 Management Information Base (MIB), traps
The Switch should support RFC 1723 - RIPv1
The Switch should support RFC 2453 - RIPv2
<b>Multicast</b>
The Switch should support 128K Multicast Routes
The Switch should support IGMP v1, v2, v3
The Switch should support IP multicast routing protocols PIM & SSM
The Switch should support PIM RP accept filter, PIM neighbor filter, multicast route limit, Bidir PIM, multicast multipath. Should support minimum 128K IPv4 and 64K IPv6 multicast entries.
The Switch should support IGMP (Internet Group management protocol)
The Switch should support IGMP v1,v2,v3
The Switch should support IGMP v1,v2,v3 Snooping
The Switch should support IGMPv3 snooping in hardware
The Switch should support IPv6 MLDv2 snooping in hardware
The Switch should support RFC 2362 - Protocol-Independent Multicast (PIM)-SM
The Switch should support PIM registers in hardware
The Switch should support RFC 1075 - DVMRP v3-07,Multicast Source Discovery Protocol (MSDP)
The Switch should support PIM (Protocol Independent Multicast)
The Switch should support GARP (Multicast Registration Protocol)
The Switch should support multicast performance at line rate in hardware, with replication performance of at least 100Mpps

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<b>Virtual Switching</b>
The Switch should support combining of two separate physical switch in a single logical unit without any additional/external devices
The Virtual switch should support the Standby Supervisor to take over in the event of a failure on the Active Supervisor
The Virtual switch should support Stateful Switch over in case of a failure of the Active Supervisor
The Virtual switch Active Supervisor is responsible for the control plane of both the switches
The Virtual switch data planes of both the physical switches should be active
The Virtual switch should support up to 1056 ports of 1Gbps
The Virtual switch should support up to 352 ports of 10Gbps
The switch should support upgrade of Software on the standby Supervisor
The switch should support In-Service OS upgrade mechanism with a minimal disruption of traffic through upgrade process.
The Virtual Switch must be able to provide relevant debugging capabilities and tools for troubleshooting interconnecting links (SPAN, PING, etc.)
<b>StatefulSwitchOver&amp; Non-Stop Forwarding</b>
The switch should support Stateful Switchover if the Active supervisor fails without any impact to system performance
The switch should support stateful feature information between the two Supervisors in the same chassis
The switch should support user session information is maintained during a switchover
The switch should support forwarding of network traffic with no loss of sessions during a Supervisor switchover
The switch should support switchover from Active Supervisor to the Standby Supervisor in less than 3 seconds
The switch should support Fast Software Upgrade to reduce planned downtime
The switch should support Nonstop Forwarding
The switch should support Nonstop Forwarding for BGP
The switch should support Nonstop Forwarding for OSPF
The switch should support Nonstop Forwarding for ISIS
<b>IPv6</b>
The switch should support IPV6 in hardware without the addition of special modules to achieve IPv6 forwarding
The Switch should support aggregate data forwarding rates up to 380 million packets per second (Mpps) for IPv6 traffic
The Switch should support IPv6 uRPF for up to 16 paths
The Switch should support Separate IPv6 and IPv4 interface statistics on egress and ingress
The Switch should support Stateful switchover for both intra-chassis and inter-chassis redundancy
The Switch should support Router Advertisement (RA) Guard (First Hop Security)
The Switch should support Neighbor Discovery (ND) Inspection
The Switch should support Port-Based Access Control List (PACL)
The Switch should support Routing Information Protocol (RIP) enhancements for IPv6 - RFC 2080
The Switch should support IPv6 RIP split horizon with poison reverse
The Switch should support OSPFv3 as defined in RFC 2740
The Switch should support the capability to run multiple OSPFv3 instances of the routing process on a single link
The Switch should support IS-IS for IPv6
The Switch should support Multiprotocol BGP for IPv6

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The Switch should support Static Route for IPv6
The Switch should support Policy-based routing (PBR) or equivalent for IPv6
The Switch should support Unicast Reverse Path Forwarding (uRPF) for IPv6
The Switch should support limiting the maximum amount of IPv6 addresses that can be bound to a single MAC-address
The Switch should support RA Guard
The Switch should support configuration of Allowed/Disallowed ports for receiving RA-guard messages
The Switch should support configuration of Allowed/Disallowed IP source addresses of RA-sender
The Switch should support configuration of Allowed Prefix list and Prefix ranges
The Switch should support configuration of Control Router Preference
The Switch should support IPv6 over IPv4 (IPv6IP) Manually Configured Tunnels
The Switch should support IPv6 using Generic Routing Encapsulation (GRE) header over IPv4 Manually Configured Tunnels
The Switch should support 6to4 tunnelling
The Switch should support Intra-Site Automatic Tunnel Addressing Protocol (ISATAP)
The Switch should support MLDv2 Snooping for IPv6 in hardware
<b>MPLS</b>
The Switch should support MPLS in hardware without the addition of special modules to achieve MPLS forwarding
The Switch should support RFC 2547 - MPLS VPN
The Switch should support Provider/Provider Edge functionality
The Switch should support MPLS mVPN (Multicast VPN), MPLS Class of Service (CoS), VRF-Aware Services (Telnet, ICMP, DHCP, IPsec, Syslog), Carrier Supporting Carrier (CsC), MPLS TE (Fast re-route), DiffServ-Aware TE, Inter-AS VPNs).
The Switch should support VRF-Lite for L3 virtualization
The Switch should support MPLS NetFlow to allow inspection of the IP header for non aggregate label at a P device (mpls2mpls)
The Switch should support RFC 3036 - Label Distribution Protocol
The Switch should support QoS mechanisms using experimental (EXP) bits
The Switch should support MPLS-RSVP-TE
The Switch should support MPLS differentiated services (diffserv)-aware traffic engineering (MPLS-DS-TE)
The Switch should support MPLS traceroute
The Switch should support EoMPLS
The Switch should support EoMPLS tunnels
The Switch should support Native VPLS in HW
The Switch should support Native L2 over multipoint GRE
The Switch should support VRF-aware operational contexts
The Switch should support Native support for VPLS
The Switch should support VPN-aware NAT
The Switch should support Up to 8192 VRFs
The Switch should support IPv6 Provider Edge (6PE)
The Switch should support Class-Based TE Tunnel Selection for 6PE
The Switch should support IPv6 VPN Provider Edge (6VPE)
The Switch should support MPLS over GRE in hardware
<b>Service Modules</b>
The Switch should support a Stateful Firewall Module

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<b>QoS</b>
The Switch should support sophisticated QoS and Traffic Management
The Switch should support QoS Classification
The Switch should support QoS Marking
The Switch should support QoS Policing
The Switch should support QoS Congestion avoidance
The Switch should support QoS Mutation
The Switch should support QoS for IPv6 unicast and multicast traffic
The Switch should support QoS for IPv6 unicast and multicast traffic
The Switch should support Per-port -per-VLAN policies
The Switch should support Distributed policing (up to 4 K policers)
The Switch should support Egress microflow policing
The Switch should support Packet or byte-based policing
The Switch should support Diff ServQoS on all ports
The Switch should support minimum four queues per port in hardware
The Switch should support Advance security – DOS and NAT
The Switch should support priority queuing
The Switch should support IP differentiated service code point (DSCP) and IP precedence
The Switch should support classification and marking based on full Layer 3, 4 headers
The Switch should support input and output policing based on Layer 3, 4 headers.
The Switch should support Enterprise wide QoS management: LAN to WAN integration
The Switch should support Traffic Classification: Physical Port, IP DA/SA, IP DA/SA/L4 Port
The Switch should support Admission Control: IP DA/SA, IP DA/SA L4, RSVP
The Switch should support Traffic Marking: IEEE 802.1Q/P COS, IPv4 ToS, via ACLs
The Switch should support Congestion Avoidance: WRED, multiple Queue Thresholds
The Switch should support Scheduling IP precedence, 802.1p, three transmit queues on a per port basis, WRR, Strict Priority Queue TOS->COS mapping
The Switch should support Micro-Flow Policing (limits BW of specific user/application)
The Switch should support Aggregate-Flow Policing (dedicated BW per customer SLA)
The Switch should support Excess-Rate Policing (permits traffic bursts, enables granular priority values/service-level)
The Switch should support Strict-Priority Queue (protects mission-critical, delay-sensitive traffic)
The Ethernet ports must support Shaped round robin (SRR)
The Ethernet ports must support Deficit weighted round robin (DWRR)
The Ethernet ports must support Weighted Round Robin (WRR)
The Ethernet ports must support Priority queueing
The Ethernet ports provide congestion avoidance with Weighted Random Early Detection (WRED)
The Ethernet ports provide congestion avoidance with Tail-drop thresholds
The Switch must support the ability to perform QoS re-write and strict priority queuing simultaneously
The Switch must provide the ability to make "real-time" configuration modifications to QoS or ACL classmaps without affecting other rules
The Switch must provide microflow policing for granular bandwidth control support
<b>NetFlow/SFlow</b>
The Switch should support NetFlow
The Switch should support a minimum of 512 K NetFlow/SFlow entries per module
The Switch should support ingress NetFlow/Sflow for collecting flow statistics for packets at

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ingress interface or interfaces
The Switch should support Egress NetFlow/Sflow for collecting flow statistics for packets prior to transmission out the egress interface or interfaces
The Switch should support Sampled NetFlow/SFlow for records to be created based on a sample of the traffic matching the flow
The Switch should support Sampled NetFlow/SFlow in hardware
The Switch should support 1000 global NetFlow/SFlow samplers
The Switch should support NetFlow/SFlow lookups for IPv4 based packets to be performed using the Layer 2 header
The Switch should support NetFlow/SFlow lookups for IPv6 based packets to be performed using the Layer 2 header
The Switch should support NetFlow/SFlow lookups for MPLS based packets to be performed using the Layer 2 header
The Switch should support users flexibility in defining which record types they want to use for a NetFlow/Sflow record
The Switch should support NetFlow/Sflow field options for collection of MPLS information in a NetFlow/SFlow record
The Switch should support NetFlow/Sflow field options for collection of IPv6 and multicast information in a NetFlow/SFlow record
The Switch should support NetFlow/Sflow field options for collection of multicast information in a NetFlow/SFlow record
The Switch should support Netflow/Sflow for VPN's
The Switch must have complete access to of L2, L3, and L4 Flag fields for application visibility via Netflow or IPFIX like functionality
<b>Security</b>
The Switch should provide robust protection of the control plane in Hardware
The Switch Shall have Filters/Access-List on all ports
The Switch should support MAC ACLs featuring per-port/per VLAN granularity
The Switch should support IEEE 802.1x and 802.1x extensions
The Switch Shall have 802.1x accounting
The Switch should support 192K ACL's
The Switch should support VLAN ACLs
The Switch should support Router ACLs
The Switch should support port based ACLs
The Switch should support Role-Based ACL
The Switch should support packet classification by tagging packets on ingress to the network so that they can be properly identified for the purpose of applying security and other policy criteria along the data path
The Switch should support secured communication on the links between devices in the network with a combination of encryption, message integrity check, and data-path replay protection mechanisms
The Switch should support L2, L3 and L4 ACLs
The Switch should support ACL dry run and hitless commit
The Switch should support Source MAC + IP Binding
The Switch should support Ipv4 and IPv6 uRPF
The Switch should support Private VLANs
IPv6 ACLs should support TCP and UDP protocol
IPv6 ACLs should support Source and destination port numbers
IPv6 ACLs should support TCP flags, including SYN, ACK, FIN, PSH, URG, RST, and Established (ACK and RST)
IPv6 ACLs should support ICMPv6 packets with source or destination address and ICMP type

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<b>Management &amp; Monitoring</b>
The Switch must provide means to auto configure endpoints such as phones, printers and desktops for deployment simplification
In-service software upgrade
The Switch should support the revised IP-MIB that includes statistics collection for IPv6
The Switch should support the revised IP-FORWARD-MIB
The Switch Shall have TACACS+/RADIUS enabled.
The Switch Shall have SSHv1 , SSHv2, SNMPv1, SNMPv2, SNMPv3 and NTP support
The Switch Shall have Management Access Filter (Access Policies)
The Switch should support Web based management console
The Switch should support Telnet and TFTP access
The Switch should support RMON - Remote Monitoring (RMON) with 4 RMON groups (history, statistics, alarms, and events).
The Switch should support SNMP agent - SNMPv1, SNMPv2c, SNMPv3.
The Switch should support collection of Top-N to analyze data for each physical port on a switch
The Switch should support collection of Top-N details for Number of input/output broadcast packets
The Switch should support collection of Top-N details for Number of input/output bytes
The Switch should support collection of Top-N details for Number of input errors
The Switch should support collection of Top-N details for Number of input/output multicast packets
The Switch should support collection of Top-N details for Number of buffer overflows
The Switch should support collection of Top-N details for Number of input/output packets
The Switch should support collection of Top-N details for Utilization
The Switch should support Layer 2 traceroute to identify the Layer 2 path that a packet takes from a source device to a destination device
The Switch must be able to provide traffic counters (packet or byte) for logical interfaces (example [display interface vlan 10])
The Switch must support the capability to check traffic statistics (packet or byte) across dedicated stack ports
The Switch should support Protocol Analyzer to capture network traffic from a port mirroring session and store the captured packets in a local memory buffer.
The Switch should support email-based and web-based notification of critical system events
The Switch should support utilization of vendor services for direct case generation with the Technical Assistance Center
The Switch should support features to deliver alerts to multiple recipients, each with configurable message formats and content categories.
The Switch should support message formats for optimal compatibility with pager services, standard email, or XML-based automated parsing applications
The Switch should support Short Text—Suitable for pagers or printed reports.
The Switch should support Plain Text—Full formatted message information suitable for human reading.
The Switch should support Machine readable format using Extensible Markup Language (XML) and Adaptive Markup Language (AML) document type definitions (DTDs)
The Switch should support Multiple concurrent message destinations.
The Switch should support Multiple message categories including configuration, diagnostics, environmental conditions, inventory, and syslog events.
The Switch should support Filtering of messages by severity and pattern matching.
The Switch should support Scheduling of periodic message sending
The Switch should support Continuous device health monitoring and real-time diagnostics alerts
The Switch should support Automatic Service Request generation, including detailed diagnostic information to speed problem resolution

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The Switch should support Secure message transport
The Switch should support each of the CPUs to report events to the management processor using an out-of-band interface and log the event in nonvolatile memory with a time stamp
The Switch should support Backplane Traffic Monitoring to monitor the backplane and fabric-channel traffic utilization at a configured interval and threshold
The Switch should be able to report buffer watermark messages for active buffering monitoring
The Switch should be able to support the capability to have a built-in protocol analyzing capability (similar to a wireshark protocol analyzer)
The Switch should support USB for configuration & new software image download
The Switch must be able to provide relevant CLI to ignore version mismatches when performing an In-Service Software Upgrades
The Switch must provide readily available documentation on version compatibility across software releases for hitless upgrades
Switch should provide accurate reporting on energy usage and consumption
Switch should offer power management solution, including third party integration
The Switch should support creating and running programs or scripts directly through the CLI or Tool command Language
<b>Port Mirroring</b>
The Switch should support port mirroring from one or more ports
The Switch should support port mirroring from one or more aggregated links
The Switch should support port mirroring from one or more VLANs
The Switch should support four 10GE bi-directional SPAN/RSPAN sessions
The Switch should support to send the mirrored traffic to one or more destinations for analysis
The Switch should support Port Mirroring without affecting the switching of traffic on sources
The Switch should support local Port mirroring on a single switch
The Switch should support remote port mirroring where in source ports or source VLANs, and destinations on different switches
The Switch should support remote port mirroring over a L2 VLAN
The Switch should support remote port mirroring by carrying traffic to the destination switch via a separate VLAN
The Switch should support remote port mirroring over a L3 Network via GRE
The Switch should support port mirroring for Ingress traffic
The Switch should support 2 port mirroring sessions for Ingress traffic
The Switch should support port mirroring for egress traffic
The Switch should support 2 port mirroring sessions for egress traffic
The Switch should support port mirroring for Ingress as well as egress traffic simultaneously
The Switch should support 2 port mirroring sessions for ingress and egress traffic simultaneously
The Switch should support a permit list of the ports that are valid for use as port mirroring destination ports to avoid accidental configuration of destination ports

#### 5.1.1.2 Distribution Switch:

Distribution switch shall be Chassis based Multilayer architecture with redundant supervisory modules. One distribution switch shall be placed at Admin Building (Type-II), one at Artisan Cabin (Type-II) and one at Stores Building (Type-I).

The Type-I Distribution switch shall have Two supervisory modules, Two power supplies, minimum 2No. 10Gbps singlemode fibre ports populated, 24 No. 1Gbps singlemode fibre ports populated and 48 No. 10/100/1000 Mbps PoE (IEEE 802.3af) copper ports.

The Type-II Distribution switch shall have Two supervisory modules, Two power supplies, minimum 2No. 10Gbps singlemode fibre ports populated, 24 No. 1Gbps singlemode fibre ports populated and 96 No. 10/100/1000 Mbps PoE (IEEE 802.3af) copper ports.

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Switches shall be with following specifications:

<b>General Features</b>
The Switch should be Chassis based Multilayer Switch Architecture with minimum 7 slots and should support minimum of 5 payload slots
The Switch should have Two Supervisor Modules for redundancy
The Switch should support online insertion and removal of the Supervisor module
The performance of the switch should not be affected in case of failure of one of the supervisor module. The other supervisor module should take over with the same performance capabilities.
Dual Hot-swappable power supplies, hot-swappable fan tray with redundant fans, and hot-swappable payload modules
<b>Performance</b>
800Gbps switch Capacity.
Layer 2, L3, L4 hardware forwarding at 250 Mpps (IPV4 )& 125 Mpps ( IPv6 ).
No performance penalty with advanced Layer 3 and Layer 4 services enabled
Software-based learning at a sustained rate of 1000 hosts per second
Support for 55,000 MAC addresses
Support for 256,000 ( IPv4 ) & 128,000 ( IPv6 ) entries in routing table (shared between unicast and multicast)
Scalability to 4000 virtual ports (VLAN port instances)
Bandwidth aggregation up to 16 Gbps through Port Aggregation.
Hardware-based multicast management & Hardware-based ACLs
<b>Power Over Ethernet</b>
The Switch should be able to support 48 ports of simultaneous PoE (IEEE 802.3at standard).
The Switch should be able to provide an energy management solution to help develop baseline, monitor and control energy consumption for end devices like PoE end points. Switches must support IEEE 802.3af, IEEE 802.3at
The Switch must provide means to prioritize POE endpoints to keep them powered in case of single power failure
The Switch should support the ability to adjust a PoE device's power allocation if its actual power requirement is lower than the IEEE 802.3af classification requirement on the device and via a management platform
The Switch should be able to provide power supply type, statistics for available power, current power
Should be able to adjust the power consumption like reducing the power usage of unused modules/ports, etc
<b>Layer 2 Features</b>
IEEE 802.1Q VLAN encapsulation, Support for 4096 VLANs per switch
Support for Automatic Negotiation of trunks to help minimize the configuration & errors.
Centralized VLAN Management. VLANs created on the Core Switches should be propagated automatically.
Spanning-tree for fast convergence with STP instances of minimum 2500.
802.1d, 802.1s, 802.1w, 802.3ad, 802.3af Power over Ethernet (PoE), 802.3at Power over Ethernet (PoE)
Spanning-tree root guard to prevent other edge swiches becoming the root bridge.
IGMP snooping v1, v2 and v3
Port Aggregation across modules

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Link Aggregation Protocol (LACP)
Support for Detection of Unidirectional Links and to disable them to avoid problems such as spanning-tree loops.
The CPU Stateful Switchover should be in subsecond failover time, so that the Layer 2 Links need not be renegotiated in case of failure of one of the CPU module.
The Switch should be able to discover the neighboring device of the same vendor giving the details about the platform, IP Address, Link connected through etc, thus helping in troubleshooting connectivity problems.
<b>Layer 3 features</b>
IP routing protocols Open Shortest Path First [OSPF], Routing Information Protocol [RIP], RIP2, Intermediate System to Intermediate System (IS-IS), Border Gateway Protocol Version 4 (BGP4) and Multicast Border Gateway Protocol (MBGP), ICMP Router Discovery Protocol, Policy-Based Routing (PBR)
Support for Router redundancy Protocol
Multicast entries should be minimum of 65,000 ( IPv4 ) and 60,000 ( IPV6 ).
The Switch should be Non-Stop Forwarding (NSF)-Aware for most of the dynamic routing protocols.
IP multicast routing protocols (PIM, SSM, Distance Vector Multicast Routing Protocol [DVMRP]), Pragmatic General Multicast (PGM)
IGMP v1, v2, and v3, IGMP filtering on access and trunk ports
Support for Virtual Route Forwarding feature to map VLANs to respective VRFs
Support for IPv6 Protocol Unicast & Multicast forwarding in Hardware
<b>Quality Of Service</b>
QoS hardware entries should be minimum of 100,000.
Per-port quality of service (QoS) configuration, Support for four queues per port in hardware
Strict priority queuing, IP differentiated service code point (DSCP) and IP Precedence
Classification and marking based on IP type of service (TOS) or DSCP, full Layer 3 and Layer 4 headers
Input and output policing based on Layer 3 and Layer 4 headers. Support for 1024 policers on ingress and 1024 policers on egress configured as aggregate or individual
Shaping and sharing output queue management, Support for Congestion avoidance feature like DBL (Dynamic Buffer Limiting)
No performance penalty for granular QoS functions
Support for Automatic Quality of Service for easy configuration of QoS features for critical applications.
<b>Security Feature</b>
Support for Admission Control features for end-point security (PCs & Desktop Posture Assessment) and thereby controlling the spread of viruses & worms
RADIUS, which allow centralized control of the switch and restrict unauthorized users from altering the configuration
Standard and extended ACLs on all ports
802.1x user authentication (with VLAN assignment and Guest VLAN extensions)
Router ACLs (RACLs) on all ports (no performance penalty), VLAN ACLs (VACLs), Port ACLs (PACLs)
Private VLANs (PVLANS) on access and trunk ports
Dynamic Host Configuration Protocol (DHCP) snooping and Option82 insertion
Port Security, Secure Shell (SSH) Protocol versions 1 and 2
Unicast MAC filtering, Unicast port flood blocking
Dynamic Address Resolution Protocol (ARP) inspection, IP source guard

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<b>Management Features</b>	
Single console port and single IP address to manage all features of the system	
Software-configuration management, including local and remote storage	
Optional Compact Flash memory card to store software images for backup and easy software upgrades	
In-service software upgrade	
Manageability through common network-management software on a per-port and per-switch basis, providing a common management interface for routers, switches of the same vendor	
Support for SNMP versions 1, 2, and 3	
Remote Monitoring (RMON) software agent to support four RMON groups (history, statistics, alarms, and events) for enhanced traffic management, monitoring, and analysis.	
Analysis support, including ingress port, egress port, and VLAN mirroring	
Support for sFlow / NetFlow or equivalent for Deep traffic & session flow analysis.	
Support for Port Mirroring, Remote Mirroring & ACL filtering for Port mirroring used for IDS functionalities.	

### 5.1.1.3 Access Switch:

Access switches shall be used to connect desktops/IPPhones/workstations / peripherals etc.

The Access switch shall have minimum 4No. 1Gbps singlemode fibre ports populated, and 24 No. 10/100/1000 Mbps active PoE ( IEEE 802.3 af) copper ports.

Specifications shall be as given below.

<b>Hardware &amp; Performance Requirements</b>	
Architecture	Fixed Configuration Layer2 1U Rack mountable Switch. Forwarding bandwidth of 56 Gbps and Switch forwarding rate of 40 Mpps
Rack mounting	19" inch rack mountable. Rackmount kit to be provided along with the switch
Flash & Memory	The switch should have enough Memory (Flash and/or any other) to hold the latest Software Release. The Memory should be large enough to support fully populated ports, all features of switch and parameters like MAC Address Table, VLANs etc.at their peak values as claimed in the Data Sheets of the Switch.
Stacking	The Switch should support OPTIONAL Stacking module/ports and should support stacking bandwidth of 20 Gbps.
No. of 10/100/1000 Ports	The Switch should have minimum 24 nos. 10/100/1000BaseTX ports
No of 1G fibre Ports	The switch should have 4 numbers of 1G SM fibre ports.
Type of Ports	Autosensing, Autonegotiating, Auto-MDIX on all UTP ports with minimum 802.3af compliant
<b>Connectivity &amp; Filtering</b>	
802.3ad	Should support Industry Standard Port/Link Aggregation for all Ports
Jumbo Frames	Jumbo Frames support up to 9K Bytes
Storm Control	Support for broadcast/multicast storm control to prevent degradation of switch performance from faulty end stations
<b>Layer 2 Functionality</b>	
802.1Q	Should support 802.1Q protocol

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Type of VLANs	Should support port based VLANs
Voice VLAN	Should Support Voice VLAN for separating and prioritising VoIP traffic
VLAN Trunking Protocol or Equivalent	Should support VTP or equivalent protocol to reduce administrative burden of configuring VLANs on multiple switches
No. of VLAN	Should support minimum 255 active VLANs
MAC Addresses	No. of MAC Address Supported: 8000
IPv6	Should support IPv6 as per RFC 2460 and IPv6 Neighbour Discovery
Power Over Ethernet	The Switch should be 802.3af compliant end devices
<b>Security Features</b>	
MAC Address Filtering	Should Support MAC Address Filtering based on source and destination address
DHCP Snooping	Should support DHCP Snooping to filter untrusted DHCP messages
802.1X	Should support 802.1x Network Security and Authentication
802.1x with VLAN Assignment/ Guest VLAN	Should support 802.1x with VLAN Assignment/Guest VLAN features
RADIUS	Should have support for RADIUS
<b>Network Protocols</b>	
STP	Should Support Spanning Tree Protocol, Rapid Spanning Tree Protocol, Multiple Spanning Tree Protocol
<b>Quality of Service</b>	
QoS Scheduling	Should support QoS scheduling
Queue per port	Should support minimum 4 queues per port
Rate Limiting	Switch should support rate limiting (bandwidth control). Rate limiting should be supported on the Ingress or Egress of any port without sacrificing additional ports.
<b>Multicasting</b>	
Multicast	Should support IPv4 Multicasting
IGMP	Should Support IGMP v1, v2
<b>Management</b>	
Network monitoring/ management	Switch should be manageable through NMS on per port/switch basis with common interface for all manageable devices on the network. Should Support syslog, SNMP, RMON, SSH, telnet, web management
Port Mirroring	Should support port mirroring feature for monitoring network traffic of a particular port/VLAN/group of ports/entire switch.
<b>Software</b>	
Software Version	Version of software for supplied switch should be latest release to support all required features
Software Updates	Software updates should be bundled for the entire contract period
<b>IEEE Standards Compliance</b>	
IEEE Standards	Ethernet: IEEE 802.3, 10BASE-T
	Fast Ethernet: IEEE 802.3u, 100BASE-TX, 100BASE-FX
	Gigabit Ethernet: IEEE 802.3z, IEEE 802.3ab, 1000BASE-X (mini-GBIC/SFP), 1000BASE-SX, 1000BASE-LX/LH
	IEEE 802.1D Spanning-Tree Protocol
	IEEE 802.1S & 1W for Rapid Spanning tree convergence

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	IEEE 802.1p CoS Prioritization
	IEEE 802.3x Flow Control
	IEEE 802.3ad Link Aggregation
	IEEE 802.1Q VLAN
	IEEE 802.1X Authentication
	IEEE 802.1ab
	IEEE 802.3ad
	IEEE 802.3af

#### 5.1.1.4 AAA Server:

Suitable AAA Server Solution has to be provided for both managing the Network devices and for end user authentication using IEEE 802.1x. The system should be appliance based solution. The system shall be of following specifications:

<b>Specification</b>
The AAA Server should be an appliance based and should support redundancy
Should support distributed deployment model that enables large-scale deployments and highly available solution
The AAA Server should offer centralized command and control for all user authentication, authorization, and accounting from a Web-based, graphical interface
The AAA Server should provide the manageability and administration of user access for routers, VPNs, firewalls, dialup and DSL connections, cable access solutions, storage, content, voice over IP (VoIP), wireless solutions, and switches using IEEE 802.1x access control.
The same AAA Server should leverage access framework to control administrator access and configuration for all RADIUS enabled network devices in the network.
Automatic service monitoring, database synchronization, and importing of tools for large-scale deployments
Flexible 802.1X authentication type support, including Extensible Authentication Protocol Transport Layer Security (EAP-TLS), Protected EAP (PEAP), LEAP, EAP-Flexible Authentication via Secure Tunneling (EAP-FAST), and EAP-Message Digest Algorithm 5 (EAP-MD5)
Downloadable access control lists for any Layer 3 device, including Routers, Firewalls, and VPNs
Restrictions such as time of day and day of week, as well as user and device group profiles.
Device command set authorization
Network access restrictions
User and administrative access reporting
Dynamic quota generation
Restrictions such as time of day and day of week
User and device group profiles
The AAA Server should have a Web-based user interface to simplify and distribute configuration for user profiles, group profiles.
The AAA Server should be able to support large networked environments with support for redundant servers, remote databases, and user database backup services.
Should support Integrated User Repository in addition to supporting integration with existing external identity repositories such as Windows Active Directory and LDAP. Should also support concurrent usage of multiple databases
Windows Active Directory and Windows NT database support to consolidate Windows username and password management and uses the Windows Performance Monitor for real-time statistics viewing.
Different access levels for each AAA Server administrator-and the ability to group network devices-enable easier control and maximum flexibility to facilitate enforcement and changes of security policy administration over all the devices in a network.
The proposed AAA Server should be used across virtually any network access server from the same vendor.

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Tight coupling with Routers and VPN solutions to provide features such as Multichassis Multilink Point-to-Point Protocol (PPP) and Router/Switch Software command authorization.
The AAA Server should offer token server support for any One-Time Password vendor that provides an RFC-compliant RADIUS interface (such as RSA, PassGo, Secure Computing, ActiveCard, Vasco, and CryptoCard).
It should also provide dynamic quotas for time-of-day, network use, number of logged sessions, and day-of-week access restrictions.
The AAA Server should act as a policy decision point in Network Admission Control deployments. Using policies that are configured, it should evaluate the credentials sent to it by Host Agent, determine the state of the host, and send the AAA client ACLs that are appropriate to the host state. Evaluation of the host credentials should enforce many specific policies, such as OS patch level and antivirus DAT file version. It should also record the results of policy evaluation for use with your monitoring system. Policies should be evaluated locally by AAA Server or can be the result returned from an external policy server to which the AAA Server forwards credentials. For example, credentials specific to an antivirus vendor should be forwarded to the vendor's antivirus policy server.
Support for Wireless Authentication- to support organization who cannot enforce a strong password policy and who wish to deploy an 802.1X EAP type that does not require digital certificates, support a variety of user and password database types, supports password expiration and change, and is flexible, easy to deploy, and easy to manage. For example, organization using Extensible Authentication Protocol who cannot enforce a strong password policy and does not want to use certificates can migrate to EAP-FAST for protection from dictionary attacks. The AAA Server should support for EAP-FAST supplicants available today on client devices and 802.11a/b/g WLAN client adapters.
AAA server should include simultaneous TACACS+ and RADIUS support for a flexible solution.
The AAA Server should extend per-user ACL support to any Layer 3 network device that supports this feature. This include proposed firewalls, VPN solutions, and Routers. The Administrator should be able to define sets of ACLs that can be applied per user or per group. This feature complements NAC support by enabling the enforcement of the correct ACL policy. When used in conjunction with network-access filters, downloadable ACLs can be applied differently per AAA client, allowing you to tailor ACLs uniquely per user, per access device.
The AAA Server should have support for certificate revocation using the X.509 CRL profile. A CRL is a time-stamped list identifying revoked certificates, which is signed by a certificate authority or CRL issuer and made freely available in a public repository. The Server should periodically retrieve the CRLs from provisioned CRL Distribution Points, using LDAP or HTTP, and store them for use during EAP-Transport Layer Security (EAP-TLS) authentication. If the certificate presented by the user during an EAP-TLS authentication is present in the retrieved CRL, the AAA server should fail the authentication and deny access to the user. This capability is extremely important in view of the frequent organizational changes and protects valuable company assets in case of fraudulent network use.
The AAA Server should have NAF. NAF is required to provide a flexible way of applying network-access restrictions and downloadable ACLs on AAA client names, network device groups, or the IP addresses of AAA clients. NAFs applied by IP addresses could use IP address ranges and wildcards. This feature is also required for granular application of network access restrictions and downloadable ACLs. NAF should allow flexible network device restriction policies to be defined in large environments.
The AAA Server should allow for replicating the user and group databases separately. This is to reduce the amount of data sent between the AAA Servers during a replication event. A configurable replication timeout option should be available to provision for slow network connectivity between the AAA Server replication partners.
Administrators should have the capability to replicate network access profiles and all related configuration, including posture validation settings, AAA clients and hosts, external database configuration, global authentication configuration, network device groups, dictionaries, shared profile components, and additional logging attributes.
Capability to allow administrators to classify access requests according to network location, membership in a network device group, protocol type, or other specific RADIUS attribute values sent by the network device through which the user connects. Authentication, access control, and authorization policies should be mapped to specific profiles.

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6.1.1.5 NMS

NMS
The Network Management Software shall be a standalone, comprehensive management platform that delivers integrated, modular management capabilities across fault, configuration, accounting, performance, and security (FCAPS) needs.
The software shall be designed on a service-oriented architecture (SOA) using a business application flow model and capable of including additional modules to the base platform to provide deeper functionality
The software shall be compatible with Microsoft Windows and Linux operating systems
The software shall come with an initial license for 50 managed devices. Additional node licenses shall be available to extend the node limit.
The software shall enable centralized management of all network elements with a variety of automated tasks, including discovery, categorization, baseline configurations, software images, configuration comparison tools, version tracking, change alerts, and more.
The software shall have modular architecture supporting addition of new modules to enrich a network's management capabilities. This shall include Wireless Network Management, User Access Management (AAA), Network Traffic Analyzer (using Sflow/Netflow).
Rich Resource Management - Discovery, full inventory, L2/L3 topology
Performance management – CPU, Memory, Bandwidth, TopN statistics, threshold-based alarming etc.
VLAN Management – view current VLAN configuration, VLAN topology, bulk VLAN deployment
ACL Management - Simplified definition and deployment of ACLs, ACL rule optimisation
Comprehensive Configuration Management – Bulk configuration, scheduled backup and restore, baselining and notification of changes etc
Fault Management – In-depth correlation and analysis of alarms
Flexible Reporting – Pre-defined and custom reports, scheduled and flexible delivery options

5.2 Bill Of Material – Passive

Sl. No	Description	Unit	Qty.
1	12 Core Outdoor Single Mode Fibre Optic Cable	m	18000
2	24 Port Rack Mountable LIU 19"	No	50
3	Single Mode Pigtail	No	700
4	SC-LC Single Mode Fibre Patch Cord 2 Metre	No	90
5	SC-SC Single Mode Fibre Patch Cord 2 Metre	No	20
6	SC-SC Single Mode Fibre Patch Cord 10 Metre	No	4
7	Cable Route Markers	No	80
8	Wall Mount Rack 12 U	No	25
9	Floor Mount Rack 24 U	No	2
10	Floor Mount Rack 42 U	No	8
11	Cat 6 UTP Cable	m	70000
12	Cat 6 Dual Information Outlet	No	1100
13	Cat 6 UTP Patch Cord 2 Metre	No	800
14	Cat 6 UTP Patch Cord 5 Metre	No	200
15	Cat 6 Patch Panel	No	110

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5.2.1 Material Specification – Passive5.2.1.1 Outdoor Single mode Fibre Optic cable:

1	Make	Molex / Panduit / Schneider / Systimax / ADC Krone / AMP
2	Type of Fiber	12 Core Singlemode 9/125 micron Loose Tube armored with ROHS Compliant
3	Application	Outdoor/ Underground
4	Jacket	UV Stabilised Polyethylene HDPE Sheath
5	Armouring	Corrugated Steel Tape Armour (ECCS Tape), Thickness > 0.15mm
6	Strength Member	Two Steel Wires
7	Standard	ITU G652.D - LWP, Low water peak TIA/EIA 598
8	Attenuation	0.4dB/km over 1310nm to 1625nm

5.2.1.2 Rack mount LIU:

1	Make	Molex / Panduit / Schneider / Systimax / ADC Krone / AMP
2	Rack Mount	Lockable 19" rack mounted with 1U height, Sliding Drawer Type
3	Material	Fully Powder Coated Steel Body / CRS
4	Accommodation	24 Port for SC Coupler using Adapter Plate
5	Labelling	Labelling for port identification
6	Certification	ROHS Compliant
7	Coupler	SC Duplex Type with ROHS Compliant
8	Splice Holder material	ABS - Halogen Free

5.2.1.3 Single mode Pigtail:

1	Make	Molex / Panduit / Schneider / Systimax / ADC Krone / AMP
2	Type of connectors	SC-SC / SC-LC LSOH Jacket
3	Polishing	100% Factory polished, tested and Guaranteed Performance
4	Standards	ROHS Compliant

5.2.1.4 Single Mode Fibre Patch cord:

1	Make	Molex / Panduit / Schneider / Systimax / ADC Krone / AMP
2	Type of connectors	SC-SC / SC-LC LSOH Jacket
3	Polishing	100% Factory polished and tested
4	Insertion Loss	Less than 0.35dB per connector
5	Attenuation	0.4dB/km over 1310nm to 1625nm
6	Standards	ROHS Compliant
7	Jacket colour	Yellow

5.2.1.5 Cable route markers:

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1	Material	RCC slab
2	Marking	BHEL OFC
3	Height	700 mm
4	Width	300 mm
5	Thickness	60 mm
6	Top	Semi-circular
7	Painting	Orange

5.2.1.6 Wall-Mount Rack (12 U):

1	Make	APW President / HCL / Netrack
2	Size	19" Floor mount rack
3	Height	12U
4	Depth	500 mm
5	Side Panels	Both Side panels shall be of removable type and access-protected with lock and key.
6	Front & Back Panels	Back panel and full length Glass Front door, both hinged type and with lock and key
7	Mounting hardware	12 Nos.
8	Power strip	Power strip with 6 Nos. of 5A, 3 pin socket
9	Fan	230V AC 90CFM fan at the top - 1 No
10	Cable Manager	Horizontal cable manager - 3 Nos.
11	Keys	All the racks shall have common key for all the doors

5.2.1.7 Floor-Mount Rack (24 U):

1	Make	APW President / HCL / Netrack
2	Size	19" Floor mount rack
3	Height	24U
4	Depth	500 mm
5	Side Panels	Both Side panels shall be of removable type and access-protected with lock and key.
6	Front & Back Panels	Back panel and full length Glass Front door, both hinged type and with lock and key
7	Mounting hardware	24 Nos.
8	Power strip	Power strip with 8 Nos. of 5A, 3 pin socket
9	Fan	230V AC 90CFM fan at the top - 2 No
10	Cable Manager	Horizontal cable manager - 5 Nos.
11	Keys	All the racks shall have common key for all the doors

5.2.1.8 Floor-Mount Rack (42 U):

1	Make	APW President / HCL / Netrack
2	Size	19" Floor mount rack
3	Height	42U
4	Depth	500 mm
5	Side Panels	Both Side panels shall be of removable type and access-protected with lock and key.
6	Front & Back Panels	Back panel and full length Glass Front door, both hinged type and with lock and key

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7	Mounting hardware	42 Nos.
8	Power strip	Power strip with 12 Nos. of 5A, 3 pin socket
9	Fan	230V AC 90CFM fan at the top - 2 No
10	Cable Manager	Horizontal cable manager - 15 Nos.
11	Keys	All the racks shall have common key for all the doors

5.2.1.9 Cat 6 UTP cable:

1	Make	Molex / Panduit / Schneider / Systimax / ADC Krone / AMP
2	Category	Should meet minimum Category 6 requirements
3	Type of Conductors and Grade	4 Pair Solid Conductors with FR Grade
4	Standards	TIA/EIA 568B, ISO Class E 11801-2002
5	Gigabit Requirements	Should meet or exceed Gigabit Ethernet requirements at 100 meters
6	Separator	Cross / Star Spine to separate 4 Pairs UTP Cable
7	Pull Thread / Strip Thread	Cable Pull Tension Thread inside the UTP Cable
8	Certification	UL Listed, ETL Tested and Verified and ROHS Compliant
9	Meter Marking	Printed with every metre lengths of the UTP Cable

5.2.1.10 Cat 6 Dual Information Outlet:

1	Make	Molex / Panduit / Schneider / Systimax / ADC Krone / AMP
2	Category	Should meet minimum Category 6 requirements
3	Jack Connector	Contact Material - Copper Alloy and Contact Plating 50Micron Gold/100Micron Nickel
4	IDC Contact Material	Copper Alloy
5	IDC Contact Plating	Tin/Lead Plate
6	Dust Cover	Should cover the RJ45 interface to avoid dust & Contaminants
7	Standards	EIA/TIA 568-B, ETL Verified CAT6 Component, UL Listed and ROHS Compliant
8	Gigabit Requirements	Should meet or exceed Gigabit Ethernet Requirements at 100 meters
9	Faceplate	Shuttered dual face plate
10	Mount box	Surface Mount Box with screws

5.2.1.11 Cat 6 UTP patch cord:

1	Make	Molex / Panduit / Schneider / Systimax / ADC Krone / AMP
2	Type of conductor	4 Pair 24AWG stranded copper wire
3	Boots	Anti-snag slip on boots
4	Sheath	LSOH (Low Smoke Zero Halogen) and ROHS Compliant
5	Standards	ISO/IEC 11801:2002/Amd 2:2010 CAT6 TIA-568-C.2 and RJ45 Plug Compliant with ISO/IEC 60603-7-4 and FCC 47 Part 68

5.2.1.12 Cat 6 Patch Panel:

1	Make	Molex / Panduit / Schneider / Systimax / ADC Krone / AMP
2	No. of Ports	24

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5.3 Installation of passives:

Sl. No	Description	Unit	Qty.
1	Outdoor Fibre laying in soft soil	m	7000
2	Outdoor Fibre laying in hard soil	m	5000
3	Outdoor Fibre laying in road	m	100
4	Outdoor Fibre laying in trench	m	1800
5	Splicing of pigtail	No	700
6	Fixing of wall mount rack 12U	No	25
7	I/O fixing and termination	No	1100
8	Patch panel termination	No	110
9	UTP cable laying	m	61000
10	UTP cable laying with wall/floor concealing	m	9000

5.3.1 Specification for Installation of passives5.3.1.1 Outdoor Fibreoptic cable laying in soft soil:

The cable shall be laid underground by excavating the earth to a depth of 1 metre, in HDPE pipe. The pipe shall be covered with half round concrete trough of 4" dia. Cable route markers shall be installed at intervals of 50 meters and at turning points. The excavated portion shall be refilled to about 60 cms. and warning tape shall be placed. The balance soil shall be refilled upto the ground level. Bidder shall supply and use the necessary HDPE pipe of ISI standard, half-round concrete trough and Warning tape as per the requirement.

5.3.1.2 Outdoor Fibreoptic cable laying in hard soil:

The cable shall be laid underground by excavating the earth to a depth of 0.5 metre, in HDPE pipe. The pipe shall be covered with half round concrete trough of 4" dia. Cable route markers shall be installed at intervals of 50 meters and at turning points. The excavated portion shall be refilled about 30 cms. and warning tape shall be placed. The balance soil shall be refilled upto the ground level. Bidder shall supply and use the necessary HDPE pipe of ISI standard, half-round concrete trough and Warning tape as per the requirement.

5.3.1.3 Outdoor Fibreoptic cable laying in road:

The cable shall be laid underground by excavating the earth to a depth of 0.5 metre. The cable shall be laid in a HDPE pipe within a steel pipe. The excavated portion shall be refilled fully with the excavated earth and shall be finished by cementing. Bidder shall supply and use the necessary HDPE pipe of ISI standard. Supply of steel pipe is under the scope of BHEL.

5.3.1.4 Outdoor Fibreoptic cable laying in trench:

In some places fibre cable shall be laid along trenches. This involves removal of cement slabs at few locations, laying of HDPE pipe, laying of fibre cable inside HDPE pipe and replacement of cement slabs.

In sand covered trenches, the job involves burying HDPE pipe in the sand and laying fibre optic cable inside HDPE pipe. Bidder shall supply and use the necessary HDPE pipe of ISI standard as per the requirement.

5.3.1.5 Splicing:

The pigtails shall be spliced to the ends of fibre cables and neatly arranged using splice holders in the LIU and the LIU shall be fixed in the racks.

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#### 5.3.1.6 Installation of wall-mount rack:

The rack shall be mounted on brick walls by grouting or on steel girders using suitable clamps.

#### 5.3.1.7 Information Outlet installation:

Installation of I/O involves mounting of surface mount box, punching UTP cable in the I/O jack, ferruling the cable, labeling the I/O and testing connectivity.

#### 5.3.1.8 UTP Patch panel installation:

Installation of UTP patch panel in rack involves mounting of patch panel, punching UTP cable in the patch panel, ferruling the cable, dressing, labeling and testing connectivity.

#### 5.3.1.9 UTP cable laying:

UTP cables are required to be laid on brick walls or along steel girders or in modular workstations.

In case of brick walls, UTP cable shall be laid in PVC channel / PVC wire duct.

In case of laying along steel girders, the cable shall be laid in PVC conduit.

In modular work stations cable shall be routed through guides within the workstations securing with cable ties.

The bidder shall supply and use the necessary PVC channel /conduit /cable duct of ISI standard as per the requirement.

#### 5.3.1.10 UTP cable laying with wall / floor concealing:

In some places, concealing in wall / floor is required. In such cases, breaking the wall / floor, installing the conduit, laying the cable and plastering shall be done by the bidder. The bidder shall supply and use the necessary PVC conduits of ISI standard as per requirement.

## 6 MAINTENANCE

All the actives supplied and installed as per this tender shall be maintained for a period of 5 years.

At least 1 resident certified engineer and at least 2 diploma engineers or ITI technicians shall be posted to maintain the network. The technicians should be available in two shifts (6:00 to 14:00 and 14:00 to 22:00) on all working days (Monday to Saturday). The engineers should be available 24 X 7 on call. Engineers will adhere to BHEL's holiday calendar.

Maintenance of actives includes the following:

- Daily report showing status of all switches.
- Configuration changes as per the requirement of BHEL.
- Troubleshooting and resolution of network complaints.
- Upgrade of OS on switches as and when required.
- Replacement of faulty/malfunctioning switches as per SLA
- Configuring switch ports for 802.1x as and when required i.e. during moves, adds and changes.
- Deployment of AAA clients in desktops if required.

Maintenance of LAN includes the following:

- Labelling of all fibre and UTP cables
- Attending to user complaints on network connectivity

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- Attending to minor changes and relocations in connectivity
- Identifying faults
- Rectifying UTP problem
- Testing for identifying fibre cable problems and failure locations (within 6 hours)
- Cleaning and dressing of network racks

The activities given above are only indicative. The engineer/technicians shall carry out relevant activities as per the instructions of the Network Manager.

Tools required for performing the above activities are under the scope of the bidder. All passive materials required for LAN maintenance will be provided by BHEL.

## 7 SERVICE LEVEL AGREEMENT

1. Bidder shall be responsible for continuous and smooth operation of the LAN for the entire lease period.
2. Maintenance and services shall cover services, repairs and replacements necessary to keep the hardware and software in good working condition.
3. Bidder shall maintain sufficient spares, in BHEL Thirumayam to ensure immediate attention in case of breakdown.
4. Uptime of 99.5% per month should be ensured for all the actives individually. Uptime is calculated on 24x7 basis.  

$$\text{Uptime} = ((\text{Hours in the month} - \text{downtime hours}) / \text{Hours in the month}) * 100$$
5. In case the uptime is less than 99.5% for a particular month, deduction will be calculated as per the following scheme and the amount will be deducted from the quarterly lease rental:  

$$\text{Deduction for the month for an item} = (99.5 - \text{uptime percentage}) / 100 \times \text{rental per month} \times \text{multiplication factor}$$

Where, the multiplication factor is calculated by,

For uptime $\geq$ 99.5%	multiplication factor = 0
For uptime $\geq$ 99.0% and $<$ 99.5%	multiplication factor = 1
For uptime $\geq$ 98.5% and $<$ 99.0%	multiplication factor = 2
For uptime $\geq$ 98.0% and $<$ 98.5%	multiplication factor = 4
For uptime $\geq$ 95.0% and $<$ 98.0%	multiplication factor = 8
For uptime $<$ 95.0%	multiplication factor = 16

6. If non availability of an item affects availability of other items, then all such items will also be treated as not-available and penalty calculation will be done for all these items.
7. If an item has less than 95% availability continuously for 3 months then it shall be replaced with a new item and uptime is to be ensured at more than 95%. If majority items are having availability less than 95% continuously for more than three months and not rectified, BHEL reserves the right to terminate part or entire contract.

## 8 OTHER TERMS & CONDITIONS

1. Commissioning certificate will be issued for the actives only after completion of the total work including actives and passives.
2. Payment for supply of passives will be released only after the total installation and commissioning of the passive network.
3. The bidder shall comply with all the welfare regulations (PF no. and ESI no./Medical policy) for the labour involved in executing the contract.
4. Maintenance during the lease period shall not be sub-contracted. The maintenance engineers posted at site shall be direct employees of the bidder.

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5. In case a service engineer leaves the bidder organization, a suitable substitute resource shall be provided, with the approval of BHEL, within a week.
6. Bidder shall arrange for a visit of BHEL Team to a site where a similar system has been installed by the bidder.
7. During the period of lease rental/AMC all defective parts/modules shall be replaced/rectified free of cost without any cost implication on BHEL.
8. Any part/module that becomes faulty shall not be blamed to be the fault of BHEL. The faulty parts/modules shall be repaired within the scope of AMC.
9. BHEL reserves the right to opt for continuation of maintenance support for the hardware and software at end of 5 year lease period by way of awarding AMC contract to bidder at the rate equal to maintenance charges paid per quarter during the original lease contract. Bidder shall agree to provide the AMC service for at least two years after the expiry of the 5 year lease period. The Technical terms of AMC shall be same that of maintenance support during the lease period. The payment for AMC will be made quarterly at the end of the each quarter.
10. BHEL reserves the right to retain the hardware, software and other items supplied in this procurement at the end of the lease period on payment of Re. 1/- (Rupee One only).

**Annexure-I**

**No Deviation Certificate**  
(To be given in bidder's letter head)


**Ref:** BHEL's Enquiry No. \_\_\_\_\_ Dated \_\_\_\_\_

It is Certified that the offered solution vide Enquiry No. \_\_\_\_\_ dated \_\_\_\_\_  
\_\_\_\_\_ in response to BHEL's enquiry mentioned under reference has no Technical  
deviation from the requirement of BHEL, Thirumayam given vide the Technical  
Specification (Requirement).

Date:

Bidder's Signature with seal

**Annexure-II**

 BHEL - THIRUMAYAM	<b>THIRD PARTY NON-DISCLOSURE          AGREEMENT</b>	Doc.No. : ISMS-04/TP/011	
		Ver. No: 2.0	Rev. No: 00
		Date : 01 - 10 - 09	

**THIRD PARTY NON-DISCLOSURE AGREEMENT**

I, \_\_\_\_\_, on behalf of the \_\_\_\_\_ (Name of Company), acknowledge that the information received or generated, directly or indirectly, while working with BHEL, Thirumayam on contract is confidential and that the nature of the business of the BHEL, Thirumayam is such that the following conditions are reasonable, and therefore:

I warrant and agree as follows:

I, or any other personnel employed or engaged by our company, agree not to disclose, directly or indirectly, any information related to the BHEL, Thirumayam Without restricting the generality of the foregoing, it is agreed that we will not disclose such information consisting but not necessarily limited to:

- Technical information: Methods, drawings, processes, formulae, compositions, systems, techniques, inventions, computer programs/data/configuration and research projects.
- Business information: Customer lists, project schedules, pricing data, estimates, financial or marketing data,

On conclusion of contract, I, or any other personnel employed or engaged by our company shall return to BHEL, Thirumayam all documents and property of BHEL, Thirumayam, including: drawings, blueprints, reports, manuals, computer programs/data/configuration, and all other materials and all copies thereof relating in any way to BHEL, Thirumayam's business, or in any way obtained by me during the course of contract. I further agree that I, or any others employed or engaged by our company shall not retain copies, notes or abstracts of the foregoing.

This obligation of confidence shall continue after the conclusion of the contract also.

I acknowledge that the aforesaid restrictions are necessary and fundamental to the business of the BHEL, Thirumayam and are reasonable given the nature of the business carried on by the BHEL, Thirumayam I agree that this agreement shall be governed by and construed in accordance with the laws of country.

I enter into this agreement totally voluntarily, with full knowledge of its meaning, and without duress.

Dated at \_\_\_\_\_, this \_\_\_\_ day of \_\_\_\_\_, 20\_\_.

Name

Company

Signature

[ RESTRICTED USE ]

**Annexure-III**

**Past Experience Of Similar Executed Projects**

SL N O.	DESCRIPTION OF WORK	POSTAL ADDRESS OF CLIENT & NAME OF OFFICER IN CHARGE	CONTRACT VALUE	STARTING DATE	E-mail	Fax Number

**SIGNATURE OF BIDDER** : \_\_\_\_\_

**NAME OF BIDDER** : \_\_\_\_\_

**COMPANY SEAL** : \_\_\_\_\_

**Annexure-IV**

**5 Years Finance Lease Option for Actives (Quarterly Rental)**

Sl.No	Item Description	Item Qty (In Nos.)	Quarterly Principal For Total Quantity (In Rs.)	Quarterly Interest (In %)	Quarterly Interest For Total Quantity (In Rs.)	Service tax on 10% of the quarterly interest value	Quarterly Maintenance Charge For Total Quantity (In Rs.)	Lease Tax (In %)	Service Tax (In %)	Quarterly Lease Tax For Total Quantity (In Rs.)	Quarterly Service Tax For Total Quantity (In Rs.)	Total Quarterly Rental Charge Including Tax (In Rs.)
			<b>A</b>	<b>B</b>	<b>C=B×A/100</b>	<b>D=C×0.1×0.1236</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H=Fx(A+C)</b>	<b>I=GxE</b>	<b>J=A+C+D+E+H+I</b>
1.	Core Switch	2										
2.	DistributionSwitch type I	2										
3	DistributionSwitch type II	1										
4	AccessSwitch	35										
5	AAAServer	2										
6	NMS	1										
	Total	----		----				----	----			
						Total Rental charge for 5 yrs = Sum of J×5×4						
	Quarterly AMC charges from 6th year valid for 2 years. Sum of D(In Rs.)											----

<b><u>Annexure-V</u></b>								
<b>Outright Purchase for Actives (Including AMC upto 5th year)</b>								
Sl.No	Item Description	Item Quantity (In Nos.)	Price For Total Qty. With Standard Warranty Excluding Taxes (In Rs.)	Standard Warranty Period (In No. Of Years)	Tax And Duties (In %)	Tax Value For Total Quantity (In Rs.)	AMC Value For Total Qty. After Warranty Period Upto End Of Fifth Year Including Taxes (In Rs.)	Total Price Including Taxes, Duties And AMC For Total Qty. (In Rs.)
			A	B	C	D=A×C/100	E	F=A+D+E
1.	Core Switch	2						
2.	Distribution Switch type I	2						
3	Distribution Switch type I	1						
4	Access Switch	35						
5	AAA Server	2						
6	NMS	1						
	Total	----		----	----			
	Quarterly AMC charges from 6th year valid for 2 years.	----	----	----	----	----	----	

<b>Annexure-VI</b>								
<b>Outright Purchase of Passives</b>								
Sl. No	Item Description	Unit	Item Quantity	Price For Total Qty. With Standard Warranty Excluding Taxes (In Rs.)	Standard Warranty Period (In No.Of Years)	Tax And Duties (In %)	Tax For Total Quantity (In Rs.)	Total Price Including Taxes, Duties For Total Qty. (In Rs.)
				A	B	C	D=A×C/100	E=A+D
1	12 Core Outdoor Single Mode Fibre Optic Cable	m	18000					
3	24 Port Rack Mountable LIU 19"	No	50					
4	Single Mode Pigtail	No	700					
5	SC-LC Single Mode Fibre Patch Cord 2 Metre	No	90					
6	SC-SC Single Mode Fibre Patch Cord 2 Metre	No	20					
7	SC-SC Single Mode Fibre Patch Cord 10 Metre	No	4					
8	Cable Route Markers	No	80					
9	Wall Mount Rack 12 U	No	25					
10	Floor Mount Rack 24 U	No	2					
11	Floor Mount Rack 42 U	No	8					
12	Cat 6 UTP Cable	m	70000					
13	Cat 6 Dual Information Outlet	No	1100					
14	Cat 6 Utp Patch Cord 2 Metre	No	800					
15	Cat 6 Utp Patch Cord 5 Metre	No	200					
16	Cat 6 Patch Panel	No	110					
	Total		----		----	----		

<b>Annexure-VII</b>							
<b>Installation of Passives</b>							
Sl. No	Item Description	Unit	Item Quantity	Price For Total Quantity Excluding Taxes (In Rs.)	Tax And Duties (In %)	Tax For Total Quantity (In Rs.)	Total Price Including Taxes, Duties For Total Qty. (In Rs.)
				A	B	C=A×B/100	D=A+C
1	Outdoor Fibre laying in soft soil	m	7000				
2	Outdoor Fibre laying in hard soil	m	5000				
3	Outdoor Fibre laying in road	m	100				
4	Outdoor Fibre laying in trench	m	1800				
6	Splicing of pigtail	No	700				
7	Fixing of wall mount rack 12U	No	25				
8	I/O fixing and termination	No	1100				
9	Patch panel termination	No	110				
10	UTP cable laying	m	61000				
11	UTP cable laying in wall/floor concealing	m	9000				
	Total		----		----		

**For installation of passives, tax will be deducted at source.**

**BHARAT HEAVY ELECTRICALS LIMITED TIRUCHIRAPALLI**  
**CAPITAL PURCHASE**

Annexure-B

**ACCEPTANCE OF COMMERCIAL TERMS AND CONDITIONS BY THE BIDDERS.**

(This should be essentially filled in and sent along with the techno-commercial offer without fail. If this check list is not filled and submitted along with techno-commercial offer (Part I) or if the bidder does not confirm acceptance to the terms and conditions proposed, BHEL reserves the right to reject such offer)

**CHECK-LIST FOR BIDDERS**

SI No	DESCRIPTION
1.	<p>The Bidders shall submit the offer in single stage with <b>TWO INNER ENVELOPES</b> as indicated below which shall be sealed in one outer envelope.</p> <p style="text-align: center;"><b><u>ENVELOPE-I: "PART-I: TECHNO - COMMERCIAL PART"</u></b></p> <p>The following details are to be written on the top of the envelope:</p> <p>NAME OF WORK:</p> <p>Enq. NO.:</p> <p>Due Dt:</p> <p>FROM : [ NAME &amp; ADDRESS OF BIDDER]</p> <p>This envelope shall contain (i) Techno-Commercial (Part-I) of Bidding Document in original duly stamped and signed on each page along with un priced bid with indicating applicable taxes &amp; duties, (ii) Techno-Commercial details including all supporting documents and duly signed and stamped in each page.</p> <p style="text-align: center;"><b><u>ENVELOPE-II: "PART- II: PRICE PART"</u></b></p> <p>This part should contain the schedule of price particulars and must be correlated to the technical details provided in Part I</p> <p>The following details are to be written on the top of the envelope:</p> <p>NAME OF WORK:</p> <p>Enq. NO.:</p> <p>Due Dt:</p> <p><b>PRICE PART (DO NOT OPEN)</b></p> <p>FROM: [NAME &amp; ADDRESS OF BIDDER]</p> <p>The Bidder shall submit only price/ Rates as per Schedule of Rates without any condition. Condition indicated, if any, in the Price part shall not be taken cognizance of and such bid may be rejected without assigning any reasons thereof.</p> <p>The prices shall be filled up both in figure and in words and rounded off to the nearest rupee. No overwriting or use of correction fluid shall be accepted. Any correction shall be signed by the authorised signatory.</p> <p>All the two envelopes ( Part I &amp; II ) shall be put in one cover, duly sealed, superscribing as Part I and Part II of Enquiry No., due date of opening and the address and reference of the Bidder.</p> <p>The above offer should reach this office on or before the due date by 14.00 Hrs (IST). Late offers will not be considered.</p> <p>Tender should not be addressed to any Individual's name but only by designation to:</p> <p style="text-align: center;"><b>DGM / CAPITAL PURCHASE / MFG BHARAT HEAVY ELECTRICALS LIMITED HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620 014 TAMIL NADU, INDIA</b></p> <p>Tenders should be free from <b>CORRECTION AND ERASURES</b>, Corrections if any, must be attested. All amounts shall be indicated both in words as well as in figures. In case of any difference between amount quoted in words and figures, amount quoted in words shall prevail.</p> <p>Offers should be in <b>ENGLISH</b> and accompanied by detailed technical literature, catalogue and detailed dimensional drawings in <b>ENGLISH</b> or otherwise, the offers will not be considered.</p>
2.	<p><b><u>OPENING OF TENDERS</u></b></p> <p>The Part I- Technical &amp; commercial bid would be opened on the Tender opening date.</p> <p>The Part II - Price bid of Technically suitable Bidders alone would be opened. The Technically suitable Bidders would be informed about the tender opening date.</p> <p>Clarifications if any required by BHEL for Technical evaluation would be sought from bidders before opening of Part II - price bid.</p>

<p>3.</p>	<p><b>Stage-I: Evaluation of Technical &amp; Un-priced Commercial Bids</b></p> <ul style="list-style-type: none"> <li>Only those Bidders who meet all the requirements as per Eligibility Criteria for Bidders will be considered for further evaluation.</li> <li>Technical and un-priced commercial bid of the bidder shall be opened and evaluated for acceptability of Technical offer, technical suitability, acceptance of technical and commercial terms. BHEL Trichy will evaluate the Technical bid submitted by the Bidders.</li> <li>During the Technical Evaluation of the bid, BHEL Trichy may ask for additional information / resources to validate the bid. These may include technical documents / white papers from OEM or third party, references, demonstration of a proof of concept or solution, visit to OEM's lab or their clients reference site, etc. Failure to furnish information as required or to submit a bid not substantially responsive to the bidding documents may result in rejection of the bid.</li> <li>There shall be no deviation from the technical specification. <b>"No Deviation Certificate"</b> as per the format shall be submitted.</li> <li>Prior to price opening of bids, BHEL will determine whether each bid is accompanied by required commercial terms &amp; conditions, fulfils the qualifying requirement stated in Bidding Document and compliance to the requirement of the Bidding Document.</li> </ul> <p><b>Stage -II: Evaluation of the Price Bid:</b></p> <p>The evaluation of tenders will be as follows:</p> <ul style="list-style-type: none"> <li>Technically cleared offers will be considered for price evaluation</li> <li>Evaluation of the offer will be based on L1 of the total value for the entire scope of work. The total value referred here is the total rental of the actives for 5 years and the outright value of the passives and labour for laying.</li> <li><b>The contract will be awarded to a single party for the total scope</b>, based on the above evaluation.</li> <li>If some discrepancies are found between the rate given in words and figures, the rate in words shall be taken as correct.</li> <li>For rental part, the bidder shall quote the quarterly rental charges (including principal repayment, tax, interest, support charges, etc.) for 5 years.</li> <li>For outright part, the bidder shall quote the total outright price including tax and other applicable charges.</li> <li>BHEL reserves the right to go for a Reverse Auction (RA) instead of opening the submitted sealed price bid, which will be decided after techno-commercial evaluation. Information and general terms and conditions governing RA as per point 17.</li> </ul>
<p>4</p>	<p><b>Taxes and Duties :</b> All Taxes and Duties payable as extra to the quoted price should be specifically stated in offers along with CST &amp; TIN No / Tariff No. etc., failing which the purchaser will not be liable for payment of such Taxes and Duties. Our TIN No. 33243560005, TNGST No. 3560005, CST. No. 239383 Dt. 11-06-1991 &amp; BHEL ECC No. AAACB4146PXM012, Service Tax Reg No (STC)- AAACB4146PST006. Assessment circle Tiruverambur.</p> <p><b>Cenvat credit &amp; VAT credit</b> If any Excise Duty is payable, the chapter head / sub-head reference and the rate of the duty should be quoted. If the tenderer is availing <b>CENVAT</b> credit for his input materials, the effect of proforma credit should be passed on to the purchaser</p> <p><b>Income Tax applicable</b> Any service charges payable towards supervision of E&amp;C, training, performance prove-out etc., will be released after deduction of Income Tax as per Indian Income Tax Act / as per the Govt. of India rules and TDS certificate will be issued by BHEL for such deductions. Applicable service tax on E&amp;C charges will be payable extra. The liability of depositing the same to the Govt. will be of the bidder. Income tax depreciation will be claimed by BHEL</p>
<p style="text-align: center;"><b>No row shall be left blank. Please indicate NA, in case the item is "not applicable"</b></p>	
<p>4.</p>	<p>Maintenance during the lease period shall not be sub-contracted. The maintenance engineers posted at site shall be direct employees of the bidder.</p>
<p>5.</p>	<p><b>Validity:</b> Validity of the offer should be 180 days from the date of tender opening. BHEL reserves the right not to consider offers from bidders with validity less than 180 days from the date of tender opening.</p>
<p>6.</p>	<p><b>Terms of Payment:</b></p> <ul style="list-style-type: none"> <li>Purchase Order will be released on the successful bidder.</li> <li>Successful bidder shall sign Bipartite Lease Agreement as per BHEL format.</li> <li>Lease period will start after issue of Commissioning Certificate by BHEL Trichy.</li> <li>Quarterly lease rental charges become payable at the end of each quarter after certification by BHEL Trichy. Bidder shall submit the invoice after each quarter. 100% quarterly payment will be made after 45 days from the date of submission of invoice.</li> <li>Bidder shall submit the invoice in triplicate for processing the bills.</li> <li>Deduction for non-availability as per SLA will be made from the quarterly rental.</li> <li><b>Outright purchase payment terms( Passives ):</b> 100% payment will be made after 45 days from the date of installation of all the passives and submission of invoice.</li> </ul>
<p style="text-align: right;"><b>Vendor's confirmation</b></p>	

<b>No row shall be left blank. Please indicate NA, in case the item is “not applicable”</b>		<b>Vendor's confirmation</b>
<b>7.</b>	<p><b>Performance Bank Guarantee (PBG):</b></p> <p>The Bidder, in the event of an order, should furnish a bank Guarantee from an Indian Bank approved by BHEL, at no extra cost in a proforma prescribed by BHEL, alongwith the order, for an amount equivalent to <b>10% (Ten percent)</b> of the value of the contract. The PBG shall be valid for throughout the contract period of Five years from the date of receipt / acceptance / commissioning of the equipment at BHEL, Tiruchi / Thirumayam.</p> <p>The Performance Bank Guarantee shall be obtained from any one of the following banks which is a member bank in our consortium of banks.</p> <p><b>List Of Consortium Banks</b>                      1.Deutsche Bank 2.Hdfc Bank 3.Anz Grindlays Bank 4.Citi Bank 5.Standard Chartered Bank 6.Bank Of America 7.Abn Amro Bank 8.Idbi Ltd 9.Icici Bank Ltd 10.The Hongkong And Shanghai Banking Corporation Ltd.</p> <p><b>List Of Nationalised Banks</b>                      1.Allahabad Bank 2.Andhra Bank 3.Bank Of India 4.Bank Of Baroda 5.Bank Of Maharashtra 6.Bharath Overseas Bank 7.Canara Bank 8.Central Bank Of India 9.Corporation Bank 10.Dena Bank 11.Indian Bank 12.Indian Overseas Bank 13.Oreintal Bank Of Commerce 14.Punjab National Bank 15.Punjab &amp; Sind Bank 16.State Bank Of India 17.State Bank Of Travancore 18.State Bank Of Mysore 19.State Bank Of Bikaner &amp; Jaipur 20.State Bank Of Hyderabad 21.State Bank Of Patiala 22.State Bank Of Maharashtra 23.State Bank Of Sourashtra(Sbi-13.09.08) 24.Syndicate Bank 25.Uco Bank 26.Union Bank Of India 27.United Bank Of India 28.Vijaya Bank</p> <p><u>If PBG is issued by a Foreign counter part of the BHEL consortium Indian Bank, in case of claim against the PBG , it will be lodged in any one of the Indian counters of the Foreign Bank which issued the PBG.</u></p>	
<b>8.</b>	<p><b>Liquidated damages (LD):</b></p> <p>It is clearly understood among the parties to the contract that“<b>Time is the essence of the contract</b>”. Therefore, the delivery/commissioning of the goods specified in the purchase order should be made within the time prescribed. Where the seller supplies or despatches the goods, beyond the delivery period specified the purchaser will have no obligation to accept the goods. If accepted liquidated damages at the rate of 1/2% of the value of goods delayed for each week of delay subject to a maximum of 15% of the order value will be levied.                      Liquidated damages @ ½% per week subject to a maximum of 15% shall be applicable for delay in the Period for completion of the Installation &amp; Commissioning work</p> <p>For the purpose of Imposing LD, the FOB delivery (B/L date) shall be considered. <u>BHEL reserves the right to reject offers from bidders not accepting the above LD clause, with maximum LD as 15%.</u></p>	
<b>9.</b>	<p><b>Risk Purchase:</b></p> <p>Alternatively the purchaser at his option will be entitled to terminate the contract and to purchase elsewhere at the risk and cost of the seller either the whole of the goods or any part which the bidder has failed to deliver or despatch within the time stipulated as aforesaid or if the same were not available from the best and the nearest available substitute. The bidder shall be liable for any loss which the Purchaser may sustain by reason of such risk purchases.</p>	
<b>10.</b>	<p><b>Force Majeure clause:</b></p> <p>If at any time during the continuance of this contract the performance in whole or in part by either party of any obligations under this contract shall be prevented or delayed by reason, of any war, hostilities, acts of the public enemy, civil commotion, sabotage, fires, explosions, epidemics, quarantine, restrictions or acts of GOD (hereinafter referred to as events) then provided notice of happening of any such events is given by either party to other within twenty one days from the date of occurrence thereof neither party shall reason of such events be entitled to terminate this contract nor shall either party have any such non performance and delay is resumed as soon as practicable after such events has come to an end or ceased to exist. If the performance in whole or part of any obligation under this contract is prevented or delayed by reason or any such event claims for extension of time shall be granted for period considered reasonable by the purchaser subject to prompt notification by the seller to the purchaser of the particulars of the events and supply to the purchaser if required of any supporting evidence. Any waiver of time in respect of partial instalment shall not be deemed to be a waiver of time in respect of remaining deliveries.</p>	
<b>11.</b>	<p><b>Delivery terms and evaluation process:</b></p> <p>Bidders should submit their offer for <b>FOR Destination basis</b>. Packing &amp; Forwarding and Freight &amp; Insurance charges from works to BHEL, Destination to be inclusive of basic rate. Applicable % of taxes &amp; duties should be clearly indicated.</p> <p><b>Evaluation of offers shall be on the basis of delivered cost (Net cash outflow to BHEL)</b></p>	

<b>No row shall be left blank. Please indicate NA, in case the item is “not applicable”</b>		<b>Vendor's confirmation</b>
<b>12.</b>	<p><b>Delivery Schedule:</b></p> <ul style="list-style-type: none"> <li>➤ Supply of the materials, both active and passive, should be done within a period of 4 weeks from the date of releasing of the purchase order.</li> <li>➤ Installation of the switches and configuration of LMS should be done within a period of 4 weeks from the date of supply.</li> <li>➤ All the clients should be configured to get authenticated with ACS within 8 weeks from the date of supply.</li> </ul> <p>Installation of the passives as specified under “Bill of Material – Passive” should be done within a period of 16 weeks from the date of releasing of the purchase order. Installation of both active and passive items should be carried out simultaneously.</p>	
<b>13.</b>	<p><b>Guarantee:</b></p> <ul style="list-style-type: none"> <li>(1) During the period of lease rental / AMC all defective parts / modules shall be replaced / rectified free of cost without any cost implication on BHEL.</li> <li>(2) Any part / module that becomes faulty shall not be blamed to be the fault of BHEL. The faulty parts/modules shall be repaired within the scope of lease rental / AMC.</li> </ul> <p>Offers from bidders not accepting the requested guarantee period/Warranty will be rejected.</p>	
<b>14.</b>	<p><b>Short shipment / Warranty replacement:</b></p> <p>In case of any short shipment in the main equipment / spares, customs duty levied on such supplies, shall be borne by the bidder. Any warranty replacement during the lease period shall be on FOR/ BHEL-Destination basis.</p>	
<b>15.</b>	<p><b>Inspection &amp; Testing:</b></p> <p>All goods shall be subject to inspection by BHEL or its authorized representatives at bidder's works (or) at BHEL destination or at any other place in India indicated by BHEL as the case may be. The bidder will not charge for the facilities provided for inspection of goods. The final inspection and acceptance of the project will be carried after installation of the equipment at BHEL, Destination.</p>	
<b>16.</b>	<p><b>Test certificates / Operating and Maintenance manuals :</b></p> <p>The Bidders shall clearly mention in their offer, that Test Certificates and Operating Maintenance Manuals, etc., as called for in the Technical Specification, in the required number of copies will be provided at no extra cost</p>	
<b>17.</b>	<p><b>Reverse Auction (RA):</b></p> <p>BHEL reserves the right to conduct on-line internet Reverse Auction for finalizing the Tender. This decision will be communicated to the technically qualified bidders after technical evaluation. Details / General terms / guidelines for conduct of RA are shown below Bidders are requested to confirm their acceptance for BHEL proceeding with RA route for finalization of the enquiry.</p> <ol style="list-style-type: none"> <li>1. For the proposed reverse auction, technically and commercially acceptable bidders only shall be eligible to participate.</li> <li>2. 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.</li> <li>3. BHEL will inform the bidder in writing in case of reverse auction, the details of Service Provider to enable them to contact &amp; get trained.</li> <li>4. Business rules like event date, time, Start price, bid decrement, extensions etc. also will be communicated through service provider for compliance.</li> <li>5. Bidders have to fax the Compliance form in the prescribed format (provided by Service provider) before start of Reverse auction. Without this, the bidder will not be eligible to Participate in the event.</li> <li>6. BHEL will provide the calculation sheet (e.g., EXCEL sheet) which will help to arrive at “Total Cost to BHEL” like Packing &amp; forwarding charges, Taxes and Duties, Freight charges, Insurance, Service Tax for Services and loading factors (for non-compliance to BHEL standard Commercial terms &amp; conditions) for each of the bidder to enable them to fill-in the price and keep it ready for keying in during the Auction.</li> <li>7. Reverse auction will be conducted on scheduled date &amp; time.</li> <li>8. At the end of Reverse Auction event, the lowest bidder value will be known on the network.</li> <li>9. The lowest bidder has to Fax the duly signed Filled-in prescribed format as provided on case-to-case basis to BHEL through Service provider within 24 hours of Auction without fail.</li> <li>10. Any variation between the on-line bid value and the signed document will be considered as sabotaging the tender process and will invite disqualification of bidder to conduct business with BHEL as per prevailing procedure.</li> <li>11. 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.</li> <li>12. BHEL reserves the right to negotiate if need be, with the “L1” bidder of the Reverse Auction</li> </ol> <p><u>BHEL reserves the right not to consider offers from bidders not complying with the RA process for finalization of the enquiry.</u></p>	

<p><b>18.</b></p>	<p><b>Ethical Standard</b></p> <p>Bidders are expected to observe the highest standard of ethics during the procurement and execution of this contract. In pursuit of this policy, BHEL will reject a proposal for award if it determines that the bidder being considered for award has engaged in corrupt or fraudulent practices in competing for the contract. For the purposes of this provision, the terms set forth below are defined as follows:</p> <p>a) "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value to influence the action in the procurement process or in contract execution; and</p> <p>b) "fraudulent practice" means a misrepresentation of facts in order to influence a procurement process including collusive practices designed to establish bid prices at artificial, non-competitive levels to deprive the benefits of competition to BHEL.</p> <p>By signing the bid forwarding letter, the bidder represents that for the software it supplies, it is the owner of the intellectual property rights. Willful misrepresentation of these facts shall be considered a fraudulent practice without prejudice to other remedies that BHEL take.</p>	
<p><b>19.</b></p>	<p><b>Non Disclosure Agreement</b></p> <p>The bidder shall sign a Non Disclosure Agreement (NDA) with BHEL. By signing the NDA, the bidder agrees not to disclose any confidential information, business or proprietary, as covered by the agreement. The proforma for the Non Disclosure Agreement is attached as Annexure-II.</p>	
<p><b>20.</b></p>	<p><b>INDEMNITY</b></p> <p>The contractor hereby undertakes to indemnify BHEL against all actions, suits, proceedings, claims, losses, damages etc., which may arise under Minimum Wages Act, Fatal Accident Act, Workmen Compensation Act, Shops &amp; Establishment Act, Family Pension &amp; Deposit Linked Insurance scheme or any other Act or statutes not herein specifically mentioned but having any direct or indirect application for the person(s) engaged under this contract by him.</p> <p>The Contractor shall defend, indemnify and hold BHEL harmless from any liability, which may be imposed by the Central, State or local authorities and also from all claims, suits arising out of or by reason of the work provided by this contract including any liability that may arise out of accident, whether brought by the employees/ labourers of the Contractor or by the third parties or by the Central or State Government authority or any sub-division thereof.</p> <p>BHEL shall not be responsible for any claim/compensation that may arise due to damages/injuries/pilferage to the contractor's employee(s)/ staff/labourers under any circumstances while an employee(s) / labourer is engaged in the BHEL 's duty under the contract.</p> <p>The contractor shall make regular and full payment of wages/salaries including overtime/night halt allowance etc. as applicable as per rules in force and any other payments due to his employees/labourers and furnish necessary proof whenever required by BHEL.</p>	
<p><b>21.</b></p>	<p><b>INSURANCE POLICIES</b></p> <p>The Contractor shall at his own cost take insurance and maintain at all times until the close out of the Contract, insurance policies in respect of equipment and workmen engaged by him for providing services under this Contract.</p>	
<p><b>22.</b></p>	<p><b>TERMINATION OF THE CONTRACT</b></p> <p>BHEL reserves the right to terminate the Contract, at any stage during the period of the Contract based on the contractor's performance, by giving 30 days notice in writing.</p> <p>BHEL shall have the right to terminate this contract if:</p> <ol style="list-style-type: none"> <li>1. The contractor fails to provide services or contractual obligations in accordance with the SLA.</li> <li>2. The contractor suspends the performance of all or part of the services, or</li> <li>3. The contractor abandons the services, or</li> <li>4. The contractor becomes bankrupt or goes into receivership (or) liquidation or makes an assignment for the benefit of his creditors.</li> </ol> <p>In the event of termination of contract, the amount due to the Contractor as per contractual provisions after recovery of dues (from Contractor's pending invoices/ Security Deposit, as the case may be), shall be released to them.</p>	
<p><b>23.</b></p>	<p><b>ARBITRATION</b></p> <p>All disputes or differences whatsoever which may arise at any time during execution of the Contract shall be mutually settled by BHEL and Contractor as per provision of the Contract. However, in the event such disputes cannot be settled mutually, such disputes shall be settled as per the Arbitration and Reconciliation Act, 1996 of the Govt. of India and its subsequent amendments. In case of disputes with the Central PSUs, the same shall be settled at Tiruchirappalli as per the Guidelines of the Govt. of India.</p> <p>However, during the period such disputes are settled either by mutual discussions between the parties or by legal means, Contractor shall continue to do the work as per terms &amp; conditions of Contract.</p>	

<b>No row shall be left blank. Please indicate NA, in case the item is “not applicable”</b>		<b>Vendor's confirmation</b>
<b>24.</b>	<p><b>Amendment of bidding documents</b></p> <p>BHEL Trichy may at its sole discretion amend the Bidding Documents at any time prior to the deadline for submission of bids. However in case of such amendment, the bid submission date may be extended at the discretion of BHEL Trichy.</p> <p>Amendments made prior to submission of bid will be provided in the form of addenda / corrigendum to the bidding documents and will be posted only on the BHEL website (<a href="http://www.bhel.com">http://www.bhel.com</a>&amp;<a href="http://www.tenders.gov.in">http://www.tenders.gov.in</a>) in tender notification section. Hence the bidders are requested to visit the web pages regularly for updates.</p>	
<b>25.</b>	<p><b>General Conditions</b></p> <ul style="list-style-type: none"> <li>➤ Point by point confirmation for the Technical Specification enclosed to be provided. Offers received without confirmation to our specification will be liable for rejection. If needed additional sheets shall be used.</li> <li>➤ Relevant catalogues are to be attached</li> <li>➤ Prices shall be quoted item wise only as per the model format enclosed. An unpriced copy shall be submitted along with technical bid where in the applicable Taxes and Duties Shall be clearly specified</li> <li>➤ Equipment offered shall be “New”. Re-built / Re-conditioned / Used equipments will not be accepted. “<b>Newness</b>” certificate from OEM shall be furnished for all items.</li> <li>➤ Insurance documents for all the items.</li> <li>➤ Make, Model, Product No and Details of each Item must be mentioned clearly</li> <li>➤ All the Items must be supplied in full and complete</li> <li>➤ Proper documentation, labeling and tagging shall be carried out for all the equipments used in the entire landscape for easy management and maintenance</li> <li>➤ Incomplete offers will not be considered for further processing</li> <li>➤ <b>Fixed price:</b> Prices quoted by the bidder shall be fixed and not subject to any escalation whatsoever during the period of bid validity and execution of the Purchase Order. A bid submitted with an adjustable price will be treated as non - responsive and rejected. Prices shall be written in words and figures. In the event of difference, the price in words shall be valid and binding. Unit prices shall be considered correct in the event of any discrepancy with regard to total price.</li> <li>➤ The Bidder shall arrange for securely protecting and packing the stores to avoid loss or damages during transit.</li> <li>➤ Evaluation of offers shall be on the basis of delivered cost (Net cash outflow to BHEL).</li> <li>➤ BHEL reserves its right to reject a tender due to unsatisfactory past performance in the execution of a contract at any of BHEL projects / units.</li> <li>➤ BHEL shall be at liberty to reject or accept any tender, part or in full, at their own discretion and any such action is not liable for any question or claim against BHEL.</li> <li>➤ All Equipments / Services including Personnel for carrying out the installation and commissioning of the Equipment shall be arranged by the bidder. If any Services is availed from BHEL, it is only on chargeable basis unless otherwise specified.</li> <li>➤ The bidder shall provide necessary drawings, Test Certificates and Operating Maintenance Manuals etc., as called for in the Technical Specification, in the required number of copies at no extra cost.</li> <li>➤ Vendor shall arrange for boarding, lodging and logistics of onsite commissioning engineer and operations engineers.</li> <li>➤ The quarterly leased rental payment will commence only after: <ul style="list-style-type: none"> <li>➤ Successful commissioning of the actives and signing of commissioning certificate, and supply and installation of passives</li> <li>➤ Signing of Bipartite Lease Agreement</li> <li>➤ Proof of maintenance contract with OEM for the total duration of 5 years.</li> </ul> </li> <li>➤ Any replacement during lease period shall be supplied free of charge on <b>FOR BHEL, Trichy/Thirumayam</b> basis</li> </ul>	

<b>26. Company Details &amp; Contact</b>		
Full Address of the company:		
Company Email ID:		
Phone No.:		
Fax No		
Pan No		
CST /TIN No		
Service Tax No.		
Name of the contact person:		
Mobile No.:		
e-mail ID		
For any queries / clarifications the bidders may contact us through our FAX NO. +91 431 2520719 or through e-mail < <a href="mailto:srchandran@bheltry.co.in">srchandran@bheltry.co.in</a> >		

NOTE:-

- a) Your specific acceptance to our Payment terms, LD, Risk Purchase Clause & Submission of PBG for 10% of the order value are essential for consideration of your offer. Otherwise your offer is liable for rejection.
- b) **No row shall be left blank. Please indicate NA, in case the item is "not applicable"**

**Declaration:-**

We have gone through and understood the 'General guidelines & instructions to bidders for submitting offer' enclosed as a part of the Tender and confirm that our offer has been made in line with the same.

(AFFIX OFFICIAL SEAL HERE)

Signature with date:

Name:

Designation:

Department:

(PLEASE AFFIX YOUR SIGNATURE WITH SEAL ON EACH PAGE)

(AFFIX OFFICIAL SEAL HERE)

Signature with date: