



BHARAT HEAVY ELECTRICALS LIMITED
FABRICATION PLANT, JAGDISHPUR INDUSTRIAL AREA, DISTT.
CSM NAGAR-227817 (U.P.), INDIA
Phone: +91-5361-271 378; Fax: +91-5361-271 382

TENDER ENQUIRY

Tender Enquiry No: TE-FP-EPBAX-12-04	Tender Enquiry Date: 02/11/2012	Due Date and Time for Submission of Bid through email: on or before 23/11/2012 (2:30 PM)	Due Date and Time for Opening of Bid: 23/11/2012 (3:00 PM)
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To,

KIND ATTN.:

Dear Sir,

We are pleased to invite most competitive quotations in three part bid system, strictly in line with given Terms & conditions. Please submit your lowest quotation in the format prescribed in **Annexure-A** by the due date and time.

Terms and Conditions:

- 1. Scope of Supply:** Supply, inspection at Vendor's works, packing, forwarding, insurance of EPBAX System and its Cabling work as per Technical specification for Fabrication Plant, BHEL, Jagdishpur as per following details:

TABLE-1

Sr. No.	Description	Equipment Guarantee	AMC	Delivery Schedule	I&C Schedule
1	Supply, installation, testing, commissioning of EPBAX Communication server with BOQ as per Part-A of attached Annexure-A & specification as per Annexure-E	1 year from date of acceptance and successful installation at BHEL, Jagdishpur	4 years after 1 year of Guarantee period	4 weeks from PO/LOI	6 weeks from supply
2.	Supply, installation, testing, commissioning of Cabling work for EPBAX System with BOQ as per Part-B of attached Annexure-A	2 year from date of acceptance and successful installation at BHEL, Jagdishpur	NIL	4 weeks from PO/LOI	6 weeks from supply

- 2. Prices:**

Prices: The prices shall be firm on FOR BHEL, Fabrication Plant basis. **Prices shall be quoted by vendors as per price bid schedule at Annexure-A.** If the prices are quoted in any other format then the bid is liable to be rejected.

- 3. Delivery Period:**

Complete set of items with its auxiliaries and spare parts shall be supplied on FOR

BHEL Jagdishpur basis within 4 weeks from date of PO/LOI.

4. Installation & Commissioning Period:

Complete set of items with its auxiliaries and spare parts shall be Installed and Commissioned at BHEL Jagdishpur within 6 weeks for Sr. No. 1 and 4 weeks for Sr. No. 2 of above TABLE-1 from date of supply of complete set of items.

5. Liquidated Damages (LD)/Penalty For Delay:

The delivery of Equipment shall be made within the time prescribed. Failure to dispatch the Equipment in time as per the delivery specified above would make the Vendor liable to an un-conditional penalty at the rate of one half percent (1/2%) of the Order value for delay of each week (or part thereof) subject to a maximum of ten percent (10%) of the Order Value. The Installation & Commissioning of Equipment shall be completed within the time prescribed. Failure to commission the items as per schedule specified would make the Vendor liable to an un-conditional penalty at the rate of one half percent (1/2%) of the Order value for delay of each week (or part thereof) subject to a maximum of ten percent (10%) of the Order Value.

6. Terms of Payment:

90% payment (alongwith 100% of taxes and duties) of supply portion against dispatch documents and balance 10% payment after acceptance of the Equipment at BHEL works and after submission of letter of Acceptance of Equipment and Performance Bank Guarantee. Freight charges shall be payable separately after receipt of material at site.

Installation and commissioning charges shall be payable after acceptance of the Equipment at BHEL works and after submission of letter of Acceptance of Equipment.

7. Equipment Guarantee:

As per above TABLE-1.

8. Annual Maintenance Contract (AMC):

As per above TABLE-1.

9. Performance Bank guarantee:

Vendor shall furnish a Performance Bank Guarantee (PBG) of 10% of the Contract Price confirming that necessary service and maintenance support and guarantee replacements will be provided during the guarantee period. The PBG shall be valid up to end of the guarantee period with additional claim period of 2 months. The PBG shall be issued as per attached Format at **Annexure-C** and from BHEL Consortium bank as per **Annexure-D** only.

10. Arbitration:

GM-CSU&FP (or any official appointed by him) shall be the sole arbitrating authority for this contract.

11. Contract Law and Jurisdiction:

This Contract shall be governed by the laws of India. No court shall entertain or try

any suit or legal proceedings to enforce any claim arising out of the Contract except in a court of law having jurisdiction at **CSM Nagar**.

12. Insurance:

Transit Insurance of complete items shall be done by vendors.

13. General:

- a) Lowest bidder for each part (Part-A and Par-B) shall be treated as L1 vendor for each part separately. Normally, order shall be placed on the L1 tenderer for Part-A and Part-B separately (refer Price Bid Format at **Annexure-A**)
- b) Offer validity shall be 3 Month from the date of opening of Bid.
- c) The items should be only brand new & as per applicable Indian/International standards.
- d) BHEL reserves the right to accept or reject any of the bid / all bids with or without deviation or cancel / withdraw the invitation for bid without assigning any reason whatsoever and in such case no tenderer shall have any claim arising out of such action by BHEL.
- e) BHEL may decide to process the case through Reverse Auction. Vendors to give their confirmation for participation in Reverse Auction process. Offer of vendors not confirming to Reverse Auction shall be liable to be rejected.
- f) Failure in satisfactory performance of the contract shall lead to forfeiture of the PBG.
- g) BHEL reserves the right to increase or decrease the quantity.
- h) The offers received late after due date and time, shall not be considered by BHEL.
- i) Offers with deviations from terms and conditions of the tender shall attract Loading or may not be considered.

Instruction/procedure for submission of bids

- a. This Tender shall be issued by hand/email/fax only.
- b. The offer is to be submitted by the vendors in three parts in sealed envelopes.
- c. **Envelop-1: Tender Cost (Rs. 2000/-) in form of Demand Draft (DD).** Payment to be made through Demand Draft in favour of "Bharat Heavy Electricals Limited" payable at State Bank of India, IGFCC Branch, Jagdishpur Industrial Area, U.P., Distt. Sultanpur-271817, INDIA (Branch Code: 9072). Vendor to write Demand Draft (DD), Tender Enquiry No. & Date, Due date of opening and complete address of the Vendor on the envelop.
- d. **Envelop-2: Techno-Commercial Offer shall be sealed in Envelop-2.**
On the envelop, vendor to write Part-I, Tender Enquiry No. & Date, Due date of opening and complete address of the Vendor. This envelop should contain following documents:
 - i. Tender Enquiry duly signed with stamp on each page as a token of acceptance of all terms and conditions.
 - ii. Declaration as per attached Annexure-E of NIT.
 - iii. Technical details/brochures of the offered models, if applicable.
 - iv. Duly signed with stamp on each page of Technical Specification as a token of acceptance.
 - v. Un-priced copy of Price bid format (as per Annexure-A). Un-priced means that vendor to write "QUOTED" in place of the prices offered in Original Price Bid.
 - vi. Covering Letter giving index interlinking all the documents with all the pages signed and stamped.
- e. Envelop-3: Price Bid shall be sealed in Envelop-3.
On the envelop, vendor to write Part-II, Tender Enquiry No. & Date, Due date of opening and complete address of the Vendor. This envelop should contain following documents:
 - i. Priced copy of Price bid format (as per Annexure-A). To terms or conditions should be written in Price Bid Format, else offer of the vendor is liable to be rejected.

ENVELOP-1, ENVELOP-2 & ENVELOP-3 shall be sealed in BIG ENVELOP. On this envelop, vendor to write Tender Enquiry No. & Date, Due date of opening and complete address of the Vendor.

- f. Address for submission and opening of Tender Document :
Office of the AGM (MM)
CSU&FP, Jagdishpur Industrial Area,
Distt. CSM Nagar- 227817 (U.P.) INDIA
Tel: +91 5361 271 378
Fax: +91 5361 271 382
Email: upender@bhelcsufp.in
The tender(s) should reach the above mentioned address on or before the due date mentioned above. BHEL will not be responsible for delay in receipt of tender(s).
- g. BHEL reserves the right to accept or reject any of the bid / all bids with or without deviation, or cancel / withdraw the invitation for bid without assigning any reason whatsoever and in such case no bidder shall have any claim arising out of such action by BHEL.

Yours Faithfully,

For Bharat Heavy Electricals Limited

Upender Kumar
Engineer-MM (CSU & FP)

PRICE BID FORMAT
(Section-III)

PART-A

Tender No. & Date : **TE-FP-EPBAX-12-04 dated 02/11/2012 DUE ON 23/11/2012**
Bidder's Offer No. & Date :

All Values in INR

Sr. No.	Item Description	Unit	Qty.	Unit Rate	Total Price	Excise Duty @__%	Sales tax @__%	Any Other Taxes/Charges	Freight	FOR BHEL Price
			1	2	3 = 1 X 2	4 (on 3)	5 (on 3+4)	6	7	8 = 3+4+5+6+7
PART-A										
1	Sr. No. of 1 of Table-2 of Annexure-B	No.	1							
2	Sr. No. of 2 of Table-2 of Annexure-B	Nos.	15							
3	Sr. No. of 3 of Table-2 of Annexure-B	No.	1							
4	Sr. No. of 4 of Table-2 of Annexure-B	Nos.	120							
5	Sr. No. of 5 of Table-2 of Annexure-B	Nos.	40							
6	Sr. No. of 6 of Table-2 of Annexure-B	Nos.	3							
7	Sr. No. of 7 of Table-2 of Annexure-B	Nos.	3							
	SUB-TOTAL (SR. NO. 1 to 7)									
8	I&C Charges of Sr. No. 1 to 7									
	TOTAL WITH I&C CHARGES									
9	Sr. No. of 1 of Table-3 of Annexure-B	Yrs.	4							
	GRAND TOTAL OF PART-A									

Note: Vendor to quote for all the items.

Un-priced copy of this price-bid to be submitted with Part-I, Techno-Commercial Offer as per NIT.

Name of the Firm
Signature of Prop./Partner with Seal

PRICE BID FORMAT**(Section-III)****PART-B**Tender No. & Date : **TE-FP-EPBAX-12-04 dated 02/11/2012 DUE ON 23/11/2012**

Bidder's Offer No. & Date :

All Values in INR

Sr. No.	Item Description	Unit	Qty.	Unit Rate	Total Price	Excise Duty @__%	Sales tax @__%	Any Other Taxes/Charges	Freight	FOR BHEL Price
			1	2	3 = 1 X 2	4 (on 3)	5 (on 3+4)	6	7	8 = 3+4+5+6+7
PART-B										
1	Sr. No. of 1 of Table-4 of Annexure-B	Mtrs.	2500							
2	Sr. No. of 2 of Table-4 of Annexure-B	Mtrs.	5000							
3	Sr. No. of 3 of Table-4 of Annexure-B	Nos.	5							
4	Sr. No. of 4 of Table-4 of Annexure-B	Nos.	7							
5	Sr. No. of 5 of Table-4 of Annexure-B	Mtrs.	2500							
6	Sr. No. of 6 of Table-4 of Annexure-B	No.	1							
7	Sr. No. of 7 of Table-4 of Annexure-B	Nos.	3							
8	Sr. No. of 8 of Table-4 of Annexure-B	Mtrs.	1500							
9	Sr. No. of 9 of Table-4 of Annexure-B	Nos.	200							
10	Sr. No. of 10 of Table-4 of Annexure-B	Mtrs.	2500							
11	Sr. No. of 11 of Table-4 of Annexure-B	Nos.	12							
12	Sr. No. of 12 of Table-4 of Annexure-B	Nos.	4							
13	Sr. No. of 13 of Table-4 of Annexure-B	Mtrs.	2500							
GRAND TOTAL OF PART-B										

Note: Vendor to quote for all the items.

Un-priced copy of this price-bid to be submitted with Part-I, Techno-Commercial Offer as per NIT.

Name of the Firm
Signature of Prop./Partner with Seal

1.1 Communication Server :TABLE-2

SI No	Description of Work	Qty Req. (No's)	Make Quoted
1	<p>Supply of fully Non-blocking IP Telephony server, 19" rack Mountable, with minimum 32 bit processor & 266 MHz CPU, having minimum flash memory of 2GB along with all required hardware & software for seamless connectivity, QSIG Compliant, Equipped with all types of common control cards, power supply cards, Fully wired for following requirements and each CPU should be expandable up to at least 230 ports just by addition of chassis as required with all types of control & power supply cards. Must be TEC approved.</p> <p>Note: Item No.1 should have 3 CPU Blades with desired No's of main chassis and will be installed at three different places in distributed architecture with requirements as below.</p> <p>At CSU & FP Admin Building:</p> <ol style="list-style-type: none"> 1. 16 Ports Analog Trunk interface card 2. 16 Ports Digital Extensions interface card 3. 64 nos. Analog Extension interfaces 4. 02 no. PRI interface Card (Min 30 Channel Each) 5. 01 no. Auto attendant Card (Min 4 Channel) 6. 32 Channels VoIP Gateway card 7. LAN Port Inbuilt 8. CLI Built In 9. 08 ports Voice Mail 10. QSIG <p>At CSU & FP Plant Office:</p> <ol style="list-style-type: none"> 11. 8 Ports. Digital Extensions interface card 12. 64 nos. Analog Extension interfaces 13. 32 Channels VoIP Gateway card 14. LAN Port Inbuilt 15. CLI Built In 16. 01 no. Auto attendant Card (Min 2 Channel) 17. QSIG <p>At CSU & FP Township:</p> <ol style="list-style-type: none"> 18. 128 nos. Analog Extension interfaces 19. 32 Channels VoIP Gateway card 20. 01 no. PRI interface card (Min 30 channel) 21. LAN Port Inbuilt 22. CLI Built In 23. 01 no. Auto attendant Card (Min 2 Channel) 24. QSIG 	1	
2	Supply of min 10 key Digital phone Suitable for item No.1 (Same make of server)	15	
3	Supply Of PC Based operator console with at least 60 freely programmable keys with LED, Function, speed dial or Line keys suitable for item no.1	1	
4	Supply of push button basic Phone sets suitable for item no.1 Make Siemens/Panasonic/BPL/BEETEL (Wall Mountable :80 NO's, Floor Mountable : 40 No's)	120	
5	Supply of push button basic Phone sets With CLI suitable for item no.1 Make Siemens/Panasonic/BPL/BEETEL	40	
6	Supply of 1 KVA online UPS/FCBC (As per system requirement) for power backup Suitable for item No. 1 UPS Make APC/ Numeric/ Emerson/ Microtech	3	
7	Supply of 19", 21U Floor Mountable Rack with all Accessories suitable for item No.1	3	
Installation, testing & commissioning of IP communication server (Sr. no 1 to 7) in plant & township as per technical specification attached as annexure -3.			
Approved Make of Communication server: Avaya, Ericsson Aastra, NEC, Siemens, Cisco, Panasonic, Nortel, Alcatel			

Note: - If a digital/analog, subscriber/CO line card not have 16/16/8 ports, required no. of cards to fulfill the requirement shall be supplied by the bidder.

1.2 AMC Charges:

TABLE-3

SI No	Description of Work under AMC	Unit Qty.
1	AMC charges for Complete IP Telephony system complete with all control, power supply (UPS), Analog, Digital, PRI & IP subscriber cards, Phones, CO line cards etc. (Onsite, Labour & Spares)	4 Years (After warranty period of 1 year)

(PART-B)

2. BOQ for Cabling Work at BHEL CSU FP Plant office & Township:

TABLE-4

SI No	Description of Work	Qty. required	Make Quoted/NA
1	Supply of 20 Pair .5 MM Armored JFTC cable (Make Delton/ Finolex).	2500 Mtr.	
2	Supply of 02Pair .5 MM PVC Wire (Make Delton/ Finolex).	5,000 Mtr.	
3	Supply Of wall mountable Krone MDF 10 Pair.	5 Nos.	
4	Supply Of wall mountable Krone MDF 20 Pair.	7 Nos.	
5	Supply of 1 inch PVC Conduit (Make AKG/Cap/Daphin/Seiko/G plus)	2500 Mtr.	
6	Supply of wall mountable Krone MDF 50 Pair.	1 Nos.	
7	Supply of wall mountable Krone MDF 100 Pair.	3 Nos.	
8	Supply of 10 Pair .5 MM Armored JFTC Cable (Make Delton/ Finolex).	1500 Meter	
9	Supply & Fixing of RJ-11 Input & Output Box (Rosette box).	200 Nos.	
10	Trenching with sand and brick and laying of Cables.	2500 Mtr.	
11	Fixing and Punching of 10 & 20 Pair MDF.	12 Nos.	
12	Fixing and Punching of 50 & 100 Pair MDF.	4 Nos.	
13	Fixing & Laying of 2 pair cable with accessories in PVC conduit.	2500 Mtr.	

NOTE:

1. The amounts of all above items are tentative and will be charged on actual basis of work done.
2. Quoted System must be installed in the distributed Network architecture at three separate locations in BHEL CSU & FP Jagdishpur Premises.
3. BHEL will provide LAN network for connectivity of systems through LAN Network in factory premises. CPU installed in township will be connected to CPU installed at CSU FP Admin building through armored JTFC cable and PRI cards on both CPU shall be used for communication.
4. Warranty of 12 months is to be provided on complete system after the date of commissioning.
25. Bidders are required to specify the original manufacturer of each item.
26. AMC charges shall be paid quarterly and downtime shall be calculated for each quarter as per attached annexure-2 and the same will be deducted from the AMC charges of the period.
27. Bidder can bid for Part-A OR for Part-B OR for both parts independently and L-1 will be decided for both parts separately. L-1 for part-A and part-B shall co-ordinate with each other to complete the full scope of work as desired by BHEL.

SCOPE OF WORK:

Supply of material, trenching and laying of cable in plant and township, Installation of Communication Servers, testing, commissioning and training to BHEL representative shall be provided by the bidder. Bidders can visit the installation site as per their requirement before quoting against the enquiry.

PRE-QUALIFICATION CRITERIA

1. The bidder must be an original manufacturer of the model offered or a dealer authorized by the OEM or authorized by Indian Channel Partner of OEM.
2. The model offered must be in operation with any other Government organization/PSU/MNC/Reputed private organization and performance should be satisfactory, documentary evidence to be enclosed.
3. The model must have working interconnection with other exchanges over digital E1/ PRI.
4. The bidder must produce valid TEC Approval certificate at least 256 Lines for the particular model quoted.
5. Must be Q SIG compliant, documentary evidence to be enclosed.
6. Not ever black listed by any PSU/ Govt. organization
7. Provide spare material and services and technical support for next 10 years. The bidder must enclose a letter from OEM assuring support for the above said period.
8. At least three years of experience in installation and commissioning of IP based communication server working in Government / PSU/ Private Organization.
2. The Bidder should attach manufacturer's detailed technical specification in original (or photo copy) of the model quoted, indicating all the technical specification mentioned in the tender document.
3. The bidder must have executed One job of similar nature of minimum value Rs 10,00,000.00 for Part-A and Rs. 5,00,000 for Part-B or above, OR Two jobs of value Rs 7,00,000.00 for Part-A and Rs. 3,00,000 for Part-B or above OR Three jobs of value Rs 5,00,000.00 for Part-A and Rs. 2,00,000 for Part-B or above.
4. **Local Service Support:** The firm shall have complete infrastructure with warehouse located at Lucknow, to provide timely support in terms of manpower, spares and accessories.

DOWNTIME CALCULATION FOR EPABX SYSTEM

Bidder shall be responsible for maintaining a minimum uptime of 95% for the entire system on monthly basis. Any down downtime above 5% will be subject to deduction of AMC charges on following basis. The downtime will be calculated as shown below:

Example:

- a) AMC amount per quarter: Rs. A
- b) Total available hours per Month: 24HX 30D = 720H
- c) No Down time (T) calculation is 5% = 36Hrs.
- d) Deduction Factor (F) will be calculated as below:

Downtime in a Month	Deduction Factor (F)
<5%	1.0
5%-10%	1.5
10%-15%	2.0
>15%	3.0

e) Downtime deduction (D) = $T \cdot A / 3 \cdot F / 720$

i.e. If the system is down for 50 Hrs. in a month, deduction will be Rs. $50 \times A / 3 \times F / 720$

Note:

If the uptime for equipment falls below 95% continuously for 1 month, the equipment shall have to be replaced by the Bidder, without any extra charge. Down time Hours will be calculated for any item failure in the system like Server, Phone, Cards, connectors, Cables etc.

PROFORMA FOR PERFORMANCE BANK GUARANTEE

(To be issued on appropriate valid non-judicial stamp paper)

This Deed of Guarantee made this Day of 200 by Bank Ltd (hereinafter called the 'Bank', in favour of Bharat Heavy Electricals Limited, having its Registered Office at BHEL House, Siri Fort, New Delhi – 110 049 (hereinafter called the 'Purchaser') throughunit.

Whereas M/s (hereinafter called the Vendor) has entered into a Contract arising out of the Purchase Order No addressed by the Purchaser to the Vendor, for.....(scope of supply & services) (hereinafter called the 'Agreement').

And whereas the said Agreement provides that the Vendor shall submit a Bank Guarantee for a sum of Rs..... (Rupees..... only) towards Performance Guarantee to be made in the form and manner therein specified.

And whereas the Vendor have approached (Bank) and at their request and in consideration of the arrangement arrived at between the said Vendor and the said Bank, the said Bank has agreed to give such guarantee as hereinafter mentioned to the aforesaid Purchaser.

Now, therefore, these presents witness that we (Bank) by the hand of Shri..... its lawfully and duly constituted attorney do hereby undertake to pay the aforesaid Purchaser a sum of Rs..... (Rupees) by virtue of this Guarantee without any demur, merely on a demand from the Purchaser and to keep the company indemnified to the extent of Rs....., by virtue of this guarantee against any loss or damage caused to or would be caused to or suffered by the Purchaser by reason of breach by the said Vendor of any of the terms or conditions contained in the said Agreement or by reason of the Vendor's failure to perform the said Agreement and for the payment of any money payable by the said Vendor to the Purchaser under the terms and conditions of the said Agreement (the decision regarding the breach, loss, damage or payment due being solely at the discretion of the Purchaser).

We further undertake to pay the Purchaser any money so demanded notwithstanding any dispute or disputes raised by the Vendor, any suit or proceeding pending before any court or Tribunal relating thereto, our liability under these presents being absolute and unequivocal. The aforesaid guarantee will remain in force and we shall be liable under the same, irrespective of any concession for the time being granted by the said Purchaser to the Vendor in or for fulfilling the said Agreement and the guarantee will remain in full force irrespective of any change of terms, conditions or stipulations or any variation in the terms of the said Agreement irrespective of whether notice of such change and/or variation is given to us or not and claim to receive such notice of any change and or/variation is given to us or not.

LIST OF BHEL CONSORTIUM BANK	
1	State Bank of India
2	Canara Bank
3	Bank of Baroda
4	Punjab National Bank
5	State Bank of Hyderabad
6	State Bank of Travancore
7	Corporation bank
8	Syndicate Bank
9	Indian Bank
10	Oriental Bank of Commerce
11	UCO bank
12	Central bank of India
13	IDBI Ltd.
14	HDFC Bank Ltd.
15	ICICI Bank Ltd.
16	Kotak Mahindra Bank Ltd
17	The Federal bank Limited
18	ABN-AMRO Bank
19	Citi Bank
20	HSBC
21	Deutsche Bank
22	Standard Chartered Bank
23	United bank of India
24	Vijaya Bank
25	Union Bank of India
26	Bank of India
27	Andhra Bank
28	Punjab & Sind Bank
29	Axis Bank

SPECIFICATIONS FOR IP KSU/PBX COMMUNICATION SERVER

- IP based Communication Server should be a full-featured IP based communications system providing a rich feature set of the system, with pure Voice over IP (VoIP) communications, across corporate Local and Wide Area Networks (LAN and WAN).
- The system should be full featured, modular and scalable like network switches for port capacity so that to increase number of ports, additional chassis can be installed over the existing system.
- Should be ROHS complied as green product with power saving.
- System should supports traditional circuit switching as well as VoIP functionalities.
- Support feature transparency over networked PBXs.
- Universal Port Architecture that has the flexibility to accommodate station terminal equipment, trunks and adjunct processors in any available slot in the system.
- Multiple networking options supporting PSTN (analog and digital) and TIE trunk (analog, digital and IP) without additional external equipment.
- Universal IP port gatekeeper control signaling for both Station and Trunk.
- Remote sites should be survivable and fully operational even if the central site fails, or the WAN connectivity between the remote site and central site fails.
- Support wide range of terminals including analog phone, digital phone, IP phone (H.323 & SIP), soft phone, and IP DECT phone.
- The proposed system shall facilitate user-friendly computer telephony integration (CTI).
- Basic telephony functions should be provided in one system without additional servers such as publisher, TFTP server and other adjunct servers.
- System should supports built in ACD function and no external server should be needed for ACD functionality.
- Minimum communication must be provided after discharge backup battery (Power failure transfer).
- The IP Phones must be designed to provide a converged infrastructure at the desktop, with a 10/100BASE-TX connection to the LAN and built-in hub for a PC connection to the telephone itself .IP Phone must be Modular in design and flexible to incorporate more number of keys without replacing Phone, i.e. 6 or 12 key phone can be upgraded to 24 key whenever required protecting initial investment just by replacing key Module/pad.
- System should be offering features with enhanced user interface. On the WAN side, the system must provide peer-to-peer connections over IP networks with the voice compression.
- Besides, the system must provide legacy line / trunk interfaces to support the existing Time Division Multiplexing (TDM) based infrastructure, such as analog telephones, digital telephones, analog networks and digital networks.
- Both peer-to-peer connections and TDM-based connections should controlled by the CPU board. The CPU should incorporate a built-in Device Registration Server (DRS) and a single interface point of IP connection to IP telephone.
- The CPU board of the system should be like a heart of pure IP connections and TDM-based connections. The CPU board must employ at least a 32 bits microprocessor. With this processing power and DSP technology, it must integrate the following functions.
 - DTMF receivers
 - Caller ID receivers
 - Caller ID senders
 - MF senders / receivers
 - In-Mail
 - VoIPDB
 - VoIP which has VoIP NIC port (Gigabit Ethernet) must be mountable without additional slots in the KSU.
- Additional KSU/PBX, referred to as Expansion KSU/PBX, can be installed to increase the capacity of the system to meet the customer's business needs. The system can be expanded to port capacity of 512 digital terminals.
- Call forwarding from any extension to any other extension.
- Programmable Boss- Secretary System.

SYSTEM MAXIMUM CAPACITY:

- Total of Analog, Digital, IP Extensions : 512
- Max Analog ext 512
- Max Digital ext 512
- Max IP ext 512
- Max. Analog Trunk : 180
- Max. BRI : 180
- Max. PRI : 180 B-Channel
- Max. IP Trunk (SIP) : 128
- Max. VoIP Channels : 128
- Conference Circuits : Maximum 32 party per Conference
- IN skin Voice Mail/ AA (Auto attendant) Channel on CPU: 16 port Channel without PC (Embedded card based) with 500 mail boxes and 30 Hours storage capacity.
- Networking with 15 locations with full features enabled.

INTELLIGENT NETWORKING

- Supports peer-to-peer IP feature transparency, point-to-multipoint IP feature transparency or TDM-based feature transparency.
- Provides one system look for multi-site implementation with centralized unified systems management.
- Support feature transparency with remote office equipped with other IP PBX models from the same vendor.

SYSTEM MANAGEMENT

- The PBX system can be managed under one single management interface.
- Functionality distributed with call control intelligence residing in site for a multi-sites PBX environment.
- Support remote maintenance by serial interface and/or TCP/IP interface.

SYSTEM FEATURES

- Malicious Call Trace
- Call waiting services
- Hot line
- Music on hold including the music sources
- Operator (console button) and station (dial access) to radio paging including tone-to-rotary conversion as necessary
- Trunk answer supervision by battery reversal or metering pulse
- Intercom blocking
- Restriction and unrestricting of telephones
- No Attendant Service
- QSIG Networking conforms Trunk to Trunk Connections
- Support different voice encoding technique include G.729a, G.711, G.723.1
- Peer to peer support
- Backward compatibility for both hardware and software must be supported. Clear migration strategy must be illustrated.
- Support H.323 and SIP standard phones.

SYSTEM INTERFACES

- Availability of voice messaging system interface.
- Availability of call accounting system interface.
- Availability of interface to other IP applications.

SERVICE FEATURES

- Support authorization code (at least 10 digits).
- Support accounts codes (at least 10 digits).
- Support forced accounts codes (at least 10 digits).
- The user is allowed to key in at least 24 dialed digits to cater for called number as well as account codes.
- Call Forwarding set by Direct Inward System Access (DISA).

CALL ROUTING & CLASS OF SERVICE

- Support Least Cost Routing
- Routing must allow user to route dialed 0, 00, 01 or 011 calls over different routes.
- Support fifteen classes of service and ring-down to operator.

TRAFFIC MANAGEMENT

- Traffic statistics recording should be available.

STATION HUNTING TECHNIQUE

- Circular
- Pilot
- Secretarial
- Uniform Call Distribution

TERMINAL DETAILS

- Legacy Terminals (Analogue & Digital), IP Terminals, IP DECT, IP Soft Phone, GSM / SIP Mobile, Standard IP Terminals.XML Applications on IP Terminals. Messaging Waiting & CLIP on Analogue. Wideband Codec.

DIGITAL TERMINAL SET PHYSICAL FEATURES

- Must have option to use wired Handset or wireless Handset with Dial pad and at least 8 BLF/LED keys via Bluetooth support.
- Same Digital/IP Terminal must be upgradeable for blue tooth handset connectivity by just replacing wired handset to Blue tooth Handset
- Minimum 24 freely programmable/fixed keys with LED are expandable to 32 key without replacing the original Base terminal by just replacing key Module.
- Alphanumeric LCD tilt able display with 3 lines (24 characters per line); additional
- Backlighting that remains illuminated for approx. 5 s.
- The faceplate of the instrument should be changeable with different color option as and when required in future.
- Multiple line appearances with LED indication.
- Integrated Full-Duplex speakerphone with adjustable volume control.
- Speakerphone should allow on-hook dialing.
- Availability of various phone models supporting 8 to 32 programmable line/feature keys with capability to store up to 24 digits.
- Availability of fixed feature keys.
- Faceplate overlay must be a snap-on clear plastic material.
- Easily accessible data port for modem connection or fax machine use.
- Soft tone electronic ringer with adjustable High-Low settings.
- Line powered (No external power or user installed batteries).

- Availability of HOLD button.
- Availability of Digital Multi-Line Station.
- For wall mounted version, comes with snap-in cable connectors.

DIGITAL TERMINAL BASIC CALL FEATURES

- Extension to extension dialing
- Call waiting
- Call hold
- Distinctive ringing
- Eight party conference
- Call forward on busy
- Call forward on no answer
- Call forward all calls
- Internal and external queuing
- Automatic Recall
- Automatic Line Preferences
- Remote Call Forwarding (External Call Forwarding)
- Do Not Disturb
- Busy Override
- Internal Paging Through Telephone
- Multiple Appearance/Bridged Station Lines
- Manual Signaling (Boss/Secretary Button/Buzzer)
- Boss/Secretary Intercom
- Trunk Queuing with Callback
- Station Queuing with Callback
- Multiple Call Forwarding options
- “Off Premise” call forwarding
- Support display/block caller ID for both incoming and outgoing call.
- Parallel phone feature, i.e. call can be transferred to a parallel phone of same no using a key. For example if someone calls CEO, first the call should go to secretary, then it can be forwarded to CEO if desirable using a key.

FULLY FEATURED IP TELEPHONY SUPPORT

- IP Ports (Stations-Trunks)
- Distributed media gateways (analog/digital station, ISDN PRI trunk interface)
- Failover resiliency

IP TERMINALS

- IP Terminal with Color LCD Touch Screen with COLOUR DISPLAY and xml supports With BACKLIT LCD AND KEY PAD
- Must have option to use wired Handset or wireless Handset via Bluetooth support.
- Same terminal must be upgradeable for blue tooth handset connectivity by just replacing wired handset to Blue tooth Handset
- Minimum 24 freely programmable/fixed keys with LED’s expandable to 32 key without replacing the original Base terminal by just replacing key Module.
- Alphanumeric LCD tilt able display with 3 lines (24 characters per line); additional
- Backlighting that remains illuminated for approx. 5 s.
- The faceplate of the instrument should be changeable with different color option as and when required in future.
- Multiple line appearances with LED indication

- Integrated Full-Duplex speakerphone with adjustable volume control
- Simple upgrade from digital phone to IP phone
- Interface to native IP Telephones (H.323 & SIP)
- Availability of PC Client soft phone
- Availability of wireless IP DECT Handset
- Full-duplex speakerphone
- Easy programming of line/Feature Keys And Fixed Feature Keys
- Support all the features of the Digital terminal
- IP phone should equip with a build in mini switch for connectivity to a desktop/notebook computer
- A user should be able to plug in their IP phone anywhere in the organization and automatically receive calls without administrative intervention.
- The IP phone should be powered via external power adapter, power patch panel or in line power of the switch.
- Supports failover resiliency for IP stations across discrete systems, i.e., an IP telephone can be configured behind more than one PBX.

INTELLIGENT ATTENDANT CONSOLE

- Availability of PC based and desktop operator console
- Attendant administration with high operability
- Call ID of incoming trunk and station (Alpha Numeric)
- Trunk group busy indicators
- Support trunk group access
- Busy verification of station lines
- Privacy, line lock out
- Attendant controlled conference
- Transfer and extension of calls, both internal and external
- Direct access to paging including the generating of any required tones or pulses
- Release loop control with at least six loops per operator console
- Camp-on
- Intrusion support
- Class of service support
- Indication of the number of calls waiting
- The LCD changes with different call states and instructs the user which Multifunction keys are available for each state.
- Support Multi-function Keys to reduce the number of different buttons and greatly simplify operation. Keys such as Busy Verify, DND Override, etc. only appear when needed.

Technical Specification of CLI telephone

1. Make Panasonic, Beetel, BPL, Seimens, Alcatel etc
2. Push button type key pad dialing with caller ID
3. Last Number Redial, Mute, Flash and Pause.
4. Ringer Volume Control
5. Pulse/Tone Mode dialing
6. The offered telephone set should be Compatible with DTMF and FSK.
7. Memory of Incoming calls: 30 Minimum and at least 8 outgoing memory.
8. 2 way hands free conversation.
9. Visual ring indication.

FEATURES OF COMMUNICATION SERVER:

Account Code – Forced/Verified/Unverified	Account Code Entry	Alarm
Alarm Reports	Alphanumeric Display	Analog Communications Interface (ACI)
Ancillary Device Connection	Answer Hold	Answer Key
Attendant Call Queuing	Automatic Call Distribution (ACD)	Automatic Release
Automatic Route Selection	Background Music	Barge-In
Battery Backup – System Memory	Battery Backup – System Power	Call Duration Timer
Call Forwarding – Park and Page	Call Forwarding	Call Forwarding with Follow Me
Call Forwarding, Off-Premise	Call Forwarding/Do Not Disturb Override	Call Monitoring
Call Redirect	Call Waiting/Camp-On	Callback
Caller ID Call Return	Caller ID	Central Office Calls, Answering
Central Office Calls, Placing	Class of Service	Clock/Calendar Display
Code Restriction	Code Restriction Over ride	Code Restriction, Dial Block
Conference	Conference, Remote	Conference, Voice Call/Privacy Release
Continued Dialing	Data Line Security	Delayed Ringing
Department Calling	Department Step Calling	Dial Pad Confirmation Tone
Dial Tone Detection	Dialing Number Preview	Digital Trunk Clocking
Direct Inward Dialing (DID)	Direct Inward Line (DIL)	Direct Inward System Access (DISA)
Direct Station Selection (DSS) Console	Directed Call Pickup	Directory Dialing
Distinctive Ringing, Tones and Flash Patterns	Do Not Disturb	Door Box
Drop Key	Facsimile CO Branch Connection	Flash
Flexible System Numbering	Flexible Timeouts	Forced Trunk Disconnect
Group Call Pickup	Group Listen	Handset Mute
Hands free and Monitor	Hands free Answerback/Forced Intercom Ringing	Headset Operation
Hold	Hot Key-Pad	Hotline
Howler Tone Service	Intercom	ISDN Compatibility
Last Number Redial	LCR-Least Cost Routing	Line Preference
Long Conversation Cutoff	Loop Keys	Maintenance
Meet Me Conference	Meet Me Paging	Meet Me Paging Transfer
Memo Dial	Message Waiting	Microphone Cutoff
Mobile Extension	Music on Hold	Name Storing
Night Service	Off-Hook Signaling	One-Touch Calling
Operator	(OPX) Off-Premise Extension	Paging, External
Paging, Internal	Park	Power Failure Transfer
Prime Line Selection	Private Line	Programmable Function Keys
Pulse to Tone Conversion	Redial Function	Repeat Redial
Reverse Voice Over	Ring Groups	Ring down Extension (Hotline), Internal/External
Room Monitor	Save Number Dialed	Secondary Incoming Extension
Secretary Call (Buzzer)	Secretary Call Pickup	Selectable Display Messaging
Selectable Ring Tones	Serial Call	Single Line Telephones
SLT Adapter	Soft keys	Speed Dial – System/Group/Station
Station Hunt	Station Message Detail Recording	Station Name Assignment – User Programmable
Station Relocation	Synchronous Ringing	Tandem Ringing
Tandem Trunking (Unsupervised Conference)	Tone Override	Traffic Reports
Transfer	Trunk Group Routing	Trunk Groups
Trunk Queuing/Camp-On	Uniform Call Distribution (UCD)	Uniform Numbering Network

UNIVERGE Multimedia Conference Bridge	Universal Slots	User Programming Ability
Virtual Extensions	Voice Mail Integration (Analog)	Voice Mail Message Indication on Line Keys
Voice Over	Voice Response System (VRS)	Volume Controls
Warning Tone for Long Conversation		