



All India Radio



**PRASAR BHARATI
BROADCASTING CORPORATION OF INDIA)
DIRECTORATE GENERAL: ALL INDIA RADIO
PLANNING & DEVELOPMENT UNIT**

These specifications are for Supply, Installation, Testing and Commissioning (SITC) of high-end servers with centralized storage and software etc. for Type-, B, C , D and E studio centers of All India Radio for storage/retrieval of audio archive and automation of sound broadcasting purposes.

1. GENERAL

- (i) The Scope of this tender includes supply, installation, testing and commissioning of data/content servers, operating system and data base software, backup servers, software and drives, storage system, SAN and Ethernet switch etc. These servers system are to be connected and integrated in existing LAN at AIR Stations.
- (ii) The tenderer shall quote for each category separately as per Bill of Material of each category centers given in Annexure-II.
- (iii) The tenderer must submit the following along with the tender:-
 - (a) **A point-to-point compliance statement as per Annexure-I highlighting deviations, if any, on all the clauses of specification from the manufacturer of the offered equipment duly signed in original. If compliance statement is in format other than Annexure-I, the tender will be rejected out rightly.**
 - (b) **Detailed printed literature, relevant to the offered equipment, giving complete electrical and mechanical data.**
 - (c) **The quote should either be from the original manufacturer or from their authorized representative/dealer. In case, the quote is from the authorized representative/dealer, a certificate in original from the original manufacturer that the tenderer is authorized representative/dealer for India should be enclosed with the tender.**
 - (d) **An undertaking that tenderer abides all the conditions given in warranty clause No. 8.**
 - (e) **A copy of un- priced Bill Of Material (BOM). Make, series no., Model no. and part nos. of offered equipment shall be quoted clearly. Any tender, showing ambiguity in above terms shall be treated as incomplete and it will be rejected.**
- (iv) The Hardware quoted shall be sourced from vendors within India for easy maintainability during and after guarantee period.

- (v) The tenderer must ensure that the tender is technically and commercially complete in all respects and all the points have been complied fully. Incomplete tenders will be rejected without any notice to the tenderer.
- (vi) The tenderer shall be required to demonstrate the functioning of integrated system at the time of technical evaluation in New Delhi. Non-compliance of the equipment demonstration will disqualify the tender.
- (vii) Total computer hardware should be from OEM of reputed make.
- (viii) The tenderer shall have at least 25 service stations spread throughout India for providing support during guarantee/warranty period and provide after sale support if required beyond this period. A list of the service centers should be enclosed with the tender.
- (ix) The storage systems should be able to support remote replication in both Synchronous as well as Asynchronous mode with consistent copies of replicated volumes at target site. Vendors should confirm support for Synchronous and Asynchronous replication. The storage array should support array based data mobility for heterogeneous SAN storage array.
- (x) The bidders should have experience of executing projects involving SITC for servers, storage, backup software and other database software. The bidders have to provide documentary proof of successful execution of two similar projects (contact details with address & phone no.) in last 2 financial years. The value of each executed project should be equivalent to Rs. 10 Crore.

2. SCOPE OF THE TENDER

- (i) The tenderer will install the hardware/ software in Content/Database Server (s) including configuration.
- (ii) Backup Server Software is to be installed in backup server and configured for Data backup and Recovery of Data/Content Server. Backup policies are to be decided in consultation with AIR.
- (iii) DAT/LTO/Tape Library is to be installed and configured in respective Backup Server.
- (iv) External Storage system is to be installed, configured and connected with Data/Content Server for Data storage as per AIR requirements.
- (v) All the drivers' software required for proper functioning of each of the hardware is to be supplied along with each system.
- (vi) All the cables & mating connectors etc. required for implementation of system at each station, will be supplied by the tenderer.
- (vii) Server system is to be connected and tested for successful operation with existing LAN setup at each of the AIR Stations.
- (viii) AIR is having an in house developed application (stand alone desk top based) named "Virtual Studio" for automation of broadcast activity. It is based on VB/MS Access. This application is required to work successfully by moving Data in the SAN based storage and Database in the

server/SAN instead of desktop. Database in the server shall be MSSQL on Windows environment. Application may remain working on windows based desktop. AIR may ask the tenderer to demonstrate the same during technical evaluation, if required

AIR is planning to setup a centralized server and a remote management site. The offered system should have in built features for connectivity to the centralized server as well as remote manageability.

3. BROAD REQUIREMENT OF THE SYSTEM.

- (i) The system shall be rugged and reliable for round the clock operation for 24/7/365 days.
- (ii) The tenderer shall submit certifications from the respective software company that the system quoted is certified for the operating system Linux and windows and other software quoted along with the hardware.
- (iii) The tenderer will arrange license for operation of software at each station.

4. TECHNICAL SPECIFICATIONS OF HARDWARE & SOFTWARE ITEMS (Specification of hardware & software in general are as given below but specific requirement of each type of station along with the quantity are as given in the table of Bill of Material (BOM))

A Hardware

(a) FILE / DATA BASE SERVER & BACKUP SERVER

- 1. Processor
 - (i) make** Intel
 - (ii)Type** As specified in BOM Table
- 2. FSB 1066 MHz
- 3. Cache Memory 8 MB L2 cache
- 4. Chipset Intel 5000Series
- 5. RAM
 - (i) Type** Fully buffered PC2 5300 667 MHz ECC DDR2-RAM, upgradeable to 32 GB (active memory with mirroring, on line spare and multiple bit error correction features)
 - (ii) Capacity** As specified in BOM Table

(b) External Storage

1. Storage

Rack mountable fully redundant RAID Array with no single point failure at any level like disc based, power supply, fans, connectivity etc.
2. Array Controller

Dual Active-Active high performance hot swappable Fiber Channel controller with support for minimum one global Hot Spare Hard Disk for each type of Disk (FC/SATA/FATA)
3. Cache

(i) capacity per controller As specified in BOM Table

(ii) Expandability Expandable as specified in BOM table (either by changing array controller or by adding Cache on the existing adapter with battery backup for 72 hrs./cache destaging)
4. Ports

a) Front End Host Ports 2 x 4 Gbps front end fibre ports per controller (4 nos. total)

b) Back end Disk Connectivity Storage system should have at least dual FC-AL loops in back end for disk array connectivity with at least 8 Gbps aggregate band width. All the FC-AL loops should be available to each & every disk array enclosure provided for expansion.
5. OS Support

Must support multiple operating system including Linux, Microsoft windows, Sun Solaris HP-UX, AIX
6. Disk Capacity

Offered solution should be provided with total disk capacity as specified in BOM table. This capacity is of formatted disks i.e after removing formatting overheads. One part of the capacity is to be provided by using 146 GB 15000 RPM 4 Gbps dual port Fiber channel disks and another part by using 500 GB dual port SATA II/FATA 7200 RPM disk drives as specified in BOM table.
7. RAID Levels

0,1, 5 & 10
8. Support Drives

Offered solution should support 73.0 GB and 146 GB at 15000 rpm and 4 Gbps; 73.0 GB, 146 GB & 300 GB at 10000 rpm & 2Gbps FC Drives; 400/500 GB 7200 rpm SATA /FATA Drives
9. Drive Scalability

Minimum number of disk support required for each type of station is specified in BOM table
10. Management software

Must include Array-based Storage Mgmt.(using web based browser) Software to centrally manage disk storage subsystem.

- 11.LUN Migration It should be supplied with the following functionality (at the LUN granularity level) with application are on line and with continued data access to the same LUN:
- i. to move data within the array between drives of different capacities & types /dynamic segment sizing.
 - ii. to migrate LUNs from one level of RAID protection to another (e.g. RAID 5 to RAID 1/0).
- 12.Point in Time copies Software Licenses The array should be supplied with point in time copy software licenses both for snapshots as well as for volume copies for entire configurable & maximum scalability of Storage Array.
- (i) It should have built in pointer based snap shots facility for faster recovery.
 - (ii) It should have built in facility for taking exact replicas of data in another set of disk, facilitating restores in case the production volumes are unavailable due to multiple disk failure or any other reason.
14. Remote Diagnostic The system should have builtin secure dial-in/web based facility for remote service and support and also support dial-out/web based to vender support facility.
15. Rack Support 19" Industry Standard Rack Ready.
- 16.SAN Switch With 8 No. of 4Gbps fibre channel ports & upgradable upto 16 nos. of 4Gbps fibre channel ports with power cord, rail kit & redundant fans., power cord, rail kit.

(c) Ethernet SWITCH

24 port 10/100/1000 Layer 2 Gigabit Managed Switch

(d) BACKUP DRIVE AND CONTROLLER FOR BACK UP SERVER

(i) DAT Drive 36/72 GB DDS5 DAT Drive and LVD SCSI Controller for connecting in the back up server

(ii) LTO Generation-3 Drive 400/800 GB LTO Generation-3 Drive and LVD SCSI Controller for connecting in the back up server.

(iii) Tape Library with following specification

i) Form Factor 4U

- ii) Capacity one number of 400/800 GB LTO-3 (upgradeable 2 drive)
- iii) Host Interface Fibre Channel Interface (Latest)
- iv) Cartridge magazine 4
- v) Data Cartridge Slots available 35 (minimum)
- vi) Max Storage capacity 14.0 TB (Native) 28.0 TB (Compressed)
- vii) Data Transfer Speed 80 MBps (Native), 160 MBps (Compressed mode)

Note: Relevant cable and connectors like ultra 320 SCSI adapter for configuring maximum support drives etc. should be provided

(e) KVM Switch, Keyboard, Monitor, Mouse

8 Port KVM switch along with Keyboard, mouse and 17" Flat TFT monitor of the same make as Server.

B SOFTWARE

(a) Operating System (Latest Edition)

- (i) Microsoft Windows Server 2003 R2 Standard Edition With CAL
- (ii) Microsoft Windows Server 2003 R2 Enterprise Edition (Cluster enable) with CAL

(b) Database Software (Latest Edition)

- (i) Microsoft SQL Server 2005 Standard Server With Client Access License
- (ii) Microsoft SQL Server 2005 Enterprise Server With Client Access License for SQL

Note: All database and OS software are to be provided with free updates and patches for at least three years.

c) Anti-Virus Software (with one year updates)

- (i) Anti-Virus Software for Server Protection
- (ii) Anti-Virus Software for Server Protection

Cluster enable

(d) Backup Software for backup server with following specifications

- i) Software for Automated backup and Restore Operations to give an integrated backup/restore from/to servers connected to LAN/External Storage (SAN).
- ii) Platform independent software (should be portable on any Linux/Windows/Unix OS latest version) with heterogeneous environment support with Linux, Windows, Unix etc Servers.
- iii) Support to backup multiple data (for MYSQL, SQL, DB2, Oracle etc. Databases) under Linux/Windows/Unix.
- iv) Should be supplied with Local disaster recovery capability for OS application and data.
- v) Support for Autoloader/Automated Tape Library(ATL) on SAN.
- vi) Off-line Backup (Cold Backup) with all necessary software components along with licenses required for each server.
- vii) Ability to backup heterogeneous computing environment with parallelism/multiplexing features. Backup software should support full, differential and incremental backup.
- viii) CPU independent cross OS licensing for client software's. The Backup Server will have Linux OS.
- ix) Scalable, Modular easy-to-configure and easy-to-use with GUI interface s/w. It should be possible to do all backup and recovery operations through the GUI.
- x) Inbuilt support for Advanced reporting with centralized management features like historical backup success/ failure reports.
- xi) Safe, reliable and fast recovery in case of disaster.
- xii) Backup S/W should allow NAS/SAN data to be backed up on the same drives available in NAS/SAN (Virtual Tape Library Concept) Quote for relevant software license, if required any.
- xiii) Quote for SAN clients license per client basis and also for cluster license if required.
- xiv) Quote for LAN free backup for heterogeneous environment.
- xv) Basic Module of Backup software for ATL/Autoloader with 1/2/4 drives &/or slot basis for on-line backup under heterogeneous environment.
- xvi) Policy based management
- xvii) Ability to have built-in alert support.
- xviii) Backup software must include encryption of backed up data or achieved data.

- xix) Ability to backup data from one platform and restore it from another (limited to general OS) to eliminate dependence on particular OS for DR purposes.

Note- Backup software for the above configuration should be quoted with clear licensing policy for backup under SAN/LAN environment.

(C) RACK with following specification:

42U, 19" Industry standard rack for housing servers, storage and KVM switch.

(D) 2x5KVA online(Parallel redundant) UPS with following specification:

Rating 2x5KVA with minimum 20 minutes backup on full load on each UPS.

Input: 160V-260V 50Hz \pm 6% single phase

Output: 230V AC \pm 1% 50Hz \pm 1%

Power factor: 0.7 to unity (lagging)

Overall efficiency: > 80%

Wave form: pure sine wave

Crest factor 3:1

Output should be provided with Isolation Transformer.

Protection: a. over voltage, short circuit and over load at UPS output

b. under voltage at battery terminal .

Noise level: < 55dB at 1 meter distance

Indicators/meters: a. mains presence including measurement of input AC Voltage, output AC voltage, frequency, battery voltage and current. These measurements should be available either on meter or through SNMP.

b. Indication for battery charging and discharging

c. Indication for low battery voltage.

Operating temperature: 0-50^o centigrade

Certification: Standard certification for safety, EMC/EMI and ISO 9001 & 14001

Battery specification: SMF, Standard make battery such as Exide, Panasonic and Hitachi etc.

UPS to work in Parallel mode with load sharing(Active/Active mode) to take full load (5KVA) in case of failure of one UPS.

5. Power Supply

All hardware should able to operate on 230 V \pm 10% V, 48-52 Hz, single phase AC power supply

6. Environmental Conditions

The equipment shall work satisfactorily in tropical climate with dry temperature range from 5 ^oC to 35 ^oC and humid conditions up to 80% RH (non-condensing) at 30 ^oC.

7. Electromagnetic compatibility

The system shall be used in the vicinity of high Radio frequency field. Therefore, the system shall conform to be protection requirements relevant to electromagnetic phenomena as per international guidelines CISPR 22 Class B.

8. Warranty

The complete system shall be warranted for a minimum period of three years from the date of commissioning against any manufacturing and design defects in respect of the hardware and software. The bidder has to provide comprehensive onsite support, which includes technical support & spares support.

The bidder shall submit a letter from OEM of server ,storage and software for confirmation of back to back support commitment (Technical services and Spares commitment) to All India Radio. The bidder needs to provide 4 hours of response time and 99% of uptime on annualized basis. The bidder should have a 24X7 Call center facility to register any service related complaint.

12. Instruction Manual

Four complete sets of instruction manuals for operation and maintenance of the hardware and operation of the software system shall be supplied to each station and Director Engg. (MR), P&D Unit of DG, AIR, New Delhi.

13. Training

The tenderer shall be required to train AIR staff on operation of the system at three place in the country decided by AIR. The training shall be free of cost.

14. Inspection

Pre dispatch inspection of complete hardware equipment shall be carried out at supplier's/ manufacturer's works/site by the representative of DG: AIR. All the necessary equipment for carrying out the inspection will be arranged by the manufacturer/ supplier.

15. Mode of Payment

The payment of hardware equipment shall be as per terms and conditions of the contract. The payment of softwares shall be released only after the commissioning of individual system at each station and to the satisfaction of AIR representative at site.

(H.K.Bharani)
Dir. Engg. (MR)

(J.M.Jain)
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Dir. Engg.(IT)

ANNEXURE-I

S.No.	Para no. of AIR specification	Tenderer's solution		
		Complied (yes/no)	Actual figure of the offered product	Remarks

ANNEXURE-II

Bill of Material (BOM) Table

Type of Station	Type B (7 stations)	Type C (26stations)	Type D (11 stations)	Type E (4 stations)	Total	Remarks
No. of file/data base server	1	2	2	2	89	
File/Data base server configuration	Non clustered	Clustered	Clustered	Clustered		
No. of backup server	1	1	1	1	48	
Processor type For back up and data base server	Quad core Xeon 5320, 1.86 GHz processor	Quad core Xeon 5320, 1.86 GHz processor	Quad core Xeon 5320, 1.86 GHz processor	2xQuad core Xeon 5320, 1.86 GHz processor		
RAM capacity of file/data server	4GB	4GB	4GB	8GB		
Quantity of HB Adapter	2	4	4	6	$37 \times 4 + 7 \times 2 + 4 \times 6 = 186$	
No. of External storage system	1	1	1	1	48	
Cache (External Storage)						
a)Capacity per controller	1GB	2GB	2GB	2GB		
b)Expandability per controller	2GB	4GB	4GB	4GB		
Current Total Storage capacity of formatted disks	3TB	3TB	6TB	6TB		
a)Capacity with fibre disks	1TB	1TB	2TB	2TB		
b)Capacity with SATA/FATA disks	2TB	2TB	4TB	4TB		

Minimum Disks scalability in Storage System	50 disks	100 disks	100 disks	100 disks		
Quantity of SAN Switch (Storage System)	0	0	0	2	8	
No. of Ethernet switch	1	1	1	1	48	
No. of DAT drive	1	0	0	0	7	
No. of LTO	0	1	1	0	37	
No. of Tape library	0	0	0	1	4	
Quantity of KVM switch, keyboard, monitor and mouse	1	1	1	1	48	
Microsoft Window Server 2003 standard Edition with CAL	2	1	1	1	55	Total No. of approx. 600 work stations available at 48 stations are to be connected with this server. Required No. of CAL under MOLP excluded free CAL supplied with servers are to be provided if required as such quote for 300CAL.
Microsoft SQL Server 2005 Standard Server and CAL	1	0	0	0	7	Total No. of approx. 60 work stations available at 48 stations are to be connected with these server. Required No.

						of CAL under MOLP excluded free CAL supplied with servers are to be provided if required as such quote for 50CAL.
Microsoft Windows Server 2003 R2 Enterprise Edition (Cluster enable) with CAL	0	2	2	2	82	Total No. of approx. 550 work stations available at 48 stations are to be connected with these server. Required No. of CAL under MOLP excluded free CAL supplied with servers are to be provided if required as such quote for 250CAL.
Microsoft SQL server 2005 Enterprise server (cluster enable) and Client Access License for SQL	0	2	2	2	82	Total No. of approx. 550 work stations available at 48 stations are to be connected with these server. Required No. of CAL under MOLP excluded free CAL supplied with servers are to be provided if required as

						such quote for 250CAL.
Antivirus software for server protect	2	1	1	1	55	
Antivirus software for server protect (cluster enable)	0	2	2	2	82	
Backup software	1	1	1	1	48	
19" Rack	1	1	1	1	48	
5KVA online UPS	1	1	1	1	48	

**Type wise List of Stations
Annexure II**

Type B Stations

North Zone	East Zone	North East Zone	West Zone	South Zone
Jalandhar, Allahabad, Jodhpur, Rohtak, Bikaner, N.Ch.New Delhi.	---	---	Rewa	---
6 Stations	----		1 Station	---

Total 7 Stations

Type C Stations

North Zone	East Zone	North East Zone	West Zone	South Zone
Srinagar, Jammu, Shimla, Gorakhpur, Varanasi,	Cuttack, Kurseong, Ranchi	Shillong, Guwahati, Imphal, Kohima, Aizwal, Dibrugarh,	Panaji, Bhuj, Rajkot, Auranagabad, Vadorara, VBS Mumbai.	Vijaywada, Madurai, Port Blair, Dharwad, Tiruchirapalli, Calicut,
5 Stations	3 Stations	6 Stations	6 Stations	6 Stations

Total 26 Stations

Type D Stations

North Zone	East Zone	North East Zone	West Zone	South Zone
Lucknow, Jaipur,	Patna,		Ahmedabad, Pune, Indore, Nagpur Bhopal.	Bangalore, Hyderabad, Thiruvananthapuram
2 Stations	1 Station	---	5 Stations	3 Stations

Total 11 Stations

For Type E Hard Disc Based System

North Zone	East Zone	North East Zone	West Zone	South Zone
Delhi	Kolkata		Mumbai	Chennai
1 Station	1 Station	---	1 Station	1 Station

Total 4 Stations

This site is maintained by All India Radio.