

E-Mail

**PRASAR BHARTI**  
**(India's Public Service Broadcaster)**  
**Directorate general of Doordarshan**  
**Doordarshan Bhawan, Copernicus Marg**  
**New Delhi -110001.**

**File No. 19(2)2020-21E1 (P) TV**

10/09/2021

**Subject:** Draft Technical Specifications for LTO Based Archiving System.

The Draft specification of the upcoming tender is enclosed herewith to offer comments, if any by prospective bidders/Firms. Please also submit budgetary quote of the item on or before due date at e-mail ddpurchase401@yahoo.co.in or on following Address:

Assistant Engineer  
Room No. 403,  
Directorate General: Doordarshan,  
Doordarshan Bhawan, Copernicus Marg,  
New Delhi -110001 (India)  
Telephone: 011- **2311 4401**

**Specification For:** Draft Technical Specifications for LTO Based Archiving System.

**Specification no:** SD 01/2021 dated 03/09/2021

**Due Date to offer Comments:** 23.09.2021

Encl.: As above (12 Pages)

Prabhat Kumar Singh  
Assistant Engineer  
Doordarshan Directorate, Doordarshan

PRASAR BHARATI  
(India's Public Service Broadcaster)  
DIRECTORATE GENERAL: DOORDARSHAN  
Doordarshan Bhawan, Copernicus Marg,  
New Delhi - 110001.

**SPECIFICATIONS FOR LTO BASED ARCHIVING SYSTEM**

DD Specifications No.: SD 01/2021

Dated: 03-09-2021

**1. SCOPE**

The specifications aims at procurement of LTO based archiving system for archiving of audio/ video media content in Doordarshan.

**2. GENERAL:**

- (a) The offered system should be from a reputed manufacturer and the quoted model should be field proven and in use by leading broadcasters. The bidder should essentially submit the list of the broadcasters to whom the offered solution has been supplied. The tenders without the proper user list are liable to be rejected.
- (b) The offered solution should mainly comprise the following hardware and software components:-
  - (i) Baseband and File based Ingest, Browsing & Retrieval
  - (ii) Media Asset Management (MAM)
  - (iii) LTO Archive

An indicative system block diagram is as per **Appendix-I**.

- (c) The offered system should operate on 230V AC  $\pm 10\%$ , 50 Hz and temperature/humidity within 10°C to 40°C / 20% to 80% (no condensation).
- (d) The name of Doordarshan centre for which the equipment is being procured is available at **Appendix-II**.
- (e) The indicative bill of material **per centre** is given in **Appendix-III**. The bidder is required to offer the complete list of items/equipment, software, various modules & sub-modules and accessories etc. required to meet the specifications, in the following proforma:

Sr. No.	Description/Name of the item	Make	Model	Part No., if any	Qty.
1.	2.	3.	4.	5.	6.

*Specifications for LTO based Archiving system: SD 01/2021 dated 03-09-2021*

Page 1 of 12



### 3. ESSENTIAL FEATURES:

#### (I) Archiving System:

- (a) The system should support file based as well as baseband ingest.
- (b) It should support natively (without re-digitizing/ trans-coding) XDCAM HD422 {MPEG-2 long GOP (12 frames) 4:2:2@HL} 50Mbps with 8 bit quantization data in MXF OP1a file format for HD.
- (c) Any baseband HD content will be converted in XDCAM HD422 MXF OP1a file format.
- (d) Similarly, SD baseband content (Analog and Digital) will be converted to DVCPRO 50 (8-bit, 4:2:2) in MXF Op1a or MXF Op Atom file format or IMX 50 (8-bit, 4:2:2) in MXF Op1a file format. The necessary A/D converter cum embedder, if required, will be part of the offer for tape-based analogue content ingest.
- (e) VCRs/Decks are not part of the system to be offered. The required VCRs/Decks will be provided by Doordarshan.
- (f) The system should support multiple broadcast quality codecs and MXF wrappers so that the retrieved media files can directly be used with any Non-Linear Editing systems.
- (g) The offered system should work under a Media Asset Management (MAM) system. The MAM should be part of the system.
- (h) Media asset management should take care of ingest operations, metadata creation, browsing, search, proxy generation of file based as well as baseband ingest and end to end content management.
- (i) The system should allow for creation, viewing and modifying the metadata of all the media file to be archived.
- (j) Metadata should include at least title, ID, source, media number, date, Time Code etc. Metadata fields should be customizable. Metadata should be added automatically and also manually.
- (k) Indexing of clips should be systematic for easy searches. Unique IDs of LTO tape cartridges should also be one of the metadata fields.
- (l) The system should support Dublin Core Metadata structure. Metadata fields should be customizable as per user requirement. It should have a SQL or similar database management system.
- (m) It should provide powerful metadata management capability for effective cataloguing, search and retrieval.
- (n) In addition to manual metadata creation, the system should also allow embedded MXF metadata. It should be able to create & modify metadata fields as per user requirement.



- (o) It should allow export of above said metadata as XML file, so that it can be imported in any standard database as a single record for each clip.
- (p) It should carry out the functions like copy, move, delete, rename, check IDs and retrieve metadata of all the archived media file content.
- (q) Media asset management should create low resolution copy of file based as well as baseband ingest and thumbnail of all the media file to be archived. The low resolution copy should be frame accurate and time code synchronized with the high resolution content. The low resolution copy should have data rate up to 1 Mbps.
- (r) The MAM should be able to link the metadata, low resolution copy, full resolution Video file stored on a LTO tape media.
- (s) It should have browser-based access for search, locate and preview archived content from computers on a local network. The browser should invoke the proxy media player to view the low resolution content. It should be possible to resize the video display area. Workstation for browsing should therefore be part of the offered system.
- (t) It should facilitate content browsing and media transfer functionality across entire operation.
- (u) The system should be supplied with 18TB or more enterprise class online storage to store high resolution, low resolution audio-video content and metadata.
- (v) It should allow retrieval of media files archived on a LTO tape as \*.mxf file and in baseband as needed. It should allow partial retrieval of media files archived on a LTO tape.

## **(II) LTO Drive:**

- (a) The system should be equipped with an LTO-8 drive. The system should be expendable to have dual LTO drive in future for making duplicate copy of the content in LTO tapes.
- (b) It should read and write to LTO Ultrium 8 tape cartridges. It should be also able to read and write to LTO Ultrium 7 tape cartridges.
- (c) 10 Nos. of LTO Ultrium-8 data cartridge and 1 No. of LTO Ultrium cleaning cartridge should also be supplied along with the system.
- (d) Linear Tape-Open (LTO) Tape Drive should provide at least 12 TB of uncompressed storage per cartridge for A/V media files.
- (e) It should support Linear Tape File System (LTFS) so that users can quickly access, store or archive files on Ultrium 8 tape and transport files to another LTO Tape drive and from different locations in a very easy-to-use format.
- (f) It should support data encryption.
- (g) It should allow users to create, manage and archive content.

*Specifications for LTO based Archiving system: SD 01/2021 dated 03-09-2021*



- (h) It should support Microsoft Windows or UNIX operating systems.
- (i) It should support an uncompressed data transfer rate of 300 MBps with 6 Gbps SAS interface connectivity. It should therefore be equipped with 6 Gbps SAS interface.
- (j) It should have Ethernet port for network integration.
- (k) It should provide storage of digital assets for the long term.
- (l) It should enable users to quickly locate and update information with file-level access to tape data.

#### 4. Technical Specifications:

##### (A) Workstation/ Server for Archiving

The system should be capable of performing all the above features. An integrated hardware and software solution should be offered. Computer workstation from reputed manufacturers will only be acceptable. The offered system should meet the following minimum configuration:

S. No.	Description	Parameter Values
1.	Processor	Dual Intel Silver 4214 (2.2 GHz), 12 cores processors or similar or better
2.	Chipset	Intel C620/621/622 Chipset or similar
3.	Operating System	Windows 10 pro, 64 bit
4.	Database Management	SQL or similar
5.	System memory	4x16GB/ 8x8GB (64GB) DDR4-2666/2933 ECC REG RAM or better
6.	Graphics	NVIDIA Quadro P2200 or similar
7.	System HDD	512GB SATA 6Gb/s SSD
8.	Video Storage	3X6TB SATA 7200 Enterprise Class HDD
9.	Computer Monitor	1 No. of 23.8 or more inch TFT/LCD monitor having resolution 1920 x 1080 Pixels, colour resolution of 24-Bit (16.7M Colours), response time of 8ms. with HDMI/ Display Port
10.	Optical Drive	Blu-Ray R/W for software installation and writing on disk.
11.	Peripherals	Mouse and Keyboard, good quality speakers
12.	I/O Slots	PCIe, As required.
13.	Networking	Dual Port Gigabit NIC.

*Specifications for LTO based Archiving system: SD 01/2021 dated 03-09-2021*



14.	Interfaces	6 Gbps SAS, USB 2.0/3.0, PS/2, RJ-45, Audio Line-In, Audio Line-Out.
The offered system should support following Inputs/Outputs and Video & file formats:-		
14.	Video Input	SD/HD-SDI: 75Ω BNC A/D converter cum embedder, if required, need to be offered for tape-based analogue content ingest
15.	Video Output	SD/HD-SDI: 75Ω BNC
16.	File input/output	File based ingest and retrieval
17.	Video formats	HD: 1920x1080/50/I (16:9 aspect ratio) conforming to SMPTE 292M and ITU-R BT. 709 (CIF) (HD-SDI: 1.485 Gb/s) SD: 625 line (4:3/16:9 aspect ratio) conforming to SMPTE 259M and ITU-R BT 601 (SD SDI: 270 Mb/s).
18.	MXF formats	HD: Sony XDCAM HD422 {MPEG-2 long GOP (12 frames) 4:2:2@HL} 50Mbps with 8 bit quantization data in MXF OP1a file format SD: DVCPRO 50 (8-bit, 4:2:2), in MXF Op1a or MXF Op Atom file format or SD: IMX 50 (8-bit, 4:2:2) in MXF Op1a file format

**(B) Workstation for Browsing:**

S. No.	Description	Parameter Values
1.	Processor	Intel Core i7 11th generation processor or similar.
2.	System memory	8GB DDR4-3200
3.	Operating System	Windows 10 Pro 64
4.	System HDD	2TB SATA 7200 rpm 6Gb/s 3.5" HDDs.
5.	Graphics	On board Intel® UHD Graphics 750 or similar
6.	Networking	Gb Ethernet port
7.	Computer Monitor	19-24-inch FHD LED Backlit Monitor.

Specifications for LTO based Archiving system: SD 01/2021 dated 03-09-2021



8.	Peripherals	Optical 3-Button Mouse, Key Board, speakers etc.
----	-------------	--------------------------------------------------

**(C) LTO Drive:**

S. No.	Description	Parameter Values
1.	Tape drive type	LTO Ultrium 8
2.	Physical capacity	12 TB native
3.	Data transfer rate	Up to 300 MBps native
4.	Media Type	Read and write: LTO Ultrium 8 • 12 TB data cartridge • 12 TB WORM cartridge LTO Ultrium 7 • 6 TB data cartridge • 6 TB WORM cartridge LTO Ultrium cleaning cartridge
5.	Networking	Gigabit Ethernet
6.	Interfaces	6 Gbps SAS
7.	Power Requirements	230 V ac, 50 Hz

**5. COMPLETENESS OF SYSTEM & COMPLEMENT OF EQUIPMENT:**

- Completeness of the system is the responsibility of the bidder.
- The successful bidder will be solely responsible for operationalization of the system to the satisfaction of Doordarshan as per the specifications.
- In order to ensure the completeness of the system, any additional equipment/accessories which bidder feels necessary to complete the configuration should also be quoted. However, in such case they should provide proper justification for the additional equipment required. These items, if any, must be listed in the offered BOM.
- If the bidder feels that the system required in the specifications may require additional features for better functionality, the bidder may quote such items as an optional item and provide full justification to decide its utility.

**6. SOFTWARE:**

- The licensed version of all software including Operating System, application software etc. are required to be supplied in original media. **These software should be licensed in the name of Doordarshan with perpetual validity.**

*Specifications for LTO based Archiving system: SD 01/2021 dated 03-09-2021*



- (b) The bidder will provide up-gradation of all the offered software free of charge during the guarantee period. **The bidder will be required to give undertaking to this effect along with the bid.**

## 7. COMPLIANCE:

- (a) **A point by point full compliance statement in respect to all the parameters related to the concerned equipment/item(s) laid down in the specifications from the respective principal manufacturers is to be enclosed along with the offer in the format given below. Mere signature on the copy of DD specifications shall not be accepted as a compliance statement.**

**The figures so mentioned should be supported by record of these in the technical literature enclosed with the tender and reference to the page number of enclosed literature for all features and technical specifications should be mentioned in the relevant column. Offers without the compliance statement or with incomplete compliance statement will liable to be rejected with the sole responsibility of the bidder. Any deviation from the specification detailed in the compliance statement is to be highlighted separately.**

Sr. No of DD specs.	DD specs.	Compliance (Yes/No)	Performance Fig. of equipment Offered.	Reference to the Page Number of enclosed literature	Deviations, in case of non-compliance	Optional items if any reqd. to make the sys. Compliant to DD specs.	Features in the offered Product which exceeds DD specs.
1	2	3	4	5	6	7	8

- (b) **A separate point by point compliance statement duly signed by the bidder in respect of all the points laid down in the specifications for all the equipment/item(s) should also be submitted along with the bid by the bidder in the above mentioned proforma.**
- (c) **In addition to above, Authorisation from respective OEMs of the system should be enclosed along with the bid.**

## 8. TECHNICAL LITERATURE:

One set of technical manuals/brochures for all the equipment are required to be provided along with the tender to facilitate the technical evaluation, otherwise the tender is liable to be ignored. The successful bidder will have to supply a set of technical, user and installation manuals with respect to each of the equipment.

## 9. DEMONSTRATION:

*Specifications for LTO based Archiving system: SD 01/2021 dated 03-09-2021*



If necessary, the bidder may be asked for demonstration of the offered system as part of the technical evaluation. In such case the bidder will have to make suitable arrangement for the demonstration of the offered system at Doordarshan Bhawan, New Delhi, on notice of 15 days. Accordingly the bidder should be in readiness for demonstration.

#### **10. GUARANTEE:**

- a) The complete system including all items/equipment should be guaranteed for three years of trouble free operation from the date of receipt of final accepted consignment at respective consignee's premises. In case of equipment failure including software and hardware within this period, the same shall be rectified or replaced free of cost to Doordarshan.
- b) After sales service support for additional 2 (two) years for repairs/maintenance of the offered system after the completion of guarantee/warranty period should also be provided. **The bidder will be required to give undertaking to this effect along with the bid.**
- c) The guarantee should cover all hardware, software and modules of the complete system.

#### **11. DELIVERY PERIOD:** 3 months.

#### **12. TRAINING:**

The bidder has to arrange 5 working days comprehensive Operation & maintenance training by the OEM or their certified trainer(s) at the site. The bidder has to provide the comprehensive training material in the form of hard copies as well as soft copies to the trainees during the training session.

#### **13. INSPECTION:**

The equipment shall be subjected to inspection by Doordarshan officials at New Delhi.

#### **14. ENCLOSURES:**

The bidder must necessarily upload the following documents along with the technical bid:

- a) An undertaking as required vide clause no. 6(b) & 10(b).
- b) Compliance statement with respect to all the points of the specifications duly signed by the OEM should be submitted for all the equipment/item(s) in the proforma mentioned in clause no. 7(a).
- c) A separate point by point compliance statement duly signed by the bidder in respect of all the points laid down in the specifications for



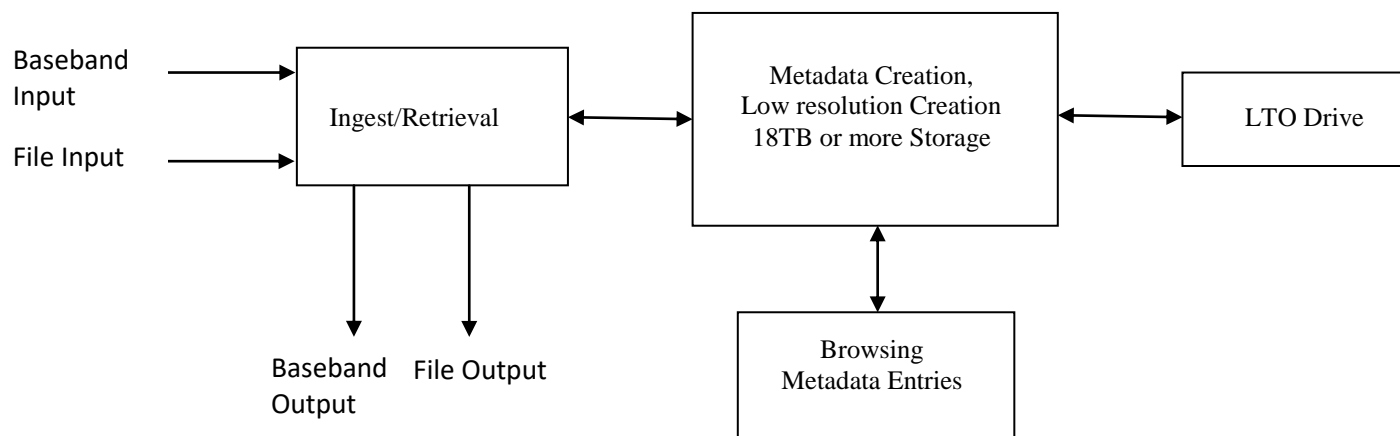
all the equipment/item(s) in the proforma mentioned in clause no. 7(b).

- d) Authorisations from OEMs as mentioned in clause no. 7(c).
- e) Technical manuals/detailed technical literature/catalogues for all the offered products for substantiating the model no. and technical specifications.
- f) Model specific user list of the offered product(s).
- g) Any other document mentioned elsewhere in the tender document.

**The tender is liable to be rejected in the absence of the above enclosures with the sole responsibility of the bidder.**

\*\*\*\*\*



**Appendix- I****Indicative Block Diagram of LTO Based Archiving System**

**Appendix- II****Doordarshan centre for which the equipment is being procured**

<b>Sr. No.</b>	<b>Zone</b>	<b>Name of the DD Centre</b>	<b>Qty.</b>
1	North Zone	Doordarshan Kendra, Dehradun	1 Lot
2	East Zone	Doordarshan Kendra, Ranchi	1 Lot
3	West Zone	Doordarshan Kendra, Raipur	1 Lot



**Appendix- III****Indicative Bill of Material (BoM)/centre**

<b>Sr. No.</b>	<b>Description of equipment/item</b>	<b>Qty.</b>
1.	Required Hardware and Software for Archiving System consisting of MAM & Database management software, Baseband & file based ingest and retrieval facility, 18TB or more enterprise class storage etc.	1 Set
2.	A/D converter cum embedder (if required, for analog content ingest).	1 Lot
3.	LTO Ultrium-8 Tape Drive.	1 Set
4.	LTO Ultrium-8 data cartridge.	10 Nos.
5.	LTO Ultrium cleaning cartridge.	1 No.
6.	Browsing PC with keyboard, mouse and 19-24 inch monitor.	1 Set
7.	Any other hardware and software required to make the system fully functional.	1 Set
8.	5 working days comprehensive Operation & maintenance training by the OEM or their certified trainer(s) at the site.	1 Job
9.	User manual/operational manuals etc.	1 Set

\*\*\*\*\*

