

**COMMENTS ON TRAI CONSULTATION PAPER ON
EMPANELMENT OF AUDITORS FOR DIGITAL ADDRESSABLE SYSTEMS**

Lt Col VC Khare (Retd.) Cable TV industry Observer

Introduction

1. DAS (Digital Addressable Systems) is a term mainly related to Cable TV networks, inclusive of HITS. through its Amendment 2011, but generally applicable to DTH Services too.

2. AUDIT is a term generally applied to accounting documentation, in common parlance. This term is not used for technical functioning excellence where PERFORMANCE certification is popularly used.

3. In the context of CATV networks, this 'audit' connotation originated from TRAI Regulation No 4 of 2009, wherein PAY TV Broadcasters were not responsive to Headend Service Providers(HSP) wanting to introduce **Voluntary CAS**. One popular excuse was that content provider is not satisfied with Headend Configuration. Provision was, therefore, made that if a HSP makes a request for provision of PAY TV Content (implying signing of agreement and issuing an integrated receiver cum decoder) and the Broadcaster declines such request in writing, then the HSP could get the Headend checked by BECIL (Broadcast Engineering Consultants India Limited), a public sector undertaking under MIB, and that such an opinion of BECIL would be treated as FINAL (i.e. nullifying/over-ruling the excuse from the Broadcasters). In this context the following need to be noted :-

(a) Cable TV networks, in India, are largely uni-directional and have evolved around wireline netcasting(Hybrid Fibre Coaxial Cable i.e. HFC) of TV content in analog mode in the 47-862 MHz RF spectrum . In this mode each TV program occupied one RF Channel (7 or 8 MHz wide) making a maximum total of 106 channels in the RF spectrum in use. In digital mode more than one program can be compressed in the space of each RF channel (i.e. multiplexing). Depending upon degree of compression and multiplexing, 2 to 24 digitized programs can be compressed in each RF CATV channel. Thus the program transportation capacity can be enhanced many fold. (DAS act amendment apparently legislated to enhance eye-ball reach for broadcasters granted downlinking facilities by MIB and income from fee collected therefrom. DAS as implemented has hardly benefitted the subscriber).

(b) But, digitized programs transportation necessitates insertion of an interface called SET TOP BOX (STB) to select a program for viewing and its conversion from digital to analog format for display on domestic TV receivers. Such devices are installed at viewer's cost. And success of DAS has been reckoned, by the task force/MIB, only from number of STBs issued to Cable Operator for installation.

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- (c) PAY TV Broadcasters, primarily, want payments for content. The subscriber resists outgo on content subscription for TV content delivery particularly when the basis for pricing is not disclosed, and hence remains arbitrary and monopolistic.
- (d) DAS amendment was legislated in 2011 amending Cable TV Act 1995 to provide for addressability(i.e. facility to enable or disable viewing of programs selectively and remotely from the Headend). With viewers being delivered several programs from a common headend, provision was made for the subscriber to select programs to be watched, intimate the same to HSP through an application form so that the addressable STB installed at the subscriber premises could be programmed to enable viewing of chosen programs only and be billed for the same. This facility is termed as SMS(Subscriber Management System). Further content is also encrypted to prevent piracy. STB, therefore, also decrypts the encrypted programs authorized for viewing by each STB.
- (e) This necessitated the requirement of checking the capability of the installed hardware architecture at the Headend for (i) technical conformity by way of netcasting capability, (ii) business documentation for billing related information, including but NOT limited to tax realizations (iii) appropriations/remissions of revenue between Broadcaster, Cable Operators, Revenue authorities and the remainder with HSP, (iv) conformity of performance parameters at the subscriber end from the point of view ofr DAS as legislated.
- (f) Starting with TRAI Regulation No 4 of 2009, No 9, 12 and 13 of 2012 and now of 2017, BECIL is the only nominated agency for Audit of installed DAS systems to the satisfaction of PAY TV Broadcasters and in turn the adjudicating authorities. Such audits were requisitioned by HSPs and audit fee/charges remitted by them. Cases of Broadcasters requisitioning BECIL on payment for audit of Headends are not known.
- (g) For any purposeful audit, first requirement is a compliance statement document of the system, by the operator of the facility, to be made available to the auditors to refer and record evidence of compliance, second requirement is knowledge (academic/professional) and experience of personnel conducting audits . BECIL in their staffing have staff experienced in studios and sound systems engineering and un-encrypted radio transmission systems such as FM radio broadcasts etc. As far as

Television content casting is considered none of their staff is reportedly experienced in design, installation testing and commissioning of addressable systems. So is the

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case for wireline networks(long hauls as well as drops). Hence to a common man it would only appear that BECIL, perhaps, was nominated being SARKARI.

(h) The paradox, also, is that Broadcast Engineering, in general, and wireline broadcasting, in particular, is not taught in the Indian academia.

(i) Further, even if report formats are drafted and standardized, how will the counseling to rectify the flaws be practiced unless auditor is experienced in establishing such headends ? *(Initially when audit of headends was started in BECIL counseling on conformity and compliance too were a part of fee charged because some one, experienced in all aspects of CATV networking, was available to advise and tutor corrections. Later the counseling aspect diminished for want of experienced personnel. Every headend differs in layout and performance. Counselling on rectifications require experience).*

(j) Even when Broadcasters send their team of their inspectors, prior to issue of IRDs, for PAY content, the team comprises of IT personnel seeking verification on (i) Server access security (ii) drills for creation of a virtual subscriber, (iii) activation and deactivation of set top boxes, (iv) fingerprinting and tracing of box location for piracy detection agencies and disabling of piracy suspected STBs. They do not exhibit confidence in checking headend layouts, test points and SMS checking consoles or commenting upon these aspects.*(Does any one wonder that out of 6000 headends reported in 2011, till date less than 1200 have been registered ? Does it also not suggest that DAS implementation as declared complete by MIB is not correct ?)*

4. In such a prevailing environment, finding and empaneling auditors for DAS Headends cannot be based upon academic/vocational accreditation prescribed as qualitative requirement. Insistence shall have to be placed upon applicants submitting details on experience of auditors on their panel of having designed, installed, tested and commissioned DAS Headends and distribution networks. Exposure to association with training activities and drafting standards would be desirable add-ons.

5. Such persons are very few in the country. Hence arrangements shall have to be made for TRAI, or MIB, to train Headend And Cable TV network auditors with help from SCTE India

(Society for Cable Telecommunication Engineers), BES India(Broadcast Engineering Society) or IETE like institutions, when so customized. Certificates of training and valid membership of such institutions shall have to be mandated. TRAI shall have to register such

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auditors, individually, who can, in turn, audit headends individually or through professional firms, which may spring up.

6. So! now answers to issues on consultation.

Answers to issues for consultation

Q1. Do you agree with the scope of technical audit and subscription audit proposed in the consultation paper? Give your suggestions along with justification?

No ! DAS legislation itself, and its implementation by MIB task force itself, though declared 100% successful, is a sad commentary on DAS implementation . In the hindsight it appears that DAS amendment, to Cable Act, was got legislated to benefit Broadcasters only by way of enhancing the program carriage capacity of Indian Cable TV networks as operating. The purpose, as legislated, stands defeated because this initiative has not benefitted the subscriber who has ended up paying for an STB not necessarily conforming to Indian Standards, has not been enabled choice of programs and issue of itemized bills for choice exercised. Unless DAS is implemented as legislated and so perceived by the subscriber this audit is meaningless.

The scope for technical audit should include (a) examination of headend architecture itself as applied and registered with MIB (b) installation and commissioning certificate (c) adequacy of security of CAS and SMS servers (d) examination of application and data base servers in terms of RAID configuration and calculations (e) MIS generation by the SMS (f) data base as per subscriber application form (g) Subscriber ID paired with STB Ser No and its VC (h) egress transport stream at exit from Headend (i) trunk wireline architecture with RoW (j) last mile network architecture with RoW (k) EoL(End of Line) parameters conformity at Subscriber end and knowledge of subscriber on DAS. Samples of information as printed from servers should form part of audit report. For business accounting information, that needs to be commented/attached, (a) No of Subscriber Forms entered in SMS (b) No of STBs procured (c) No of STBs sent out of HSP warehouse.(d) No of STBs installed and visible in SMS (e) Reconciliation between (c) and (d), (e) format of itemized billing (f) generation of monthly billing in terms of amounts for network capacity charges, PAY TV 'a-la-carte' and bouquets, taxes charged and remitted, appropriations to broadcaster and cable operators as per ICOs

Q2. Is there a need to have separate panel of auditors for conducting technical audit and subscription audit?

Yes ! because background knowledge and experience differ. It may be possible for technical auditor to cover business auditing but very unlikely that business auditor will be able to check networking conformity.

Q3: Should there be a different list of empanelment of auditors based on the model/make of CAS and SMS installed by distributor? Will it be feasible to operate such panel of auditors?

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No !

The headend architecture and layout should be audit friendly. Auditors are not concerned with design/architecture of Set Top Box. They should only seek compliance of conformity to Indian Standards and attach evidence to report. Similar is the case for CAS and SMS. For CAS, vendor must certify every year that system has not been hacked. SMS should be checked for functionality compliance and auditor should attach screen shots of pages accessible in the SMS from Customer Care Desk. Such audits, if done properly will also reflect on quality of previous audits by Broadcasters as well as by BECIL.

Q4: What should be various parameters forming eligibility criteria for seeking proposals from independent auditors (independent from service providers) for empanelment? How would it ensure that such auditors have knowledge of different CAS and SMS systems installed in Indian TV sector?

(a) Personal experience of design, installation testing and commissioning of DAS compliant headends, if any, and verifiable from such clients (b) Educational Background and skilling certification from SCTE, BES or IETE like institutions.(c) Knowledge of TRAI regulations and Indian Standards (d) Documentation acumen for reporting (e) Counselling and overseeing rectification of audited infirmities.

Auditors need not have knowledge of CAS and SMS. The specifications are indicated in TRAI regulations and have to be incorporated in HSPs manual of practice for DAS headend to be presented to auditor.

Q5: Should the minimum period of experience in conducting the audit be made a deciding parameter in terms of years or minimum number of audits for empanelment of auditor?

No ! because DAS legislation is only six years old and its delayed and flawed implementation by MIB mitigate this requirement.

Q6: Any suggestions on type of documents in support of eligibility and experience?

(a)List of designed, installed tested and commissioned DAS Headends, if any (b) Technical papers on DAS installations published if any, (c) Professional Bodies Memberships from SCTE, BES or IETE if any (d) Acceptance by TRAI.

Q7: What should be the period of empanelment of auditors?

3 years against a registration fee and renewals thereafter.

Q8: What methodology to decide fee of the auditor would best suit the broadcasting sector? and Why?

Which broadcasting sector are we talking about? Cable TV and HITS are NOT treated as broadcast by MIB. Satellitescasts and Terrestrial wireless telecasts only are considered broadcasts and are outside the scope of this consultation. In any case TRAI has not been able to extract the basis of pricing for content from PAY TV Broadcasters till date.

Fee for auditing depends upon (a) Time needed to understand the facility (b) examination of facility as explained and facilitating existence of designed test points (c) Documents

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Lt Col VC Khare (Retd) Cable TV industry Observer revealing distribution network signal levels and location of test points on a strand diagram (d) Designed EoL and Commissioning EoL as revealed from STB commissioning reports.

(e) time for rectification, if included in the scope (f) extent of expenses for travel, boarding and lodging at audit site (g) reasonable remuneration for the audit team to remain in business and (h) relief on taxation.

Q9: How the optimum performance of the auditors can be ensured including maximum permissible time to complete audit? Give your suggestions with justification.

This depends upon preparation of the auditee and competence of Chief Technical Officer of the HSP. From my experience 3-4 days is maximum time required provided the auditor issues a road map and methodology statement to the auditee well in advance to conduct the audit. A good practice to suggest internal audit by the auditee themselves and keeping the internal audit report handy to be ratified by the external auditor.

Q10: What can be the parameters to benchmark performance of the Auditor? What actions can be taken if the performance of an Auditor is below the benchmark?

DAS compliance in totality at the start and continued conformity are the spirit of the audit. Hence a check sheet needs to be compiled for checking emergence of apparent compliance from the audit report and random checks by TRAI.

Q11: Should there be different time period for completion of audit work for different category of the distributors? If yes what should be the time limits for different category of distributors? If no what should be that time period which is same for all categories of distributors?

Broadly there are only three categories of Distributors (a) National level Distributors/HSPs holding MIB registration with corporatized management and academically qualified engineers and management qualified managers (b) State/regional level HSPs, comparatively less organized holding MIB registration and (c) locality specific only HSPs, who are in business only on money power and area dominance, with hardly any managerial and technical skills but holding MIB registration. If internal pre-audits have been conducted, time period would be 3 to 4 days for (a) 6 days for (b) and 15 days for (c).

Q12: Are the conditions cited sufficient for de-empanelling an auditor? If not what should be the conditions for de-empanelling the auditor? In view of the fact that there are very few persons ready to be empanelled, the possibility of inefficient auditors getting

empanelled cannot be ruled out. Such personnel can, for petty gains, can dilute infirmities in the report which may be challenged by Broadcasters or be prejudiced against an auditee to unnecessarily tarnish the evidence on performance when represented by the auditee. Hence three more conditions are recommended to be added. FIRST – Reported dilution in distributor’s configuration infirmities to meet regulator’s parameters and SECOND – Delinquency in reporting subscriber data base/volume and business corruptibility and THIRD report on awareness of staff on reported piracy violations.

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Q13: Comments on re-empanelment if any? NIL

Q14: Any suggestion relating to the audit framework.

A technical audit is an evidence gathering process on competence, compliance and conformity to regulations, standards and statutes. Audit evidence is used to evaluate how well performance criteria are being met. Therefore, technical audits must be objective, impartial, and independent, and the audit process must be both systematic and documented.

Technical auditor is expected to have hands on experience also on designing and commissioning a DAS headend known to be functioning in the country. Further, they should be able to counsel the auditee in overcoming infirmities brought out in the report even it falls under additional scope of work.

Technical audit reports must, in order to reflect efficacy of CTO, bring out the following:-

- (a) Headend is configured, as checked from Technical Performance Statement seeking RFQ (Request for Quote) as recorded in ‘as built document’ synched with RFQ.
- (b) The procured technical equipment is technically suitable for the purpose and is configured to meet performance requirements and is futuristic for upgrades.
- (c) Headend Operation Instruction is compiled and available for checking conformity.
- (d) The technical operations are being performed as per regulations enshrined in Manual of Practice for the Headend, network and subscriber premises.
- (e) Sound framework of controls (Headend Monitoring System and Network Monitoring System) is in place to sufficiently mitigate the potential risks dilution of practices.
- (f) Authority and responsibility for operating activities are assigned properly. Information system is adequate to provide assurance of operating activities being performed properly.

(g) Network coverage strand diagram showing core and edge network span to arrive at radius of operation of network with number of subscribers marked in each edge. Further NMS (Network Management System) should plot each subscriber in the edge network with EoL parameters fed from STB commissioning reports. Random xchecks can help authentication

(h) Deficiencies in compliance clearly and boldly.

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Conclusion

7. When audit is undertaken, it must clearly state the scope by way of 'Terms of Reference' whether the scope is total scrutiny of DAS implementation, as legislated initially (particularly at Subscriber end in terms of DAS awareness, choice of programs, itemized billing, receipts for payments and experience with customer care), or limited checks for safeguarding interests of PAY TV Broadcasters, and continued compliance subsequently every year. This paper must also lead to development in grooming of technical auditors for Systems since the regulations envisage annual audits of about 6000 headends.

8. Audit report should be so drafted that it is understood by non-technical adjudicators such as TDSAT. Technical conformities should be evident in forms filled and sketches attached.

9. Auditors must have good written expression, devoid of jargons or circumlocution.

10. Last but not the least, it must be realized that technical personnel in CATV networking lack accredited academic qualifications (no formal training is being imparted in India for Wireline Broadcast Engineering) to indulge in quality technical writing, expected at their compensation and positional level. They are often shy of documentation. Audits are post commissioning recordings of evidence of conformity and may run into shoddy reporting due to poor quality of reference documents and voids in experience and power of expression quantum of auditors.

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