



**STAR INDIA PVT. LTD. RESPONSE TO TRAI CONSULTATION PAPER ON
THE TELECOMMUNICATION (BROADCASTING AND CABLE) SERVICES DIGITAL
ADDRESSABLE SYSTEMS AUDIT MANUAL (Dated 29th Mar 2019)**

We thank the Authority for the opportunity to participate on this consultation process on empanelment of auditors for digital addressable systems (DAS). We hope that the inputs given by us shall be of help and assistance to the Authority to create an enabling regulatory digital addressable system audit framework for the broadcast sector.

Below are our responses to the questions raised in the consultation paper on the Audit Manual.

Q.1. Whether it should be mandatory for every DPO to notify the broadcasters (whose channels are being carried by the DPO) for every change made in the addressable system (CAS, SMS and other related systems¹)?

A.1. It should be mandatory for every DPO to report to the broadcasters all changes made to their addressable systems as these may have commercial implications and to confirm continued technical compliance with the requirements of schedule III of interconnection regulations, 2017. In addition, in the event of technical changes made to the systems all such changes should also be notified to TRAI and MIB.

Mentioned below is an illustrative, but non-exhaustive, list of changes in the addressable system:

- a. Addition, deletion, migration, upgrade, scheduled maintenance (having implications on channel(s) encryption), down time of systems, upgrade of IP address, change in configuration of SMS / CAS / other relevant systems, etc., as reported in interconnect agreement
- b. Changes in package master in CAS and SMS
- c. Location of CAS and SMS servers
- d. Addition or deletion of headends, mini headends, stand-by headends, etc.
- e. Addition or deletion of STB makes and models, including any built-in modules in display devices such as, TVs, laptops, hybrid STBs, etc.
- f. Any other change with a potential for having commercial implication(s) or which may affect technical compliance of the DAS system

Star India Pvt. Ltd.

Registered Office

Star House, Urmi Estate,
95 Ganpatrao Kadam Marg, Lower Parel (West),
Mumbai 400 013, India.
Telephone : + 91 22 6630 5555
Fax : + 91 22 6630 5050
Website : www.startv.com
CIN : U72300MH1994PTC076485

Address for Correspondence

Star Centre Plot No. 77,
Sector 32, Gurugram. Haryana - 122 001.
Telephone: +91 124 665 4400
Fax: +91 124 238 2681
Fax For Legal & Regulatory +91 124 2382688
Website: www.startv.com



Q.2. Whether the Laptop is to be necessarily provided by the Auditee DPO or the Audit Agency may also provide the Laptop? Please provide reasons for your comment.

A.2. It is preferred that auditors be allowed to use their own laptops for audit purposes. This will ensure that the auditors have end-to-end accountability for the hardware, software and related analysis. In addition, this will enable the auditors to use requisite software packages, including their proprietary applications and analytical tools, to conduct the audit. This is critical for effective analysis of data and logs. Furthermore, data analytics softwares typically are expensive and installing them on DPO provided laptops will entail additional license fee resulting in avoidable increase in audit cost. In addition, such softwares may be proprietary to the audit firm and as per their firm's policy may not be possible to install it on DPO provided Laptops.

In case the DPOs provide laptop(s), these should meet requirements as specified in Annexure 1 of the Audit Manual. The provided laptop(s) should only have the auditor specified operating system and the software packages required by the auditor should be installed by the DPO. Auditors must verify that laptops provided by DPO do not contain any malware, virus, etc., that may interfere with the audit work. The laptop(s) should not allow copying through backup utilities or through backdoor access to the system. The access to auditors' workings, work-product and audit reports should be strictly limited only to the personnel authorized by the auditors.

Q.3. Whether the Configuration of Laptop vide Annexure 1 is suitable? If not, please provide alternate configuration with reasons thereof.

A.3. Configuration specified in Annexure 1 is adequate currently. Due to continued advancement of computing hardware and software technologies, a periodic review of specifications should be conducted atleast on an annual basis to ensure that data analysis is taking advantage of latest in data analytics science. Due to the need for analysing large volumes of transaction data and logs, in addition to Microsoft Office software, packages such as, SAS, SPSS, ACL, IDEA, Arbutus, etc., may be required for data analysis. Furthermore, the system should have the capability to run R, Python, SQL, etc., to facilitate data extraction and analysis.

Q.4. Do you agree with the provisions regarding seeking of TS recording and ground sample information from IBF/ NBA for verification/ checking by the Auditor?

Star India Pvt. Ltd.

Registered Office

Star House, Urmi Estate,
95 Ganpatrao Kadam Marg, Lower Parel (West),
Mumbai 400 013, India.
Telephone : + 91 22 6630 5555
Fax : + 91 22 6630 5050
Website : www.startv.com
CIN : U72300MH1994PTC076485

Address for Correspondence

Star Centre Plot No. 77,
Sector 32, Gurugram. Haryana - 122 001.
Telephone: +91 124 665 4400
Fax: +91 124 238 2681
Fax For Legal & Regulatory +91 124 2382688
Website: www.startv.com



A.4. The objective of the audit is to verify that the subscriber information is properly reported by the DPO as it is the main driver of the broadcasters' revenues. Since all channels signals need to be addressable, the deployed CAS systems ensure that no subscriber receives unauthorized signals. Moreover, to be in compliance with the extant interconnection regulations, it is mandatory for all the signals to be encrypted.

The accuracy of subscriber count is directly related to all instances and types of deployed CAS and on the encryption status of the channels.

The TS recorder captures technical parameters of digital streams distributed by the DPOs. This information provides insights into number of CAS deployed & encryption status of channels. The CAS system controls availability of channels at subscribers' level. Since the broadcasters' revenue is derived from number of subscribers and number of channels availed by such subscribers, it is imperative to have complete view of every instances of CAS deployed by the DPO.

Since TS recordings provide a mechanism to compare CAS systems declared by the DPO against actual CAS systems detected in the network, such comparison will ensure complete inventory of CAS systems deployed by the DPO is duly verified.

The ground samples, when collected on a random basis and in statistically adequate numbers, provide mechanism for statistical assessment of channels availed by the subscribers. All audits rely on sample verification to get comfort about accuracy of systems, databases, logs, reports, etc.

The ground samples so collected when tested by the auditors against the DPO system logs and databases extracted during audit provides confirmation that all samples are present in DPOs SMS, CAS and other related systems. Matching of samples with the system logs help validate completeness of subscribers' data.

Because of aforesaid reasons it is imperative both TS recordings and ground samples are made part of any audit for it to have credibility.

Q.5. Do you agree that Data Dump may be cross-checked with weekly data of sample weeks basis? If yes, do you agree with checking of random 20% sample weeks? Please support your comments with justification and statistical information

A.5. With the advent of NTO, the subscribers may change the selected channels based on their prevailing needs. The choice of selected channels may also get impacted by seasonal preferences (e.g., exam season, harvest season, festivals, etc.). The use of "sample weeks"

Star India Pvt. Ltd.

Registered Office

Star House, Urmi Estate,
95 Ganpatrao Kadam Marg, Lower Parel (West),
Mumbai 400 013, India.
Telephone : + 91 22 6630 5555
Fax : + 91 22 6630 5050
Website : www.startv.com
CIN : U72300MH1994PTC076485

Address for Correspondence

Star Centre Plot No. 77,
Sector 32, Gurugram. Haryana - 122 001.
Telephone: +91 124 665 4400
Fax: +91 124 238 2681
Fax For Legal & Regulatory +91 124 2382688
Website: www.startv.com



concept will essentially mean that the subscriber base impacted by such variations may not be captured by the auditor resulting in incomplete or inconclusive findings.

To ensure that the subscriber base is getting properly verified and revenue assurance objectives are met, it is essential to audit the entire dataset for the period under audit.

More detailed justification for requiring complete dataset for audit is noted below:

Commercial Justification:

- a. Conducting an audit on random 20% sample weeks will not achieve the intended objective of revenue assurance since for the remaining weeks auditor won't be able to ascertain whether count reported by DPO is complete, true and correct. Any discrepancy in audit findings will essentially trigger additional substantial validations and testing for the entire period under audit.
- b. Technically it is relatively easy to activate/deactivate, encrypt/decrypt channels in SMS and CAS. This may change the count of active subscribers. Taking all weeks for audit will act as a deterrent by tightening the audit process and remove the likelihood of data manipulation.
- c. By selecting only 20% weeks there is a risk of selecting consecutive weeks and missing out large portion of the year which will not undergo scrutiny by auditors. This will significantly impair the efficacy of the audit and reduce the intended purpose of validation of subscriber count for the period of audit and hence will not serve the purpose of revenue assurance.

Technical Justification:

- a. To create reference point for audit, the creation of transaction history from the system logs for the entire period under audit is essential. This is done through step-by-step reverse calculation starting from the oldest data by building up to the current numbers. By extracting logs only for random 20% sample weeks, the auditor cannot recreate subscriber count for the weeks under audit testing.
- b. As the aforesaid approach requires information for the entire period, the time taken to conduct audit on random 20% sample weeks may be more or similar as additional steps will be required to establish reference points for sample based audit. It is noteworthy that since the entire exercise is to be done in computerized environment, in any event time taken will not be a factor.

Star India Pvt. Ltd.

Registered Office

Star House, Urmi Estate,
95 Ganpatrao Kadam Marg, Lower Parel (West),
Mumbai 400 013, India.
Telephone : + 91 22 6630 5555
Fax : + 91 22 6630 5050
Website : www.startv.com
CIN : U72300MH1994PTC076485

Address for Correspondence

Star Centre Plot No. 77,
Sector 32, Gurugram, Haryana - 122 001.
Telephone: +91 124 665 4400
Fax: +91 124 238 2681
Fax For Legal & Regulatory +91 124 2382688
Website: www.startv.com



Past Experience:

- a. 100% of the subscribers' reports submitted by DPO to broadcasters relating to period under audit were audited with the primary objective to verify accuracy and correctness of subscribers count. Furthermore, past experience of ~7 years indicates that audit of 100% weeks was not raised as a concern as it did not cause any disruption in the operations of the DPO during audit

Q.6. Do you agree with the proposed Data extraction methodology? If not, suggest alternates with reasoning thereof.

A.6. Some sections need revision and are noted as under:

- a. Section 4.2 B II (3) word "month-end" to be replaced with "7th, 14th, 21st and 28th of the month" as reporting dates. This will make the Audit Manual language compatible with the currently prevailing regulation
- b. Section 4.2 B II (4) "...in case system does not allow such information, then DPO to provide an undertaking to this effect" – the regulation (Schedule III A 13 (vii)) requires that SMS should be able to provide at any desired time of the channels forming part of a bouquet / package. This is only possible if the system is capable of capturing service ID along with modification, discontinue date, if any. Moreover, with reference to CAS (Schedule III A 14), CAS should be able to independently generate, record, and maintain logs corresponding to each command executed. Thence, providing only an undertaking will not be in consonance with the regulation. This information is critical for an auditor to verify channel wise active subscribers count reported by the DPO
- c. Section 4.2 B III (b) superscript 12 (page 24) "data logs may be re-created using extraction tools..." – word "re-created" may be misconstrued and it is recommended that it be replaced with "restored" instead.

Q.7. Do you agree with verification and reporting of City-wise, State-wise and Head-end wise subscription report? Please provide supporting reasons/ information for your comment.

A.7. For completeness of reported subscriber data, it is imperative that the complete information pertaining to the subscribers is provided. City, state and head-end wise information is available in the SMS system and it would not cause any additional undue burden on the DPO. It will help the auditor to correlate the CAS, SMS and subscribers' data to confirm that the reported numbers are true and accurate.

Star India Pvt. Ltd.

Registered Office

Star House, Urmi Estate,
95 Ganpatrao Kadam Marg, Lower Parel (West),
Mumbai 400 013, India.
Telephone : + 91 22 6630 5555
Fax : + 91 22 6630 5050
Website : www.startv.com
CIN : U72300MH1994PTC076485

Address for Correspondence

Star Centre Plot No. 77,
Sector 32, Gurugram, Haryana - 122 001.
Telephone: +91 124 665 4400
Fax: +91 124 238 2681
Fax For Legal & Regulatory +91 124 2382688
Website: www.startv.com



Q.8. Do you agree with the tests and procedure provided for checking covert and overt fingerprinting? Provide your comments with reasons thereof?

A.8. Fingerprinting is most critical tool to detect source of piracy when a channel is re-distributed in an unauthorized manner by the DPO/LCO/subscribers from the STB. In addition to overt (visible) fingerprinting, covert (invisible) fingerprinting is also required as a detection tool in case the overt fingerprinting has been masked by the pirate. The tests and procedure provided in the Audit Manual are adequate to ensure effectiveness of fingerprinting requirement.

Q.9. Any other suggestion/ comments on the provisions or methodology proposed in the Audit Manual.

A.9. Below mentioned are other suggestions/ revisions to incorporate in the Audit Manual
Scheduling of Audits:

The Audit Manual is silent on the critical matter of scheduling of audits. Given the magnitude of the audit requirement for the entire DPO universe, the keystone for success of the audits depends upon proper scheduling. To achieve its objectives scheduling should be such that the entire universe is covered within the calendar year, no bunching up of audits should happen, the audits should be scheduled at random so that at no instance the auditee gets an opportunity to window dress, etc.

The Audit Manual needs to clearly lay down the process of scheduling of audits.

The scheduling may follow the following steps:

- a. It is proposed that the audits schedule be decided by either the TRAI or by broadcasters' bodies, such as IBF/NBA. Stratification of DPOs by subscriber base size – top 25, next 75, all others
- b. Random selection of DPOs to be audited from each of the above noted strata such that these are evenly distributed over the calendar year
- c. The auditee DPO to be informed not more than 15 days prior to the start of audit

Ground Sample:

- a. With reference to section 4.3.A(16)(k), which states, "Auditor to compare the STB/VC field samples, if provided from IBF/NBA. Auditor to compare this sample with VC and STB data extracted during the audit from CAS and SMS. All exceptions to be reported" – to avoid ambiguity, need to add that in the event of challenge audit, the STB/VC field samples will be provided by the broadcaster challenging the audit.

Star India Pvt. Ltd.

Registered Office

Star House, Urmi Estate,
 95 Ganpatrao Kadam Marg, Lower Parel (West),
 Mumbai 400 013, India.
 Telephone : + 91 22 6630 5555
 Fax : + 91 22 6630 5050
 Website : www.startv.com
 CIN : U72300MH1994PTC076485

Address for Correspondence

Star Centre Plot No. 77,
 Sector 32, Gurugram, Haryana - 122 001.
 Telephone: +91 124 665 4400
 Fax: +91 124 238 2681
 Fax For Legal & Regulatory +91 124 2382688
 Website: www.startv.com



- b. With reference to section 4.3.A(16)(k), superscript 17 (page 35) – limiting the sample size to 100 mentioned in the draft Audit Manual is inadequate. Below table indicates that statistically, for 95% confidence level and 5% confidence interval, the minimum sample size should atleast be as follows:

Subscribers Count	1-1000	1001-5000	5001-225000	> 225000
Sample Size Required	278	357	383	384

The sample size requirement should be changed from 100 to 400.

Omission of Reference to SMS:

Section 4.3.A (5) mentions “It shall not be possible to alter the data and logs recorded in the CAS and the SMS”

The audit steps (points (a) to (f)) noted in manual only refer to CAS. The reference to SMS has been inadvertently missed out. The same steps (a) to (f) should be repeated for SMS for sake of completeness and clarity.

Annexure 7 Requires Revision:

Annexure 7 table 1, 2, & 3 are obsolete and should be replaced with corresponding tables from Regulations 2017.

Clause 4.3.A.14: Omission of reference to JV’s SMS

To avoid ambiguity, the clause needs to include JVs as they are separate legal entities. They may be sharing infrastructure including SMS, CAS and other related systems with the Head-end of DPO under audit.

Clause 4.3.B.10: Superscript 19 pertaining to scroll messages

With reference to 4.3.B.10, superscript 19 needs to be removed since requirement of scroll of 120 characters is mandatory under regulation schedule III (C) 6. Compliance with this requirement is important to enable meaningful messages to be displayed on the screen.

Star India Pvt. Ltd.

Registered Office

Star House, Urmi Estate,
95 Ganpatrao Kadam Marg, Lower Parel (West),
Mumbai 400 013, India.
Telephone : + 91 22 6630 5555
Fax : + 91 22 6630 5050
Website : www.startv.com
CIN : U72300MH1994PTC076485

Address for Correspondence

Star Centre Plot No. 77,
Sector 32, Gurugram. Haryana - 122 001.
Telephone: +91 124 665 4400
Fax: +91 124 238 2681
Fax For Legal & Regulatory +91 124 2382688
Website: www.startv.com