



Telecom Regulatory Authority of India



Draft

**THE TELECOMMUNICATION (BROADCASTING AND CABLE)
SERVICES
INTERCONNECTION (ADDRESSABLE SYSTEMS) (FOURTH
AMENDMENT) REGULATIONS, 2022
(___ of 2022)**

9 September 2022

**Mahanagar Doorsanchar Bhavan,
Jawahar Lal Nehru Marg (Old Minto Road),
New Delhi – 110 002**

Written Comments on the Telecommunication (Broadcasting and Cable) Services Interconnection (Addressable Systems) (Fourth Amendment) Regulations, 2022 are invited from the stakeholders by 7 October 2022. Counter-comments, if any, may be submitted by 21 October 2022. Please support your comments with detailed reasons and justifications. Comments and counter-comments will be posted on TRAI's website www.trai.gov.in. The comments and counter-comments may be sent, preferably in electronic form, to **Sh. Anil Kumar Bhardwaj, Advisor (B&CS)**, Telecom Regulatory Authority of India, on the e-mail:- advbcs-2@traigov.in and jtadv-bcs@traigov.in. For any clarification/information, Sh. Anil Kumar Bhardwaj, Advisor (B&CS) may be contacted at Tel. No.: +91-11-23237922.

Contents

Chapter	Topic	Page No
Chapter 1	Background & Introduction	4
Chapter 2	The Telecommunication (Broadcasting and Cable) Services Interconnection (Addressable Systems) (Fourth Amendment) Regulations, 2022 (___ of 2022).	8

CHAPTER 1

BACKGROUND & INTRODUCTION

1.1 TRAI notified the Telecommunication (Broadcasting & Cable) Services Interconnection (Addressable System) Regulation, 2017 on 03.03.2017 [hereinafter referred to as “Interconnection Regulations”].

1.2 Regulation 15 of the Interconnection Regulations, as amended, inter-alia, reads as under:-

“15. Audit.— (1) Every distributor of television channels shall, once in a calendar year, cause audit of its subscriber management system, conditional access system and other related systems by an auditor to verify that the monthly subscription reports made available by the distributor to the broadcasters are complete, true and correct, and issue an audit report to this effect to each broadcaster with whom it has entered into an interconnection agreement:

Provided that the Authority may empanel auditors for the purpose of such audit and it shall be mandatory for every distributor of television channels to cause audit, under this sub-regulation, from M/s Broadcast Engineering Consultants India limited, or any of such empanelled auditors:

Provided further that any variation, due to audit, resulting in less than zero point five percent of the billed amount shall not require any revision of the invoices already issued and paid.

(1A) If any distributor fails to cause audit once in a calendar year of its subscriber management system, conditional access system and other related systems, as specified under sub-regulation (1), it shall, without prejudice to the terms and conditions of its license or permission or registration, or the Act or rules or regulations or order made or direction issued thereunder, be liable to pay, by way of financial disincentive, an amount of rupees one thousand per day for default up to thirty days beyond the due date and an additional amount of rupees two thousand per day in case the default continues beyond thirty days from the due date, as the Authority may, by order, direct:

Provided that the financial disincentive levied by the Authority under this sub-regulation shall in no case exceed rupees two lakhs:

Provided further that no order for payment of any amount by way of financial disincentive shall be made by the Authority unless the distributor, has been given a reasonable opportunity of representation against the contravention of the regulations observed by the Authority.

(2) In cases, where a broadcaster is not satisfied with the audit report received under sub-regulation (1) or, if in the opinion of a broadcaster the addressable system being used by the distributor does not meet requirements specified in the Schedule III, it shall be permissible to the broadcaster, after communicating the reasons in writing to the distributor, to audit the subscriber management system, conditional access system and other related systems of the distributor of television channels, not more than once in a calendar year:

Provided that the Authority may empanel auditors for the purpose of such audit and it shall be mandatory for every broadcaster to cause audit, under this sub-regulation, from M/s Broadcast Engineering Consultants India limited, or any of such empanelled auditors.

Provided further that if such audit reveals that additional amount is payable to the broadcaster, the distributor shall pay such amount, along with the interest at the rate specified by the broadcaster in the interconnection agreement, within ten days and if such amount including interest due for any period exceed the amount reported by the distributor to be due for such period by two percent or more, the distributor shall bear the audit expenses, and take necessary actions to avoid occurrence of such errors in the future:

Provided also that it shall be permissible to the broadcaster to disconnect signals of television channels, after giving written notice of three weeks to the distributor, if such audit reveals that the addressable system being used by the distributor does not meet the requirements specified in the Schedule III.

(3) Every distributor of television channels shall offer necessary assistance to auditors so that audits can be completed in a time bound manner."

- 1.3 The provisions of regulation 15 of the Interconnection Regulations mandate that every distributor of television channels shall, once in a calendar year, cause audit of its system by an empanelled auditor or BECIL to verify that the monthly subscription reports made available by the distributor to the broadcasters are complete, true and correct, and issue an audit report to this effect to each broadcaster with whom it has entered into an interconnection agreement. Regulation 15 also have provision of Broadcaster caused audit in cases, where a broadcaster is not satisfied with the audit report received under sub-regulation (1) of Regulation 15 or, if in the opinion of a broadcaster the addressable system being used by the distributor does not meet requirements specified in the Schedule III of Interconnection Regulations.
- 1.4 To facilitate audit by the auditors TRAI decided to prepare and issue an Audit Manual. Therefore, consultation process for Telecommunication (Broadcasting and Cable) Services Digital Addressable Systems Audit Manual was undertaken in 2019. During the consultation for the abovementioned Audit Manual, certain comments and observations reflected that there is a gap in specifying requirements for certain issues/items in the Schedule III of the Interconnection Regulations.
- 1.5 Accordingly, TRAI initiated the process of amending the Schedule III of the Interconnection Regulations. In this regard, draft Telecommunication (Broadcasting and Cable) Services Interconnection (Addressable Systems) (Amendment) Regulations, 2019 [hereinafter referred to as the Draft Regulations 2019] were issued on 27.8.2019. These Draft Regulations 2019 proposed to amend Schedule III of the Interconnection Regulations, on the following issues: -
 - i. Digital Rights Management (DRM) Systems
 - ii. Transactional capacity of CAS and SMS system
 - iii. Fingerprinting – Support for Visible and Covert fingerprinting in STBs
 - iv. Watermarking network logo for all pay channels
- 1.6 During the said consultation process, TRAI received numerous comments and suggestions from various stakeholders on issues related to DRM Systems. It was felt that specifications for DRM systems require extensive deliberations with industry stakeholders. Hence, it was decided that requirements for DRM systems shall be dealt separately. Accordingly, TRAI issued Telecommunication (Broadcasting and Cable) Services Interconnection (Addressable Systems) (Amendment) Regulations, 2019 (7 of 2019) on 30.10.2019 (please refer para 34 of Explanatory Memorandum to the Interconnection (Amendment) Regulations, 2019 dated 30.10.2019).

- 1.7 To analyse the issues related to DRM systems, TRAI constituted a committee comprising of industry stakeholders to prepare and submit draft ‘System Requirement for Digital Right Management’. After extensive deliberations, the committee submitted a report on ‘System requirements for Digital Right Management’ to be included in Schedule III of the Interconnection Regulation. TRAI conveys appreciation for the extensive work done by all the committee members.
- 1.8 Accordingly, based on the report of the stakeholders’ committee, this Consultation Paper (CP) has been prepared which proposes to include ‘System Requirement for Digital Right Management (DRM)’ as a new Schedule i.e. Schedule X in the Interconnection Regulations.
- 1.9 The amendments proposed in this CP in the Interconnection Regulations 2017 namely ‘Telecommunication (Broadcasting and Cable) Services Interconnection (Addressable Systems) (Fourth Amendment) Regulations, 2022 (___ of 2022)’ [hereinafter referred to as the “Draft Regulations 2022”] have been placed at Chapter 2 in this Consultation Paper.
- 1.10 Comments from stakeholders are invited on the Draft Regulations 2022 (and schedule thereof).

Issues for consultation

Q1: Stakeholders may offer their feedback/ comments on the Draft Regulations 2022 as per following format (Table 1).

Table 1: Format for stakeholders’ response on issues related to Draft Regulations 2022 raised in this CP

S no	Clause number of Draft Regulations 2022	Do you agree with the Draft Regulations proposed in this CP (Yes/No)	If you do not agree with the amendment proposed in this CP, then provide amended Clause proposed by you	Reasons with full justification for your response
1				
2				

Q2: Please provide comments/ any other suggested amendment(addition), if any, with reasons thereof, in the Draft Regulations 2022, that the stakeholder considers necessary (other than those proposed in this CP). The stakeholders must provide their comments in the format specified in Table 2 explicitly indicating the new clause number, suggested amendment(addition) and the reason/ full justification for proposed amendment.

Table 2: Format for stakeholders’ response on issues related to ‘System Requirement for Digital Right Management (DRM)’ on issues other than those proposed in this CP

S no	New Clause number proposed in the Draft Regulations 2022	Suggested Amendment (additional clause)	Reasons/ full justification for the proposed amendment
1			
2			

Chapter 2

Draft Regulation 2022

**TO BE PUBLISHED IN THE GAZETTE OF INDIA, EXTRAORDINARY,
PART III, SECTION 4
TELECOM REGULATORY AUTHORITY OF INDIA
NOTIFICATION**

**THE TELECOMMUNICATION (BROADCASTING AND CABLE) SERVICES
INTERCONNECTION (ADDRESSABLE SYSTEMS) (FOURTH AMENDMENT)
REGULATIONS, 2022
(___ of 2022)**

New Delhi, ___/___/2022

F. No. C-1/2/(1)/2021-B AND CS(2) — In exercise of the powers conferred by section 36, read with sub-clauses (ii), (iii) and (iv) of clause (b) of sub-section (1) of section 11 of the Telecom Regulatory Authority of India Act, 1997 (24 of 1997), read with notification of the Central Government, in the Ministry of Communication and Information Technology (Department of Telecommunications), No. 39, —

(a) issued, in exercise of the powers conferred upon the Central Government under clause (d) of sub-section (1) of section 11 and proviso to clause (k) of sub-section (1) of section 2 of the said Act, and

(b) published under notification No. S.O.44 (E) and 45 (E) dated the 9th January, 2004 in the Gazette of India, Extraordinary, Part II, Section 3,—

the Telecom Regulatory Authority of India hereby makes the following regulations to further amend the Telecommunication (Broadcasting and Cable) Services Interconnection (Addressable Systems) Regulations, 2017 (1 of 2017), namely:

1. Short title, extent, and commencement:

- (1) These regulations may be called the Telecommunication (Broadcasting and Cable) Services Interconnection (Addressable Systems) (Fourth Amendment) Regulations, 2022 (___ of 2022).
 - (2) These regulations shall apply throughout the territory of India.
 - (3) These regulations shall come into force from the date of their publication in the Official Gazette.
2. In regulation 10 of the Telecommunication (Broadcasting and Cable) Services Interconnection (Addressable Systems) Regulations, 2017 (hereinafter referred to as the “principal regulations”),
- (a) in sub-regulation (6), after the words “Schedule III”, the following words shall be inserted, namely:-

“or the Schedule X or both, as the case may be”.
 - (b) in sub-regulation (7), for the words “Schedule III”, the words “Schedule III or the Schedule X or both, as the case may be” shall be substituted.
 - (c) in proviso to sub-regulation (7), after the words “Schedule III”, the following words shall be inserted, namely:-

“or the Schedule X or both, as the case may be”.
3. In regulation 15 of the principal regulations,
- (a) in sub-regulation (2), for the words “Schedule III”, the words “Schedule III or the Schedule X or both, as the case may be” shall be substituted.
 - (b) in third proviso to sub-regulation (2), after the words “Schedule III”, the following words shall be inserted, namely:-

“or the Schedule X or both, as the case may be”.
4. In Schedule II of the principal regulations,
- (a) in item 17, for the words “Schedule III”, the words “Schedule III/ Schedule X” shall be substituted.

(b) in declaration, for the words “Schedule III”, the words “Schedule III/ Schedule X” shall be substituted.

5. After Schedule IX to the principal regulations, the following schedule shall be inserted, namely:

“Schedule X

(Refer sub-regulation (6) of the regulation 10, sub-regulation (7) of the regulation 10 and sub-regulation (2) of the regulation 15)

Scope and Scheduling of Audit

- (A) Scope: The annual Audit caused by Distributor shall include the Audit to validate compliance with this Schedule and the Subscription Audit, as provided for in these regulations.
- (B) Scheduling: The annual Audit as caused by Distributor under regulation 15 (1) shall be scheduled in such a manner that there is a gap of at-least six months between the audits of two consecutive calendar years. Further, there should not be a gap of more than 18 months between audits of two consecutive calendar years.

Digital Rights Management (DRM) System Requirements

The term DRM, herein, refers to the management of the encryption systems for, *inter-alia*, providing the functionality of CAS and SMS for the Internet Protocol Television (IPTV) service provider under these regulations.

(C) Overall architecture / system requirements and certification for IPTV service:

- (a) Retransmission of channels shall be over a closed network owned and controlled by DPO for electronic delivery of audio video stream of linear channels using Internet Protocol through an encrypted, point-to-point system architecture to set top boxes located within a subscriber’s premises. For the avoidance of doubt, IPTV shall not include any electronic delivery for receipt and viewing via (i.e., directly accessible via) the Internet / world wide web/OTT.
- (b) IPTV linear services should not be available on Internet/public network.

(D) DRM Requirements in so far as they relate to subscriber management systems (SMS) for IPTV services:

Table 1

Sl. No.	Proposed DRM requirements for SMS
1.	<p>There shall not be any data mismatch between DRM and SMS. Maximum mismatch based on subscription base may be allowed as mentioned below:</p> <ul style="list-style-type: none"> (1) Must be less than 0.20% for subscriber base up to 100000 subs (0 to 200 for subscriber base of up to 100000) (2) Must be less than 0.04% for subscriber base up to 1000000 subscribers (0 to 400 for subscriber base of up to 1000000) (3) Must be less than 0.01% for subscriber base above 10000000 subscribers (0 to 1000 for subscriber base of up to 10000000) <p>The data between both the systems shall be reconciled on a monthly basis. The reconciliation report shall be stored along with the system data for a minimum of 2 years or at least two audit cycles, or as per Schedule III whichever is later.</p>
2.	<p>Password Policy Creation for Users: SMS shall have a defined password policy, with minimum length criteria and composition (upper and lower-case characters, numeric, alphabets or special characters), forced password changes or any other appropriate mechanisms or combinations thereof.</p>
3.	<p>After-Sales Service Support: The required software and hardware support should be available to the distributor of the television channels' installations from the SMS vendor's support teams located in India. The support should be such as to ensure the SMS system with 99.99% uptime and availability. The systems should have sufficient provisions for backup systems to ensure quality of service and uptime</p>
4.	<p>All activation and deactivation of STBs shall be done with the commands of the SMS integrated with the DRM.</p>
5.	<p>Necessary and sufficient methods shall be put in place so that each activation and deactivation of STBs is reflected in the reports generated from the SMS integrated with the DRM and <i>vice versa</i></p>
6.	<p>DRM and SMS should be able to activate or deactivate services and/or STBs of the subscriber base of the distributor within 24 hours.</p>
7.	<p>The SMS shall be independently capable of generating, recording, and maintaining logs, for the period of at least immediately preceding two (2) consecutive years, corresponding to each command executed in the SMS including but not limited to activation and deactivation commands.</p>
8.	<p>The SMS should be computerized and capable of recording all logs including information and data concerning the subscribers such as:</p> <ul style="list-style-type: none"> (a) Unique customer identification (ID)

	<ul style="list-style-type: none"> (b) Subscription contract number (c) Name of the subscriber (d) Billing address (e) Installation address (f) Landline telephone number (g) Mobile telephone number (h) E-mail address (i) Channels, bouquets and services subscribed (j) Unique STB number (k) Unique VC number or MAC ID.
9.	<p>The SMS should be capable of:</p> <ul style="list-style-type: none"> (a) Viewing and printing of historical data in terms of the activations and the deactivations of STBs. (b) Locating each and every STB and VC/MAC ID installed at city and state level. (c) Generating historical data of changes in the subscriptions for each subscriber and the corresponding source of requests made by the subscriber.
10.	<p>The SMS should be capable of generating reports, at any desired time including about:</p> <ul style="list-style-type: none"> (a) The total number of registered subscribers. (b) The total number of active subscribers. (c) The total number of temporary suspended subscribers. (d) The total number of deactivated subscribers. (e) List of blacklisted STBs in the system. (f) Channel and bouquet wise monthly subscription report in the prescribed format. (g) The names of the channels forming part of each bouquet. (h) The total number of active subscribers subscribing to a particular channel or bouquet at a given time. (i) The name of a-la carte channel and bouquet subscribed by a subscriber. (j) The ageing report for subscription of a particular channel or bouquet.
11.	<p>The distributor shall ensure that the SMS vendor has the technical capability in India to maintain the systems on 24×7 basis throughout the year.</p>
12.	<p>DPO shall declare the details of the DRM and the SMS deployed for distribution of channels. In case of deployment of any additional DRM/SMS, the same shall be notified prior to commissioning of the system, to the broadcasters by the distributor.</p>
13.	<p>If there is active infrastructure sharing then, DPO shall declare the sharing of the DRM and the SMS deployed for distribution of channels. In case of deployment of any additional DRM/SMS, the same should be notified to the broadcasters by the distributor.</p>
14.	<p>SMS shall have a provision to generate synchronization report, with date and time, with the minimum fields as listed below:</p>

	<ul style="list-style-type: none"> (a) STB Number (or in case of card-less system, chip ID or MAC ID number of the STB) (b) Product Code pertaining to à-la-carte channels and bouquets available on the platform (c) Start Date of entitlement (d) End Date of entitlement (e) Status of STB (active/Inactive)
15.	The file output of DRM shall be processed by SMS system to compare and generate a 100% match or mismatch error report.
16.	<p>Channel/Bouquet management: SMS shall support the following essential requirements:</p> <ul style="list-style-type: none"> (a) Create and manage all channels and bouquets along with the relevant details such as name, tariff, broadcaster, or DPO bouquet, etc. (b) Manage changes in the channel/bouquet, as may be required, from time to time. (c) Link the Products IDs for à-la-carte channels and bouquets (Single and Bulk) created in DRM with the product information being managed in SMS, for smooth working of SMS and DRM integration. (d) Management of historical Data of Product name, i.e., Broadcasters (name), maximum retail price (MRP), distributor retail price (DRP).
17.	Network Capacity Fee (NCF) Policy Creation: SMS shall support all NCF related requirements mandated by the applicable tariff order.
18.	Bill/Invoice Generation: SMS shall be capable of generating proper subscriber bill/invoice with explicit details of NCF charges, pay channels charges (with clear itemized details of à-la-carte channel cost and bouquet costs), rental charges for STB (if any), other applicable charges, including Goods and Services Tax (GST).
19.	<p>Management of Logs:</p> <ul style="list-style-type: none"> (a) SMS shall have the facility to provide user detail logs with the ID of users on each login event. (b) SMS shall have the provision of generating the user activity log report to enable tracking users' work history. It shall not be allowed to delete the records from the log. (c) All logs shall be stamped with date and time and the system shall not allow altering or modifying any logs. (d) The logs shall be maintained for a period as specified in Schedule III or at least two audit cycles, whichever is later. (e) Channel subscription report: SMS shall be able to provide broadcaster wise total counts of monthly subscribers of channels including both à la carte and bouquet subscriptions as per format prescribed by TRAI. (f) DRM and SMS should be running on separate and independent servers.

20.	<p>SMS Database and tables:</p> <ul style="list-style-type: none"> (a) There shall not be any active unique subscriber outside the database tables declared by the Vendor (b) SMS shall not provide an option to split SMS database or for creation of more than one instance. (c) SMS shall have the provision to enable or disable channel (à-la-carte channel or bouquet of channels) selection by subscribers either through website or an application through interface provided by the distributor platform operator. (d) SMS shall be capable of capturing the following information required for audit or otherwise: <ul style="list-style-type: none"> (e) Bouquet à la carte status change history (f) Bouquet composition change history (g) Change in status of connection (primary to secondary and vice versa)
21.	SMS shall be accessed through a Firewall
22.	STB and MAC ID shall be paired from the SMS to ensure security of channel (applicable for DRM with pairing facility).
23.	The SMS shall be capable of individually addressing subscribers, for the purpose of generating the reports, on channel by channel and STB by STB basis.
24.	SMS should have a facility to carry out monthly reconciliations of channels/ala carte and bouquet (with their respective ID created in SMS with DRM and the variance report should be available in both DRM and SMS logs and made available during audits.
25.	<p>SMS should have a provision of generating the following reports pertaining to STB/MAC ID.:</p> <ul style="list-style-type: none"> (a) White list of STB/MAC ID along with active/inactive status (b) Faulty STB/MAC ID – repairable and beyond repairable (c) Warehouse fresh stock (d) In stock at local cable operator (LCO) end (e) Blacklist (f) Deployed with activation status (g) Testing/demonstration STB/MAC ID with location
26.	<p>Audit-related requirements:</p> <p>SMS should have the capability to capture below-mentioned information that may be required for audit and otherwise:</p> <ul style="list-style-type: none"> (a) Subscriber related: <ul style="list-style-type: none"> (i) Subscriber contact details change history (ii) Connection count history (iii) Transition of connection between Disconnected/Active/Temporary Disconnected (iv) Subscription change history

	<ul style="list-style-type: none"> (b) Product (Bouquet/à-la-carte channel) related: <ul style="list-style-type: none"> (i) Broadcaster à-la-carte relation (ii) Bouquet name change history (iii)À la carte name change history (iv)Bouquet à-la-carte channel rate change history (c) STB related: <ul style="list-style-type: none"> (i) Change in location history (ii) Change in status (Active/Damaged/Repaired/Replaced)
27.	User Authentication: SMS should have the capability to authenticate its subscribers through registered mobile number (RMN) through one-time password (OTP) system
28.	<p>SMS should have the provision to support the following additional requirements:</p> <ul style="list-style-type: none"> (a) List of à-la-carte channels and bouquets, digital headend (DHE) and Zone-wise: Provision to support/manage Zone/ Sub-Headend-wise list of à-la-carte channels and bouquets, in sync with the list available in DRM. (b) Product (à-la-carte channels and bouquets)-wise Renewal and Reversal setting for the Subscriber Account: Provision to allow renewal of a product to a subscriber after the expiry date of a product, and provision to auto-calculate and refund the amount to a subscriber if he discontinues a product midterm. These requirements may be configurable on selective products, as required by the DPOs as per their business plans. (c) Product (à-la-carte channels and bouquets)-wise Reversal setting for LCO Account: Provision to calculate and refund the amount due to LCO, if he or the subscriber discontinues a product midterm. Product (à-la-carte channels and bouquets) Tenure-wise LCO and Subscriber Discount Scheme/Free Days Scheme: Provision to create Discount Scheme and Free-day scheme for LCO and Subscriber, based on the duration (Tenure) of the product subscription. (d) Calendar/Activity Scheduling: Provision to auto-schedule activities like STB activation/deactivation, à-la-carte channels and bouquets addition/removal, channel/bouquet composition modification, etc. (e) Bulk Channel/Bouquet Management: Provision to perform bulk activity of à-la-carte channels and bouquets addition and removal on all or a designated group of STBs. (f) Token-number-based reports: Provision to download multiple generated reports with the help of token number, such as audit reports with different intervals. (g) Third-Party Integration: Provision to support integration with relevant third-party systems, such as, payment gateway integrations, interactive voice response (IVR) Integrations, SMS Gateway Integrations, etc. (h) Bill payment and reconciliation feature: Provision for bill payment and reconciliation (in case a DPO is running service in post-paid mode). (i) Generation of Reports: Provision to generate the following reports for operational purpose: <ul style="list-style-type: none"> (i) All, selective and single boxes' current status with their first-time activation date.

	<ul style="list-style-type: none"> (ii) Total number of à-la-carte channels and bouquets and STB expiring detail till given future date on the dashboard, according to the permission. (iii) Today's fresh activation count, de-activation count, re-activation count, à-la-carte channels and bouquets addition/ removal count on dashboard, according to the permission. (iv) Total active and inactive subscriber's details with multiple criteria (network-wise, à la-carte channels and bouquets-wise, state-city wise and broadcaster-wise).
--	---

(E) DRM Requirements for conditional access by subscribers and encryption for IPTV services

Table 2

Sl. No.	Proposed DRM Requirements for conditional access by subscribers and encryption
1.	DPO shall ensure that the current version of the DRM in use do not have any history of hacking. A written declaration from the DRM vendor shall be required to be furnished on an annual basis as compliance of this requirement.
2.	DRM shall ensure all logs are un-editable, stamped with date and time of all transactions (all activations, deactivation, channel authorization/assignment and un-authorization / de-assignments and change in MAC ID/STB). The DRM shall not allow altering or modification of any logs. There shall be no facility for the distributor/users to purge logs.
3.	DRM deployed do not have facility to activate and deactivate a Set Top Box (STB) directly from the Graphical User Interface (GUI) terminal of DRM. All activation and deactivation of STBs shall be done with the commands of the SMS integrated with DRM. The DRM shall be integrated with the SMS in a manner that ensures security of the channel.
4.	The SMS and the DRM should be integrated in such manner that activation and deactivation of STB happen simultaneously in both the systems. <u>Explanation:</u> Necessary and sufficient methods shall be put in place so that each activation and deactivation of STBs is reflected in the reports generated from the DRM.
5.	DRM deployed should be able to support two-way networks only.
6.	The DRM deployed should be able to support both carded as well as card-less STBs for any provisioning.
7.	The DRM deployed should be able to generate, record, maintain independent reports and logs for verification purpose during audits corresponding to each command executed in the DRM issued by the SMS integrated with the DRM for last two (2)

	<p>years minimum. The reports must have date and time stamp. Proposed reports should include:</p> <ul style="list-style-type: none"> (a) Unique active STB count as well as MAC ID wise on any desirable date (b) Unique bouquet/channel active for a specific STB on any desirable date (c) MAC ID wise activation-deactivation report for service requests (d) Any alteration in bouquet and/or channels configured in DRM (e) Blacklist STB report (f) Product code pertaining to channels/ bouquets available on the platform (g) Channel/bouquet authorization/assignment to STB along with start date and end date of entitlement (h) STB-VC pairing / de-pairing (if applicable) (i) STB activation / de-activation (j) Channels assignment to STB (k) Report of the activations or the deactivations of a particular channel for a given period (l) The total number of registered subscribers (m) The total number of active subscribers (n) The total number of temporary suspended subscribers (o) The total number of deactivated subscribers (p) List of blacklisted STBs in the DRM (q) Channel and bouquet wise monthly subscription report in the prescribed format. (r) The names of the channels forming part of each bouquet (s) The total number of active subscribers subscribing to a particular channel or bouquet at a given time (t) The name of a-la carte channel and bouquet subscribed by a subscriber (u) The ageing report for subscription of a particular channel or bouquet
8.	DRM deployed should be able to tag and blacklist the STB independently in case of any piracy.
9.	DRM deployed should have the technical capability in India to maintain the systems on 24x7 basis throughout the year.
10.	The DRM and SMS should be integrated in such manner that upon deactivation of any subscriber from the SMS, all program/services shall be denied to that subscriber.
11.	The DRM should be capable of generating, recording and preserving unedited data / logs for at least two consecutive years for each command executed through the DRM, including logs of each command of the SMS integrated with the DRM.
12.	DRM deployed should be capable to support both software base as well as hardware base security.
13.	DRM shall not support carriage of channel with same name or nomenclature in the distributor's network served by each headend under more than one LCN, and another channel descriptor. Further, each channel available in DRM shall be uniquely mapped with channels available in SMS.
14.	DRM shall be capable of adding/modifying channels/bouquets as may be required on real time basis in line with the activity performed in SMS.

15.	DRM should support only agreed DPO's branded/proprietary and DPO's supplied business model for STBs
16.	When infrastructure sharing is available, in such cases DRM shall be capable to support multiple DPOs.
17.	DRM should support content protection and usage rules enforcement for B2C model
18.	DRM should be capable of handling at least 3 million license transactions per minute.
19.	DRM should support encryption of individual tracks of a content stream with individual keys, i.e., track level protection
20.	DRM should support key rotation, i.e., periodic changing of security keys
21.	In case DPO has deployed hybrid STBs, DRM shall ensure that the over-the-top (OTT) App and any browser does not get access to the linear television channels offered by the DPO from its own system, and similarly, DRM for IPTV service should not get access to channels delivered through OTT platform. Provided that, all the mandatory requirements for DRM shall be complied by hybrid STBs.
22.	There shall not be any active unique subscriber outside the database tables. Further, there shall not be an option to split DRM database for creation of more than one instance by a DPO or a vendor.
23.	It must support the following options with reference to uploading of unique access (UA)/MAC ID details in DRM database: <ul style="list-style-type: none"> (a) A secure un-editable file of MAC ID details, as purchased by the distributor, to be uploaded by the DRM vendor on the DRM server directly, (b) If it is uploaded in any other form, UA/MAC ID in DRM database shall be captured in logs, (c) Further, DRM shall support an automated, application programming interface (API)-based mechanism to populate such UA/MAC ID details in the SMS, without any manual intervention.
24.	It shall be mandatory to have backup servers and logs of all activities carried out in main server shall be concurrently copied into the backup servers: <p>Provided that a log of all such instances shall be maintained along with date and time stamp, where the backup server has been used as the main server:</p> <p>Provided further that the main and backup server shall always be in sync with regard all data, such as subscription data, STB UA/MAC ID details, entitlement level information, etc</p>
25.	DRM and SMS shall ensure that the access to database is available to authorized users only, and in "read only" mode only. Further, the database audit trail shall be permanently enabled.

	<u>Explanation:</u> Database here refers to the database where data and log of all activities related to STB activation, deactivation, subscription data, STB UA/MAC ID details, entitlement level information, etc., is being stored.
26.	<p>Provision of à-la-carte channels or bouquet:</p> <p>(a) DRM (and SMS) shall be able to handle all the channels, made available on a platform, in à la carte mode.</p> <p>(b) DRM (and SMS) shall have the capability to handle such number of broadcaster/DPO bouquets, as required by the DPO.</p>
27.	DRM and SMS applications, along with their respective databases, shall be stored in such a way that they can be separately identified.
28.	DRM shall have a provision to export the database/report for reconciliation with the SMS database. Further, there shall be a provision of reconciliation through secure APIs/secure scripts.
29.	<p>DRM should have the following features:</p> <p>(a) The entitlement end date in DRM shall be equal to the entitlement end date in SMS,</p> <p>(b) The entitlement end date in DRM shall be open and SMS shall manage entitlements based on the billing cycles and payments.</p>
30.	There shall be unique license key required for viewing every 10 minutes in DRM deployed by DPO.
31.	For every change in channels, fresh license keys should be issued by the DRM. License keys issued by DRM should be secure and encrypted. DRM must ensure that the authorization keys are not received by the STB from any other source other than the one specified by the IPTV system.
32.	DRM servers should comply with extant Rules and Regulations including relevant clause under extant provisions (if any) relating to data localisation, data security and privacy. It should not be allowed to connect main DRM server to some other location (India or other country) with some proxy or another server to integrate with SMS and DPO system.
33.	IPTV transmission has to be in multicast mode only just like cable TV transmission. There cannot be any such case where unicast is allowed. STBs with facilities for recording programs shall have a copy protection system (i.e., a feature which prevents reproduction of content and/or unauthorized copying and distribution of content) and such recorded content should not be transferrable to any other device.
34.	IPTV transmission should not be allowed to configure any content delivery network (CDN) in their system to deliver linear content to STBs.
35.	IPTV should not be allowed to deliver linear content to any other device except STB which has been whitelisted in DRM.

36.	IPTV should have capability to implement session based/token authentication with token authentication duration to be controllable to few minutes.
37.	IPTV system should not allow recording of linear channel at headend/network level. It should be allowed to be recorded at STB/DVR level only, without there being any option available to transfer such recorded content to any other device.
38.	The DRM should have following policies implemented: <ul style="list-style-type: none"> (a) It should restrict user to editing or saving content in part or full. (b) It should restrict user from sharing or forwarding or mirroring the content from the STB (c) It should disallow user to take screen shots or screen grabs or screen-recording. (d) It should lock access to authorized STBs only. (e) It should have Geo blocking, that enables a broadcaster to determine and instruct the DPO/IPTV service provider to restrict the broadcast of TV channels in locations. (f) It should be able to set expiry date to recorded content at STB end based on various policies.
39.	The DRM should have the capability of being upgraded over-the-air (OTA) so that the connected STBs always have the most upgraded version of the DRM.
40.	The DPO shall ensure that the DRM is updated/upgraded at regular intervals by installing necessary patches, error corrections, additions, version releases, etc. so as to ensure protection of channels and content at all times
41.	No such functionality should be added to or removed from the DRM which compromises security of channels. DPO shall be responsible for encryption of channels' signals before their transmission through its IPTV platform using DRM integrated STBs. All costs / expenses (by whatever name called) that are required to be incurred or become payable for such upgradation and for retransmission and/or delivery/distribution of channels to subscribers shall be borne solely by such DPO. The DPO shall employ all reasonable security systems and procedures to prevent any loss, theft, piracy, un-authorized use, reception or copying of channels or any part thereof and shall notify broadcasters as soon as practicable after it becomes aware that such an event has occurred
42.	The DRM should not in any way interfere with / invalidate fingerprinting.
43.	DPO shall promptly, and at it sole cost and expense, correct any issues with the DRM (such as bugs, defects, omissions or the like) that prevents subscribers from accessing the DRM integrated STBs or channels through the DRM integrated STBs
44.	DPO shall provide broadcasters with video and audio codecs supported by the DRM integrated STBs. The DPO shall ensure that no such changes/modifications are made to such codecs parameters that will require broadcasters to incur any expense for delivery of channels / content that are free from viewer discernible problems (including, without limitation, video with no audio, audio with no video or significant signal distortion

45.	DRM should ensure that the integrated STBs are verifiably located within India by reference to internet protocol address and service address. Further, the DRM shall not permit delivery to an Internet/mobile device. The DRM must use industry-standard means (including IP-address look-up technology with screening and blocking of proxies (including anonymizing and spoofed proxies)) to prevent delivery of channels to IP addresses outside of India or to proxies.
46.	DRM should ensure that channels are accessible on integrated STBs of only such subscribers who are then-current, valid subscribers of the distributor of channels, and such confirmation must take place prior to the DRM actually delivering (or authorizing the delivery of) channel to the integrated STBs of such subscribers.
47.	Upon deactivation of any subscriber from the SMS, the DRM shall restrict delivery of all programme/services to that subscriber.
48.	The DRM shall not allow insertion of any self-promotion and/or any third party and/or paid for advertisements (including banners and aston bands) before, during or after transmission of linear channels.
49.	The DRM shall not permit subscribers to record and/or store channels/content from channels.
50.	The DRM should not mask/remove any copyright, trademark or any other proprietary information on the channels at the time of their retransmission.
51.	The DPO shall not sub-license the DRM and/or any rights granted to the DPO by the broadcaster to any entity for re-transmission of channels to subscribers

The service providers shall ensure that they seek provisioning of after sales services and support through a local entity so as to *inter-alia* provide quick resolution to any technical and piracy related issues, from DRM equipment supplier, while procuring DRM equipment.

(F) DRM Requirements in so far as they relate to fingerprinting for IPTV services

Table 3

Sl. No	Fingerprinting requirements under DRM
1.	The DPO shall ensure that it has systems, processes and controls in place to run fingerprinting at regular intervals
2.	The STB should support both visible and covert types of finger printing.
3.	The fingerprinting should not get invalidated by use of any device or software.
4.	The fingerprinting should not be removable by pressing any key on the remote of STB.
5.	The finger printing should be on the topmost layer of the video.

6.	The finger printing should be such that it can identify the unique STB number or the unique VC number or the MAC ID.
7.	The finger printing should appear on the screens in all scenarios, such as menu, Electronic Programme Guide (EPG), settings, blank screen, and games etc.
8.	The location, font color and background color of fingerprint should be changeable from head end and should be random on the viewing device.
9.	The finger printing should be able to give the numbers of characters as to identify the unique STB and/or the MAC ID.
10.	The finger printing should be possible on global as well as on the individual STB basis.
11.	The overt fingerprinting/watermarking should be displayed by the DPO without any alteration with regard to the time, location, duration and frequency.
12.	The DRM deployed should be able to generate fingerprinting/watermarking both global fingerprinting as well as targeted channel fingerprinting/watermarking.
13.	The DRM shall support and enable forensic watermarking at STB level.
14.	The DRM shall have the capability to run fingerprinting at regular intervals of at least one fingerprinting every ten (10) minutes on a 24x7x365 basis) and provide broadcasters with the fingerprint schedule on request.
15.	The DRM shall have the capability to run customized fingerprinting at such intervals as may be requested by broadcasters. Further, DPOs shall mandatorily run fingerprinting at regular intervals with a minimum of 2 fingerprints per hour on a 24x7x365 basis and provide broadcasters with the fingerprint schedule on request.

(G) DRM Requirements in so far as they relate to STBs

Table 4

Sl. No.	STB Requirements for DRM for IPTV services
1.	All STBs should have a DRM content protection.
2.	The STB deployed should be capable to support content decryption, decoding and DRM license evaluation.
3.	The STB should be capable of displaying fingerprinting inserted from Headend through DRM /SMS. The STB should support both targeted channel fingerprinting as well as all global fingerprinting.
4.	The STB should be individually addressable from the Head-end.
5.	The STB should be able to receive messages from the Head-end.
6.	The messaging character length should be minimal 120 characters.

7.	There should be provision for global messaging, group messaging and the individual STB messaging.
8.	The STB must be compliant to the applicable Bureau of Indian Standards
9.	The STBs should be addressable over the air to facilitate OTA software upgrade.
10.	The STBs with facilities for recording the programs shall have international standard copy protection system
11.	The STB should have a provision that fingerprinting is never disabled.
12.	The watermarking network logo for all pay channels shall be inserted at encoder end only. In case of infrastructure sharing, it shall be as per terms and conditions of infrastructure sharing.
13.	DRM deployed should be able to send scroll messaging which should be only available in the lower part of the screen.
14.	DRM deployed should be able to geo tag STB deployed in the network for security.
15.	STB should take all commands directly from DRM not from any intermediate servers.
16.	STB should not have feature to download (direct or side download) any 3rd party App/APK (Including on Hybrid STB's if any) and should not have access to any browser.
17.	STB should not be able to access the authorization keys from any other source except from the IPTV system through the IPTV closed network. DRM must ensure that the authorization keys are not received by the STB from any other source other than the one specified by the IPTV system
18.	STB should not have any play store to download 3rd party App.
19.	STB should have copy protection – HDCP with version 2 and above, DHCP, CGMS & macrovision with version 7 and above.
20.	DPO system should have capability to maintain un-editable logs of all activity and configurations including download of any App at STB end
21.	The DRM should not allow delivering linear TV channels on HLS, Smooth Streaming, Dash & HTTP/TCP.
22.	The STB should have forced messaging capability including forced finger printing display.
23.	The DRM integrated STBs should be tested for the following prior to their seeding in the subscribers' premises: (a) System down testing (b) Error messaging (c) Negative user journey testing (d) Device variance testing (e) Destructive testing

(f) Application monitoring testing (g) In-app monitoring testing

(V. Raghunandan)
Secretary, TRAI

Note.1: The principal regulations were published in the Gazette of India, Extraordinary, Part III, Section 4, vide notification No. 21-4/2016-B&CS dated 3rd March 2017 (1 of 2017).

Note. 2: The principal regulations were amended vide notification No. 21-6/2019-B&CS dated 30th October 2019 (7 of 2019).

Note. 3: The principal regulations were further amended vide notification No. 21-5/2019-B&CS dated 1st January 2020 (1 of 2020).

Note. 4: The principal regulations were further amended vide notification No. RG-1/2/(3)/2021-B AND CS(2) dated 11th June 2021 (1 of 2021).

Note. 5: The Explanatory Memorandum explains the objects and reasons of the Telecommunication (Broadcasting and Cable) Services Interconnection (Addressable Systems) (Fourth Amendment) Regulations, 2022 (___ of 2022).

Explanatory Memorandum

Introduction and Background

1. TRAI notified the Telecommunication (Broadcasting & Cable) Services Interconnection (Addressable System) Regulation, 2017 on 03.03.2017 [hereinafter referred to as “Interconnection Regulations 2017”].

2. During the consultation undertaken to prepare the Audit Manual, certain comments and observations reflect some issues in the Schedule III of the Interconnection Regulations 2017.

3. Accordingly, Draft Telecommunication (Broadcasting and Cable) Services Interconnection (Addressable Systems) (Amendment) Regulations, 2019 [hereinafter referred to as the “Draft Regulations”] was issued on 27 August, 2019. These Draft Regulations amended Schedule III of the Interconnection Regulations 2017, on the following issues: -

- i. Digital Rights Management Systems
- ii. Transactional capacity of CAS and SMS system
- iii. Fingerprinting – Support for Visible and Covert fingerprinting in STBs
- iv. Watermarking network logo for all pay channels

4. DRM is a systematic approach to copyright protection for digital media. The purpose of DRM is to prevent unauthorized redistribution of digital media and restrict the ways consumers can copy content they've purchased. DRM products were developed in response to the rapid increase in online piracy of commercially marketed material, which proliferated through the widespread use of peer-to-peer file exchange programs. Typically, DRM is implemented by embedding code that prevents copying, specifies a time period in which the content can be accessed or limits the number of devices the media can be installed on. DRM technology focuses on making it impossible to steal content in the first place, a more efficient approach to the problem than the hit-and-miss strategies aimed at apprehending online poachers after the fact.

5. The Schedule III of the Interconnection Regulations 2017 does not provide for the requirements / specifications of DRM based systems. The Authority, during its consultations on Audit manual, received the feedback that owing to its benefits the IPTV based DPOs are switching to DRM technology. It is necessary that the Audit regime covers the DRM based

networks and provides for enabling provisions for such operators. Accordingly, Draft Regulations included DRM specifications in Schedule III.

6. During the consultation process, the Authority received numerous comments and suggestions from various stakeholders on this issue. Numerous modification/additions were proposed by several stakeholders. Hence, the Authority was of the opinion that system requirements for DRM shall be dealt with in a separate consultation paper (refer para 34 of Explanatory Memorandum to the Interconnection (Amendment) Regulations, 2019 dated 30.10.2019).

7. The Authority was of the view that on the issue related to “System Requirements for Digital Rights Management System”, extensive deliberations with industry stakeholders is required. Accordingly, the Authority constituted a committee comprising of industry stakeholders to prepare and submit draft ‘System Requirement for Digital Right Management (DRM)’ to the Authority. The committee had representatives from the following firms/organisations/associations:

- Broadcast Engineering Consultants India Limited (BECIL)
- Indian Broadcasting and Digital Foundation (IBDF)
- News Broadcasters & Digital Association (NBDA)
- All India Digital Cable Federation (AIDCF)
- Dish TV
- Tata Sky
- Bharti Telemedia
- Sun Direct
- NXT Digital
- IIT Kanpur
- Andhra Pradesh State Fibernet Ltd
- Delinet Broadband

8. The Terms of Reference of the Committee, was to:

- (i) Study TRAI’s Telecommunication (Broadcasting & cable) Services Interconnection (Addressable System) Regulation, 2017 and its amendments (hereinafter called “*the Interconnection Regulation 2017*”).

(ii) Provide a report to the Authority on the “System requirement for Digital Right Management (DRM)” to be included in Schedule III of the Interconnection Regulation 2017.

9. The committee held several meetings. These meetings were facilitated by the Authority. After extensive deliberations, the committee submitted a report on “System requirement for Digital Right Management (DRM)” to be included in Schedule III of the Interconnection Regulation 2017 to the Authority. The Authority conveys its appreciation for the extensive work done by the committee.

10. Accordingly, Interconnection Regulations 2017 dated the 3rd March, 2017 have been amended.