

December 18, 2019

To,

Shri Anil Kumar Bhardwaj (Advisor-B & CS)
Telecom Regulatory Authority of India
Mahanagar Doorsanchar Bhawan
Jawahar Lal Nehru Marg
New Delhi-110002

**Sub: Comments on the Consultation Paper dated 11th November 2019 on
Interoperability of Set Top Box**

Dear Sir,

At the outset we thank Telecom Regulatory Authority of India (TRAI) for giving us an opportunity to provide inputs on the issue related to Interoperability of Set Top Boxes.

At the outset it is stated that though the intentions of Hon'ble Telecom Regulatory Authority of India (TRAI) is to bring a convenience for the subscriber at large, the interest and rights of all the stake holders including Multi System Operators (MSO) vis-à-vis Direct to Home (DTH) operators must also be kept in view while framing any policies with respect to interoperability of set top boxes.

It is stated that while the portability of service provider providing mobile telephony services has been successfully implemented owing to its wireless nature, the implementation of interoperability of set top boxes has to be initiated and employed with meticulous planning, since the functioning of set top boxes is closely interlinked with a whole lot of technical setup which has its own procedural complications.

It may be specifically noted unlike DTH operators, the operations of majority of MSOs are restricted to a specific area having a wired network and accordingly the provisions of interoperability might give leverage to the DTH operators over the MSOs which do not have the restriction of area and/or wired network except for the subscriber home.

It is stated that the DTH operators will have unqualified benefits in comparison to MSOs in the scenario of interoperability owing to its unrestricted reach and being a wireless service provider.

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Moreover, the interoperability should also be evaluated in the back drop of the functioning of a Local Cable Operator (LCO) wherein conventionally a LCO is aligned to a single MSO in a particular area and procuring signals from different MSOs in a single area will have its own set of complications.

Further, as Authority is already aware that STB interoperability is a license condition for all DTH player . However the same has not been implemented so far because of various reasons . Hence it is important for the Authority to see that the DTH players implement the interoperability first , which may pave the way for Industry wide interoperability.

Apart from the above, interoperability will also need a uniform and watertight extensive policies/framework with respect to Conditional Access System (CAS), smart cards,STBs operating system, Middleware, encryption etc. and the same is either in a nascent stage or yet to be developed and tested.

We state that Hon'ble TRAI must analyse/mull every minute aspect before rolling out any legislation with respect to interoperability of set top boxes.

We are detailing our response to issues raised by Hon'ble TRAI for its kind consideration.

For **Hathway Digital Private Limited**



Authorised Signatory

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Q1. In view of the implications of non-interoperability, is it desirable to have interoperability of STBs? Please provide reasoning for your comment.

HDPL's Response: With the Rapid Technological advancement , we believe that there should be a provision for interoperability of STBs, as it will provide a whole lot of option to the subscribers. However, the whole concept is in a very primitive stage and no known example of STB interoperability is available in anyother country . Hence same should be done methodically keeping in view the various aspects and interest of all the stakeholders involved in the broadcast service value chain.

In this regard we would like to highlight before the authority the following issues/concerns :

- The current STB architecture is designed to meet the current CAS requirement, the CAS system requires STB to be tightly bound with CAS system for content security which requires some part of CAS software to be hardcoded in the STB chipset during manufacturing process. Due to this requirement not all chipset supports all available CAS. Hence one STB which is bound with one CAS in specific service provider's network cannot be used in same network by another CAS of the another service provider in simulcrypt configuration.
- CAS is very important component in the eco system of digital TV service and it defines the content security. Due to this reason it also specifies minimum requirement of STB's CPU, memory (RAM & FLASH) & operating system as STB is tightly integrated with CAS. CAS also specifies the requirement of critical headend component, Multiplexer (MUX), which is used to encrypt the channels based on the ECMs generated by the CAS system, all CAS system has its own method of generating ECMs and it depends on various parameters like service ID, transport stream ID, source channel, session ID, etc. and the length of the ECMs also varies from one

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CAS to another CAS which makes it difficult for MUX vendor to support all available CAS.

- Hence there are various stringent requirement from all CAS , which are limiting factor for interoperability.
- Below is the list of such stringenet requirement:
 - STB hardware binding with CAS.
 - Not all CAS compatible with all available MUX in the market.
 - Chipset integration with CAS. Not all chipset supports all available CAS.
 - Some CAS are by design card less CAS like PowerKEY.
 - CAS also stores smart card nos. as an inventory which is not in service provider's control to manage the same. Whatever smart cards purchased by service provider are stored in its database which is secured by CAS application as part of its security requirement. Which also makes interoperability impossible as smart cards cannot be moved out of the CAS system unless it is marked as blacklisted which makes it unusable.
- Apart from the technical challenges as pointed out above, it is submitted that the principal primary concern is the limitation of the area of service of a MSO as it serves the subscribers through a wired network and DTH operator might have a benefit over the MSOs in the scenario. It may be further noted that at one hand the compatibility of CAS, smartcard, middle ware is being discussed, it will also be important to work out the commercial sustainability in case of transfer of STBs from one operator to the other since an initial investment will be made by one operator only and benefit might be reaped by other. The cost of transfer for reuse of STBs by a subscriber will also have to be worked out in the scenario.
- it is specifically stated that the benefits of interoperability cannot be passed on to the subscribers in the case of a MSO since its functioning is restricted to specific area. For Example in a particular area where say only MSO X

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has on its network and no other MSO is available. In case an existing MSO X subscriber, wants to avail services of any other MSO, it would be practically impossible for any other MSO, who does not have signal in that area to build infrastructure to serve that Subscriber and Hon'ble TRAI must take this into account while formulating legislation with respect to interoperability of STBs.

Q2. Looking at the similar structure of STB in cable and DTH segment, with difference only in the channel modulation and frequency range, would it be desirable to have universal interoperability i.e. same STB to be usable on both DTH or Cable platform? Or should there be a policy/ regulation to implement interoperability only within a platform, i.e. within the DTH network and within the Cable TV segment? Please provide your comment with detailed justifications.

HDPL's Response: It is submitted that there is a complete difference in the infrastructure and set up for provision of services by a MSO and a DTH operator. While at one hand the provision of service by DTH operator involves wireless infrastructure, the provision of service by a MSO involves a wired set-up and dependency on a Local Cable Operator for end mile connectivity. It is submitted that while a DTH operator can have a boundless reach, a MSO will have a limitation of reach due to infrastructure and geographical complications. It may be noted that due to the disparity in re-transmission infrastructure of a DTH operator and a MSO the DTH operator cannot be given access to the subscribers/customers of a MSO and accordingly interoperability of STBs of a MSO with a DTH operator should not be allowed.

Q3. Should interoperable STBs be made available through open market only to exploit benefits of commoditization of the device? Please elaborate.

HDPL's Response: The facility of interoperability of set top boxes will endow benefits only when the whole ecosystem of re-transmission is made compatible and standard. It is stated that a uniform regulation and standard procedure should be enacted for manufacturing of set top boxes and the same should be certified by Government bodies specially set up for the purpose.

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It is submitted that Hon'ble TRAI must come with standard specifications not only for set top boxes but also for related infrastructure such as CAS, Middle Ware, smart cards etc. with an obligatory mandate for compliance of the same.

As Authority is already aware of the menace caused by mushrooming of Headends post New Traiff Regime , who are using substandard SMS/CAS system ,which are not compliant with Schecule III of the Telecommunication (Broadcasting and Cable) Services Interconnection (Addressable Systems) Regulations 2017 and hence the subscribers are ultimately suffering due to the same.

Hence to avoid any such scenario in case of making interoperable STB available in open market, TRAI would have to ensure the following :

1. A nodal authority is appointed under TRAI to define a framework including technical specification for manufacture of STB's
2. All STB manufactures along with the Chipset /middleware/software vendor intending to sell their product in India , need to register themselves before the nodal authority
3. All their product to be tested and certified by the nodal authority before being put for sale in the market.
4. All the product to carry a copy of certificate issued by the authority.
5. In case of any spurious sale of STB's by any the vendor, nodal authority to have power of inspection/serizure /levying penalties/cancelling the registration of the vendor preventing him to sell his product in India.
6. Also all CAS and STB vendor would also have to align their system Architecture in line with the architecture and technical requirement of interoperable STB's and should ensure the following :

- a. Hardware binding has to be eliminated between CAS & STB. No network / NIT binding.

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- b. Make STB chipset compatible with all the CAS.
- c. Make all the MUX from different manufacturers compatible with all the CAS.
- d. Standardize ECM / control word length generated by CAS to support all the MUX from different manufacturers.
- e. Standardize STB's minimum system requirement like CPU, memory, etc.
- f. Make CAS software for seamless downloadable in STB to support interoperability.

However, we believe that the legislation on interoperability will only be beneficial when an area will have an array of MSOs and the same will give a leeway to the subscriber to choose MSOs based on the quality of service being provided by the said MSOs. However, looking at the current business models, it looks to be far fetched ask as of now.

Q4. Do you think that introducing STB interoperability is absolutely necessary with a view to reduce environmental impact caused by e-waste generated by non-interoperability of STBs?

HDPL's Response: It is submitted that though the lack of policy on interoperability might have resulted in the creation of e-waste due to non-operability of STBs, the implementation of interoperability might also create another chunk of e-waste due to standardization of STBs as the existing STBs will become use-less due to the aforementioned standardization. It is stated that Hon'ble TRAI should introduce the implementation of the interoperability as and when it becomes technically possible in a phased wise manner the way Digitisation of Cable Television Sector was done in 4 Phases, there by choosing big cities as the testing grounds wherein initially the same should be allowed to be rolled out voluntarily by the MSOs.

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Q5. Is non-interoperability of STBs proving to be a hindrance in perfect competition in distribution of broadcasting services? Give your comments with justification.

HDPL's Response: We do not think that non-interoperability of STBs is proving to be a hindrance in perfect competition in distribution of broadcasting services. It may be noted that by the own submissions of Hon'ble TRAI, as on date there are 1143 MSOs who have been granted licenses for operating as a Multi System Operator. The MSOs are already reeling under a huge compressed struggle for its basic survival due to numerous operating MSOs and the same has resulted into a proactive introduction of incentives and various features by the MSOs.

The introduction of hybrid set top boxes integrated with various OTT platforms is an obvious outcome of the said competition.

It is stated that it is not only the MSO and/or DTH operator who is giving a stiff competition to the other; a major force of competition comes from the OTT platform which is silently and gradually eating into the subscriber base of MSO due to economical availability of internet data and unregulated content.

It is pertinent to mention that unlike Telecom sector wherein the prices are not regulated, broadcasting sector is a totally regulated industry not only in terms of price but also the infrastructure and statutory compliances. It stated that interoperability might not draw the impact as Telecom due to its operational complications.

Q6. How interoperability of STBs can be implemented in Indian markets in view of the discussion in Chapter III? Are there any software based solution(s) that can enable interoperability without compromising content security? If yes, please provide details.

HDPL's Response: It is stated that as per the design architecture some portion of the CAS metadata gets hardcoded in the STB during the manufacturing process of the STB in the factory itself. For STB interoperability CAS vendors have to agree

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and develop a solution for interoperability. Hence the Authority needs to consider the wayforward provided by us in our response to Q3.

It may be noted that we are not aware of availability of any software based solution for STB interoperability. Accordingly, it would be premature to comment on the same till the time software is developed and tested.

Q7. Please comment on the timelines for the development of eco-system to deploy interoperable STBs for your recommended/ suggested solution.

HDPL's Response: It is stated that the idea of interoperability is in a very nascent stage and still lot of ground work needs to be done involving the STB/chipset manufactures along with CAS vendors along with resolving the on ground issues . The problems and solutions cannot be analysed unless we have practical tools in hand. It would be quite premature to define a timeline since it involves works and solutions by various stake holders who will have to develop a uniform format for the STBs including manufacturing and deployment of the said STBs if required.

Q8. Do you agree that software-based solutions to provide interoperability of STBs would be more efficient, reduce cost of STB, adaptable and easy to implement than the hardware-based solutions? If so, do you agree ETSI GS ECI 001 (01-06) standards can be adopted as an option for STB interoperability? Give your comments with reasons and justifications.

HDPL's Response: In furtherance of our response to Q 7, unless a software solution is developed by way of which the existing STBs would be make the STBs compatible with the services of other MSOs it would be difficult to compare it with hardware solution. It is stated before rolling out any legislation on STBs interoperability an extensive research and ground test should be done.

It is also pertinent to mention that it would also be difficult to standardize the availability of various features in STB's including OTT applications that might be exclusive to a particular MSO. Various MSO's have invested a lot of money in developing various STB real estate and this may get impacted . Hence the same should also be taken into account while developing the framework for interoperable STB.

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Q9. Given that most of the STB interoperability solutions become feasible through a common agency defined as Trusted Authority, please suggest the structure of the Trusted Authority. Should the trusted authority be an Industry led body or a statutory agency to carry out the mandate? Provide detailed comments/ suggestion on the certification procedure?

HDPL's Response: In our view , the whole concept of STB interoperability is in a very nascent stage and the concept needs to be tested through a pilot project.As pointed out above, inspite of being license condition DTH has still not been able to implement the same. Hence, it would be premature /too early to comprehend about a statutory agency to manage the solutions for interoperability .

Q10.What precaution should be taken at planning stage to smoothly adopt solution for interoperability of STBs in Indian market? Do you envisage a need for trial run/pilot deployment? If so, kindly provide detailed comments

HDPL's Response: The issues related to interoperability has been published without actually verifying the practical aspect of the tools/set-up required for making the STBs interoperable. It is suggested that Hon'ble TRAI should first carve out practical tools for implementation of interoperable STBs and re-invite comments again from the stake holders after its testing. It will give an actual insight into the cost and practical difficulties that might come around in the implementation. We also suggest that the implementation of interoperable STBs should be done in a phase wise manner as a pilot for specific areas before implementing it on a larger scale.

Q11. Interoperability is expected to commoditize STBs. Do you agree that introducing white label STB will create more competitions and enhance service offerings from operator? As such, in your opinion what cost reductions do you foresee by implementation of interoperability of STBs?

HDPL's Response: It is submitted that till a pilot project is undertaken for the basic STBs it would be difficult to comment on the white label STBs or STBs with additional features.

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Q.12 Is there any way by which interoperability of set-top box can be implemented for existing set top boxes also? Give your suggestions with justification including technical and commercial methodology?

HDPL's Response: It may be noted that it is not possible to implement interoperability in existing STBs as the design architecture does not permit the same.

Q13. Any other issues which you may like to raise related to interoperability of STB.

HDPL's Response: The major challenge to interoperability would be to re-design / re-architect the CAS application which is a huge task itself because all the CAS vendors have their own unique way to address the content security in their solution. Also, the core function of CAS application is common across the globe just few features needs to be added or removed depending on the regulatory requirement in each country. There is no country specific CAS application developed till date.

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