

Report of the Group
on
Digitalisation and Introduction of Voluntary CAS

***Part A - the implementation of CAS in cable TV network - the
best way forward***

Submitted to
Telecom Regulatory Authority of India

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Executive Summary

- S.1. Implementation of CAS in non-CAS areas would benefit all the stakeholders, including consumers in the long term. This would bring transparency and level-playing field among platforms.
- S.2. Voluntary CAS is perceived to be a non-starter unless the date from which addressability will be implemented is mandated, and unless the interconnection and tariff are also mandated for the initial roll out period. This is because in a town or a city, where there are several Multi System Operators (MSOs) and cable operators, CAS on voluntary basis will succeed only if all MSOs and cable operators voluntary agree to roll out CAS simultaneously, and they also enter into interconnection agreements with all the broadcasters accordingly. This is very difficult to achieve on a purely voluntary basis in a de-regulated environment.
- S.3. Hence the Group recommends that the date of roll out of CAS should be mandated for 55 cities in the country i.e. all state capitals, and all other cities with a population of one million and above. This should be done in phases beginning with October 2008, and ending with September 2011.
- S.4. The Group also recommends that the existing CAS regulatory framework should be extended to these cities for roll out of CAS, but only for a limited period of one year. Thereafter, CAS will be continued on voluntary basis. However, Quality of Service (QoS) Regulations would continue to apply.
- S.5. Present CAS regulatory framework should also be extended to MSOs/cable operators which want to implement CAS on voluntary basis in other cities. For them, the CAS regulatory framework will be made available for a period of two years.
- S.6. The broad guidelines relating to technical specification for conditional access/encryption and SMS systems are also laid out for the benefit of the stakeholders concerned.

Chapter 1. Introduction

Features of cable television industry

- 1.1 Cable television has registered an impressive growth over the last decade. Not only has there been tremendous growth in the C&S household who view pay television but a number of cable television networks have emerged. Despite this tremendous growth, till recently, Cable Television had developed in an un-regulated and fragmented manner, until the broadcasting services were brought under the purview of the TRAI Act.
- 1.2 The cable industry has some positive attributes and also some inherent shortcomings:
 - Cross subsidization has made cable TV affordable for the poor.
 - Consumers hardly have any choice in selecting their cable operators because of lack of effective competition in the last mile;
 - increasing pay-outs to the broadcasters and inability to choose from alternative platforms;
 - Under-declaration of subscriber numbers;
 - Absence of uniform pricing with prices fluctuating across geographies and consumer segments;
- 1.3 It would not be out of place to mention that there has been dissatisfaction among consumers due to their vulnerability and absence of standards for customer service.

Government's initiatives and implementation of CAS - A consumer centric approach

- 1.4 Beginning 2003, Parliament brought in an amendment to the Cable Networks Act, mandating the use of 'addressable system' to access pay channels through cable networks. The amendment was enacted following a surge of consumer complaints about frequent increases in subscriptions by the cable operators. There were other issues of under-declaration by operators and growing consumer dis-satisfaction due to issues relating to the inferior quality standards etc.
- 1.5 In its recommendations, the Task Force noted that under the existing arrangements, cable consumers were forced to pay for the selection of channels offered by their operators. Consumers lacked the ability to choose. Therefore to ensure greater

consumer choice in cable channel selection, the Task Force recommended the implementation of CAS technology in cable networks.

- 1.6 Following this, the Government announced a series of measures to implement CAS in specified areas. However, due to certain unresolved issues of high prices for premium channels, loss of revenues to the cable operators etc., the implementation of CAS had to be indefinitely deferred.
- 1.7 This deferment was challenged in the Delhi High Court in several cases¹. In a nutshell, the Delhi High Court quashed the Government's indefinite postponement of CAS and also directed the implementation of CAS within a specified timeframe.
- 1.8 In compliance of the court orders, TRAI was asked to make recommendations regarding the terms and conditions on which CAS should be provided to subscribers. After careful consideration, TRAI recommended that the government either de-notify the CAS framework or keep it in abeyance until the Authority was able to finalize Regulation to properly implement it. Based on the TRAI's interim recommendations, the Government suspended the implementation of CAS indefinitely in Delhi, Kolkatta, Chennai and Mumbai. However, the suspension was inapplicable in Chennai because of an injunction granted by the Madras High Court².
- 1.9 In the matter of *Hathway Cable Data Com Pvt. Ltd*³ (MSO Alliance) before the Delhi High Court, it was ordered by the Court that CAS ought to be implemented in consumer interest, within 4 weeks. The Government appealed to a Division Bench of Delhi High Court, which directed the Government to implement CAS by 31st December 2006 in Delhi, Mumbai and Kolkata. CAS has been successfully implemented by TRAI and the Government.

¹ Jay Polychem India Limited vs. Union of India, 2004 IV AD (Delhi) 249; Consumer Coordination Council vs. Union of India, CWP Nos. 8993-94 of 2003.

² *SCV vs. Union of India*, Madras High Court order dated 4 March 2004

³ Civil Writ Petition No.14464/2004.

TRAI's approach

1.10 It would be pertinent to mention that TRAI in its consultation process on the issues of *Broadcasting and Distribution of TV Channels*⁴ has recognized that the vision for the growth of this sector ought to keep in mind the following objectives:

- The objective of the regulation would be to promote and facilitate competition amongst channels, operators and platforms;
- Consumers should have the freedom to choose their content and their operator/platform- this would mean ease of exit from one operator/platform to another operator/platform;
- The other platform could be DTH or other media like telephone lines;
- Addressability must be introduced on all TV channel distribution platforms;
- As competition increases and consumers have multiple choices, price regulation would gradually be withdrawn.

1.11 Given the above, it was also recommended by TRAI that "given the existing structure of the industry and the experience of last year when even after a mandate, CAS deployment faltered, it may be necessary to provide a legislative mandate for introducing consumer choice through STBs and CAS"⁵. The Recommendations also discussed a transitory roadmap in consultations with the respective State Governments to implement CAS in a mandated phased manner.

1.12 Keeping the above objectives in mind, addressability of signals plays a very significant role in making the distribution system transparent not only for the consumers, but also the Broadcasters, MSO and the LCOs, while the Government also benefits from accurate declaration of subscriber base and revenues earned therefrom. Experience has also shown that voluntary CAS may not happen automatically without an enabling regulatory framework to push and nurture the efforts of voluntarism.

⁴ Recommendations on the issues relating to Broadcasting and Distribution of TV Channels, 1 October 2004, p.5

⁵ *Ibid.* Para 3.14, p.46

Chapter 2. Background and Genesis for Introduction of CAS

Background

2.1 TRAI had made certain recommendations on Digitalization of Cable TV to the Government in September, 2005. The Authority was primarily guided by the need to keep the process of digitalisation completely voluntary. Thus it was recommended that the cable operators, MSOs, broadcasters and above all the consumers should adopt new technology only when they see the merits of such a shift. The main recommendations of the Authority were as follows:

Time frame for digitalisation

- There should be a national plan for digitalisation from 1st April, 2006 till 31st March, 2010. This plan would be indicative and would not be mandatory in any form.
- The essential components of this plan would be:
 - i) Introduction of digital service in all cities/urban agglomerations with a population of one million plus by 2010.
 - ii) Licensing for new entrants and automatic licensing for existing operators.
 - iii) Rationalisation of import and domestic duties by April 1, 2006.
 - iv) Use of Entertainment tax for a consumer education programme during these four years (2006-2010).

Licensing and Carriage Issues

- No person shall be allowed to offer a digital service after 1.4.2006 without a licence for digital services. Such a license would be required for putting up a headend and providing signals to cable operators but the licensee will also be allowed to provide services directly to consumers.
- All operators who have an analogue headend on the date of notification of the policy will be allowed a digital licence on an automatic basis but they will have to apply separately for this.

- Those few operators who are already giving digital service will have to merely inform the licensing authority and will be treated as licensees pending issue of a formal licence.
- Licenses would be given on a non-exclusive basis just as registration is done today. However to ensure that serious players only enter the market all licensees would be required to provide a bank guarantee of Rs.50 lakhs for each city/urban agglomeration of over one million and of Rs.25 lakhs for each city/urban agglomeration that has a population of less than one million in case such a city is also considered for a digital license. This bank guarantee would be returned once the digital service has started. Such a bank guarantee would obviously not be required for those who have already commenced digital service before 1.4.2006.
- The license period should be 15 years which may be extended for a period of 5 years.
- The licences for digital service should have only a provision for non-discriminatory carriage of channels on the basis of the existing DTH licence conditions which require that the licensee shall provide access to various content providers/channels on a non discriminatory basis.

Upgradation of Network and Technical Choices

- While digitalization of cable TV should be promoted, the choice of analogue CAS or Digital CAS should be left to the Cable operators as per their business plans.
- The development of digital decoders, which are considered essential for viewing digital channels on analogue TV should be promoted with a view to promoting digitalization of Cable TV in the country.
- There is need for a clear policy framework for HITS which could be on the lines of the permission already given by the Government for one operator.

2.2 Subsequent to these recommendations, there has been a major development in as much as Conditional Access System (CAS) was introduced in part of 3 metros of Delhi, Mumbai and Kolkata with effect from 31st December 2006. A regulatory

framework for tariff, interconnection and Quality of Service (QoS) is in force in these CAS notified areas.

- 2.3 Since there have been a number of changes in the market as well as in regulatory and policy matters, a roundtable conference was held TRAI on 1st February, 2007 with various stakeholder regarding digitalization of TV transmission and voluntary implementation of CAS. It was felt that a focused group would be appropriate for going into a detailed study of the issue involved. Accordingly a Group consisting of members from different segments of the broadcasting and cable sector was formed to suggest options and roadmap for voluntary introduction of CAS and digitalization in cable television in the country. List of members of the group is attached at Annexure A. The Group was also given the responsibility to suggest regulatory and policy support for such implementation.
- 2.4 The Group also deliberated on a suggestion to explore the technical and the commercial feasibility of delivery of television channels by DTH operators directly to the cable operator (DTO). The proposal of digital delivery of channels through Headend In The Sky (HITS) was also debated.
- 2.5 Since a reference for policy framework for HITS has already been received in TRAI, the group has confined the task only to as stated in para 2.3.
- 2.6 The Group has decided to submit its report to the Telecom Regulatory Authority of India in two parts. The first part (Part-A) addresses the issue of Digitalization and Introduction of voluntary CAS, while second part (Part-B) of the report would deal with the taxation issues and others.
- 2.7 This part of report deals with the issues of Regulatory intervention in implementing CAS (with in a specific timeframe). The paper also highlights the need for Regulatory intervention to implement CAS. Views expressed herein are based on general industry practice, regulatory experience and intensive discussion and consultation amongst the stakeholders.

Chapter 3. Voluntary CAS – what’s the incentive?

3.1 It may be pertinent to highlight that there is general consensus among all stakeholders that *CAS benefits the consumers as well as other stakeholders in the long-term*. However, whether it ought to be implemented on a mandatory basis has been an issue among the broadcasters, MSOs and LCOs who have to invest to implement CAS. It is agreed that CAS brings about:

- freedom of choice to consumers
- transparency in the systems;
- improves quality of services to the consumers;
- brings in addressability – leading to better tax administration; and
- enhances competition among operators/platforms resulting in lower prices

3.2 Despite all these benefits, so far, CAS could take off only under a mandatory route barring some stray voluntary attempts. It should be noted here that there is no bar whatsoever for the service providers to introduce CAS on voluntary basis by mutual agreements. However, the reasons why the play of market forces has not led to introduction of CAS on its own are as follows:

- (i) At present, the reverse models of broadcasters, MSOs, and cable operators are based on negotiated subscriber base in the absence of addressability. The introduction of addressability through CAS would lead to transparency in subscriber base and viewership, and it may affect the revenues positively or negatively at various levels of distribution chain. This uncertainty about impact on revenue inflows in short-to-medium term acts as a deterrent in taking the first step towards implementation of CAS on voluntary basis.
- (ii) Voluntary CAS is perceived to be a non-starter unless the date from which addressability will be implemented is mandated, and unless the interconnection and tariff are also mandated for the initial roll out period. This is because in a town or a city, where there are several Muti System Operators (MSOs) and cable operators, CAS on voluntary basis will succeed only if all MSOs and cable operators voluntarily agree to roll out CAS simultaneously, and they also enter into interconnection agreements with all

the broadcasters accordingly. This is very difficult to achieve on a purely voluntary basis in a de-regulated environment.

- (iii) There is also the issue of consumer's inertia. Firstly, the average consumer may not feel the need to pay for set-top box, if he finds the existing services satisfactory. Secondly, the element of cross-subsidy, which enables the poorer sections among the consumers to get cable TV connection at affordable rates, will no longer be there in addressable environment. Thirdly, since the evasion of taxes is no longer possible in CAS, the financial burden on the consumer increases.

3.3 Hence only the mandatory introduction of CAS is likely to produce the structural corrections required in the cable TV industry.

Perspective from the angle of consumers and operators

3.4 It is to be noted that implementation of CAS entails an initial investment in a Set Top Box (STB) and making a choice of desired pay channels (apart from FTA channels) available to a consumer. It also means that for choice to be available to the consumer, the operator ought to have an arrangement to carry the desired pay channels. The experience so far, demonstrates that the broadcasters generally have a business model which do not provide their channels on an a la carte basis to the operators. Thus, the operator in turn preferably seeks to impose a bouquet on the consumers. In this situation there is limited choice with both the operator and the consumer. Thus, the move to a voluntary CAS would inter alia mean:

- For operators, an initial investment in procuring STBs and carrying all the pay channels to provide choice to the consumers.
- A need for operators to upgrade their existing systems to improve the quality of services thereby controlling and monitoring signals, creating a customer database, call centre, replacement and repair facilities, warranty provisions on STB's, employment of a skilled work force, provisioning for security deposits, etc. All this entails a high investment.

3.5 It may also be pertinent to highlight that in a few areas, where the operators have limited capacity on their analog cable systems, they show a limited number of channels for a low subscription fee but earn large amounts of carriage fee from the

broadcasters. This distortion not only restricts the choice available to consumers but also impedes competition. It has to be recognized that consumers might not wish to pay a higher subscription fee and also make an initial investment in a STB.

CAS and broadcasters

- 3.6 It may be pertinent to highlight that in the absence of addressability, broadcasters have been able to push their content only at a high price. It is also important to note that the operators have not disturbed such a non-addressable system as they under-report the subscriber base, to the broadcaster and the Government. In effect all the arrangements between the broadcasters and the operators are negotiated ones – where subscriber numbers are negotiated on a lump sum basis.
- 3.7 Non-addressability also does not create fair economic framework as the broadcasters’ business models are based on the under-declarations of subscriber base by the operators. Thus, broadcasters are forced to live with the regime of high channel prices and low declarations.
- 3.8 However, in a mandated CAS scenario, the revenue share arrangements implemented by TRAI (between the broadcasters, MSOs and the LCOs) require that the broadcasters and the operators make accurate declarations, apart from maintaining high quality of standards.
- 3.9 Thus, any deviation from the present business models would entail significant investments in improving systems, quality of standards and most importantly improving transparency in the system. It is quite evident that the adoption of CAS on a voluntary basis is likely to make stakeholders reluctant to change their existing business models.

Voluntary CAS: Issues for consideration

- 3.10 Given the above, it is felt that voluntary CAS is unlikely to offer the solutions due to the vagaries in the cable distribution system unless complete addressability is implemented, within a timeframe determined and agreed upon by all the stakeholders. Further, since CAS has been implemented once successfully in the specified areas, it would be in the interest of consumers in non-CAS areas to reap the benefits of CAS and exercise their choice with regard to both operators and channels.

3.11 It would be pertinent to highlight some of the important observations made by TDSAT in its judgment dated 27 February 2007⁶:

- Importance of TV viewership in India cannot be underestimated. TV viewing has almost attained the status of essential service. This viewership figure (68 mn) brings in the need for protection of consumer interest.
- In the CAS regime there will be 100% declaration of number of subscribers. This is to be contrasted with the figure admitted by the broadcasters themselves of 20% declaration of subscriber base in non-CAS regime.
- Without regulation the effort to introduce CAS would have derailed.
- *“The slow pace of growth of the alternative modes of delivery of television services is one of the major factors responsible for the lack of competition in the market. Coupled with the unequal bargaining powers amongst various players as explained above, the sector witnessed rampant disconnection disputes, numerous billing and payment disputes, allegations of discriminatory practices in pricing and unfair trade practices in the last few years resulting in considerable litigation in the courts of law. This affected the interests of subscribers as they did not have effective choice of delivery platforms, choice of operators of choice of channels”*
- Prices declared by broadcasters were considered too high, even the whole sale prices. Declaration of wholesale prices means that these were prices meant for MSO/COs, which means prices payable by the subscribers would be still higher.

3.12 From the above, it can be observed that:

- **Rolling out of CAS on digital networks has been the most significant step to implement order in the marketplace and remove some of the vagaries in cable distribution such as - unequal bargaining powers amongst various players, under-declaration of subscriber base, rampant disconnection disputes, numerous billing and payment disputes, allegations of discriminatory practices in pricing and unfair trade practices**
- **CAS and digitalization ought to be implemented simultaneously.**
- **There should be a mandated date for rollout of CAS in a specified area or city.**

⁶ Set Discovery vs TRAI & others

- **The model for voluntary CAS envisages a framework to encourage voluntary efforts to move towards digital CAS ever before the mandated date.**
- **The framework should clearly define the time lines during which voluntary efforts would be facilitated and the kind of regulatory framework that would be available during such period.**

3.13 Chapter 4 details the operative steps towards promotion of CAS with a mix of mandatory and voluntary elements.

Chapter 4. Voluntary CAS - the way forward

4.1 It is apparent from the experience of the stakeholders that CAS is beneficial in the long term as it brings transparency and accountability into the industry and offers choice to the consumers. It is also observed that voluntary implementation of CAS without a timeframe and determinable yardstick to monitor the same could lead to dissipation of a well-intended objective.

4.2 Given the experience of the successful implementation of CAS on a mandatory basis in select areas of the 3 metropolitan cities and Chennai, it is important to work towards a phased implementation of CAS in the rest of the country with an unambiguous regulatory framework. A detailed plan to implement CAS ought to include:

- **Commercial framework** for addressable cable platforms to ensure consumers are not burdened with unreasonable price fluctuations
- **Standards of Quality** to be strictly implemented to ensure defaulters are accountable for deficiency in services.
- **Incentivising networks** which have upgraded their networks and which are seeking to voluntarily implement CAS. This could be done by extending the CAS framework by the Regulator to such networks ahead of the CAS effective date .

4.3 The operative steps are as follows:

4.3.1. Regulatory intervention and monitoring of implementation is needed to maintain a healthy balance of stakeholders' interests.

4.3.2. The roadmap for implementation of CAS needs to be transparent, unambiguous with a definite Effective Date (the date for mandatory roll out of CAS) and a sun-set date (the date upto which a framework for regulatory protection would be available) and appropriate measures to incentivise networks to adopt CAS on voluntary basis before the effective date in order to ensure that all the stakeholders and implementing networks could work

out their business plans. A Uniform Regulatory Framework (URF) would need to be announced by TRAI in advance and the time table for implementation at various levels.

- 4.3.3. Such planning would reduce ambiguity and ensure higher acceptability of implementation by all stakeholders. Thus, a clear time frame for implementation and de-regulation will be determined and notified well in advance.
- 4.3.4. Government would declare an “effective date”⁷ for the implementation of CAS, which would be implemented in a phased manner in the identified 55 cities with the respective effective dates notified for each of the 55 cities (“Identified Cities”) as specified in Annexure B. One single notification to be issued covering all the 55 cities indicating respective “effective dates”. The earliest “effective date” should be one year from the date of notification, to give sufficient time to stakeholders to complete mutual negotiations and to enable TRAI to take stock of the situation. Since the process of implementation of CAS in remaining parts of three metros of Delhi, Mumbai and Kolkata is under consideration, there should, additionally, be a gap of atleast six months between the earliest effective date notified for the identified 55 cities and the mandated date for roll out of the last phase for these three cities.
- 4.3.5. In order to promote digitalization, no new cable operator or MSO should be permitted to get registration/permission for transmitting pay channels in analog mode. This restriction will apply to the 55 cities with effect from the date of notification containing the effective dates for these cities.
- 4.3.6. The URF support will be available to the MSOs for a period of one year after the “effective dates”.
- 4.3.7. Six months before the effective date for a particular city, TRAI would hold consultations to review the preparedness and efforts of the service providers in implementing CAS. If TRAI is of the opinion that necessary agreements for

⁷ Effective Date would mean a date notified by the Government from which all pay channels would be accessible through Addressable system only

interconnections and tariff have been successfully concluded on a voluntary basis in conformity with section 4A of the Cable Act (particularly with reference to the requirements of basic service tier and a-la-carte offering). , it may determine that there ought not to be any further Regulatory intervention. This would mean that URF would not be applicable, except for Quality of Service(QoS) Regulations. However, in case of an inference by TRAI that necessary arrangements for voluntary CAS are not in place then CAS would be implemented from the effective date alongwith the URF on mandatory basis, with a sunset⁸ period of 1 year to be notified in advance. In such an eventuality, any agreements done on a voluntary basis would be automatically superceded by URF from the effective date.

- 4.3.8. Prior to the effective date, Broadcasters and MSOs in each of the identified 55 cities would be free to implement CAS on their own on a voluntary basis.
- 4.3.9. **Broadcasters and MSOs are also free to implement CAS in cities other than identified cities on voluntary Basis.**
- 4.3.10. The MSO willing to rollout CAS prior to the effective date in these notified 55 cities or MSO willing to start CAS on voluntary basis in the cities other than these notified cities is required to apply to Government of India in the Ministry of Information and Broadcasting in advance. The application should be accompanied with the recommendations of local authorized officer concerned (notified in the Cable Act) within whose territorial jurisdiction the headend of the MSO is situated.
- 4.3.11. Government of India in the Ministry of Information and Broadcasting will consider granting provisional approval/permission to the MSO within 30 days from receipt of such application for rolling out voluntary CAS.
- 4.3.12. The approval/permission will be specific to a city. The Ministry of Information and Broadcasting may consider having a simplified procedure for multi-city MSO once they have obtained approval/permission for a city.

⁸ Sunset period refers to the period upto which the regulatory framework would be in force.

- 4.3.13. After obtaining provisional approval from the Government, the MSO can start installing the infrastructure such as Conditional Access (CA) and Subscriber Management System (SMS) etc. necessary for implementation of CAS and simultaneously initiate the process of negotiations with the broadcasters for concluding interconnection agreements for delivering the pay channels in CAS mode. The authentication of the CA and SMS system put up by the MSOs will be certified by the mutually agreed agency or by an independent agency such as BECIL etc. The date of such authentication is hereinafter referred to as "Certification Date". After this certification date, the MSO will intimate the facts of certification with necessary details with Government, who will then issue the final approval within 30 days.
- 4.3.14. If the interconnection agreements are not concluded on voluntary basis between broadcasters and MSO(s) and LCO(s), the "voluntary CAS roll out date" for these MSOs with URF support will be 3 months after the date of issue of the final approval from Ministry of Information and Broadcasting.
- 4.3.15. In case of MSO rolling out voluntary CAS in the cities other than notified 55 cities, the URF will be available to the MSO for a maximum period of two years from the "voluntary CAS roll out date". After this period is over, broadcasters would be required to offer the channels/bouquets to these MSOs at a discount of 50% or more on the prevailing price for the channels/bouquets for the non-CAS area for a further period of two years.
- 4.3.16. In the notified 55 cities, the URF will be available to the MSO offering voluntary CAS from the date one year prior to the notified effective date.
- 4.3.17. If an MSO is willing to roll out CAS even earlier than one year from the effective date for that particular city, the broadcasters will offer 50% or more discount of non-CAS channels/bouquets price to that MSO. However, URF support will be available to this MSO only from the date one year prior to the effective date.
- 4.3.18. After the sun set date (one year from the effective date) in the notified 55 cities, the URF will not be available. However, for a period of two years from the sun set date, the broadcasters will provide their channels/bouquets to the

MSOs at a discounted price of 50% or more of the prevalent non-CAS channels/bouquets prices.

4.3.19. The regulatory framework in respect of Quality of Service (QoS) will, however, continue to operate even beyond sun set date.

4.4 A detailed time plan on implementation of CAS in specified 55 cities is provided in Annexure B. The general specifications of the CA and SMS system are described in Annexure C.

(Dr. V.K. Singh)
Member

(Arvind Kumar)
Member

(Rakesh Kacker)
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Member

(Ravi Mansukhani)
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(A. Mohan)
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(Mrs Roop Sharma)
Member

(Col. S.N. Aggarwal (Retd.))
Member

(Ganesh Naidu)
Member

(Anuj Gandhi)
Member

(Rajesh Kaul)
Member

(Vittal Sampathkumaran)
Member

(R.N. Choubey)
Chairperson

Annexure A: List of member of the group

1.	R.N. Choubey, Pr. Advisor (B&CS) TRAI	Chairperson
2.	Dr V.K. Singh Retd. Engineer in Chief (Doordarshan)	Member
3.	Shri Arvind Kumar Ministry of Information & Broadcasting (MoIB)	Member
4.	Shri Rakesh Kacker, Indian Wind Energy Association	Member
5.	Shri L. V Sharma Doordarshan, Prasar Bharati	Member
6.	Shri Y.K. Sharma Prasar Bharati	Member
7.	Shri Ravi Mansukhani IndusInd Media Communications Ltd.	Member
8.	Shri A Mohan Zee Network	Member
9.	Shri K. Jayaraman Hathway Cable and Datacom Pvt Ltd.	Member
10.	Shri Anshuman Sharma Tata Sky Ltd.	Member
11.	Mrs Roop Sharma Cable Operators Federation of India (COFI)	Member
12.	Col. S.N. Aggarwal (Retd.) VOICE	Member
13.	Shri Ganesh Naidu CODA	Member
14.	Shri Anuj Gandhi Set Discovery Pvt. Ltd.	Member
15.	Shri Rajesh Kaul ESPN India Pvt. Ltd.	Member
16.	Shri Vittal Sampathkumaran Kal Cables & Sun TV	Member

Annexure B: Detailed plan for the implementation of CAS

The rationale behind the selection of the cities and phases are as under :

1. Proximity of the cities to existing CAS cities which will make it easier for ESP¹s to implement CAS in these cities.
2. C & S household size. Larger cities to be digitized first as we expect the PSP² is in those cities to be better equipped and prepared both logistically and financially. It will also ensure that :
 - Larger number of subscribers get to exercise their choice faster and
 - Greater nos. of STBs deployed in a quicker time-span thus ensuring that the broadcasters are to a certain extent compensated for regulated prices by larger number of declared points
3. Phase I has higher number of boxes as STBs have already been deployed in a few of the cities while some of the cities are planning to digitalize much ahead of the phase plan.
4. It is assumed that each city will have enough PSPs to implement CAS on their own or through JVs with ESPs.
5. All the State Capitals have been included to have uniformity among the states.

¹ Established Service Provider which can be MSO, / ICO / Group of LCOs / LCO who is already providing Conditional Access in the existing CAS cities.

² Potential Service Provider which can be MSO / ICO/ Group of LCOs / LCO that will register to implement CAS in the other cities.

DIGITALISATION - IN THREE YEARS

DIGITALISATION - to be started in Quarter commencing 1 st October, 2008									
SR. No	CITY/TOWN	TV OWNERSHIP (in '000)	C&S TV HOMES (in '000)	Quarter start				Estimated penetration of STBs (in %)	Estimated STB Reqmt in 000's
				Q1 (Oct.,08 to Dec.,08)	Q2 (Jan.,09 to Mar.,09)	Q3 (April,09 to June,09)	Q4 (July,09 to Sept.,09)		
1	JAIPUR	449	225					40	90
2	NAVI MUMBAI	1000	865						260
3	THANE	1585	634						190
4	KOCHI/ ERNAKULAM	291	230					20	46
5	AHMEDABAD & GANDHINAGAR	902	559					40	224
6	BANGALORE	1,458	1,393					40	557
7	BHOPAL	292	184					40	74
8	FARIDABAD	246	229					25	57
9	HYDERABAD & Secunderabad	1,235	1,182					30	355
10	INDORE	286	181					35	63
11	NOIDA	73	60					40	24
12	GHAZIABAD	199	153					30	46
13	GURGAON- urban	43	28					40	11
14	PUNE	947	517					40	207
15	CHANDIGARH	193	148					40	59
16	SHIMLA (HP)	44	30					30	9
17	BHUBANESHWAR	266	155					40	62
18	VADODARA	312	240					25	60
19	BURDWAN	250	160						90
	TOTAL in Ist year	9,622	6,948						2,484

SR. No	CITY/TOWN	TV OWNERSHIP (in '000)	C&S TV HOMES (in '000)	Quarter start				Estimated penetration of STBs (in %)	Estimated STB Reqmt in 000's
				Q5 (Oct.,09 to Dec.,09)	Q6 (Jan.,10 to Mar.,10)	Q7 (April,10 to June,10)	Q8 (July, 10 to Sept.,10)		
1	NAGPUR	436	289					30	87
2	SURAT	625	471					30	141
3	COIMBATORE	906	861					20	172
4	KANPUR	457	286					30	86
5	LUCKNOW	418	260					30	78
6	LUDHIANA	304	282					30	85
7	NASIK	245	184					30	55
8	RAJKOT	239	171					25	43
9	VIJAYWADA/ KRISHNA	225	220					30	66
10	AGRA	220	184					30	55
11	PONDICHERRY	207	180					30	54
12	DEHRADUN	123	70						21
13	TRIVANDRUM	213	173						52
14	PANAJI (GOA)	79	50						15
15	GANGTOK (SIKKIM)	48	40					30	12
16	DISPUR/GUWAHATI(ASSAM)	183	112					30	34
17	AGARTALA (TRIPURA)	169	99					30	30
18	IMPHAL (MANIPUR)	78	60					30	18
	TOTAL in IInd year	5,175	3,992						1,104

SR. No	CITY/TOWN	TV OWNERSHIP (in '000)	C&S TV HOMES (in '000)	Quarter start				Estimated penetration of STBs (in %)	Estimated STB Reqmt in 000's
				Q9 (Oct.,10 to Dec.,10)	Q10 (Jan.,11 to Mar.,11)	Q11 (April,11 to June,11)	Q12 (July,11 to Sept.,11)		
1	AMRITSAR	210	165					30	50
2	MADURAI	282	269					30	81
3	MEERUT	186	162					30	49
4	JAMSHEDPUR/ PURBI SINGHBHUM	202	153					30	46
5	VISAKHAPATNAM	356	348					30	104
6	ALLAHABAD	158	108					30	32
7	ASANSOL	231	141					30	42
8	DHANBAD	152	133					30	40
9	JABALPUR	211	151					30	45
10	PATNA	281	193					30	58
11	VARANASI	149	78					30	23
12	RAIPUR(CHATTISGARH)	150	68					30	20
13	JAMMU & SRINAGAR	150	88					30	26
14	RANCHI	142	79						24
15	SHILLONG (MEGHALAYA)	152	99					30	30
16	ITANAGAR(Arunachal pradesh)	112	76					30	23
17	AIZWAL (MIZORAM)	124	84					30	25
18	KOHIMA (NAGALAND)	102	66					30	20
	TOTAL in IIIrd Year	3,350	2,461						738
IN ALL THREE YEAR TOTAL									
		18,147	13,401					0	4,326

Source: C&S and Total TV homes based on NRS'2006 data

Annexure C : Requirements

Illustrative requirements for Set-Top-Boxes (STBs), Conditional Access System (CAS) & Subscribers Management System (SMS) for implementation of Digital Addressable Systems

(A) STB Requirements:

- 1 All the STBs should have embedded Conditional Access.
- 2 The STB should be capable of decrypting the Conditional Access inserted by the Headend.
- 3 The STB should be capable of doing the Overt and Covert Finger printing. The box should support both Entitlement Control Message (ECM) & Entitlement Management Message (EMM) based fingerprinting.
- 4 The box should be individually addressable from the Headend.
- 5 The box should be able to take the messaging from the Headend.
- 6 The messaging character length should be minimal 120 characters.
- 7 There should be provision for the global messaging, group messaging and the individual box messaging.
- 8 The box should have forced messaging capability.
- 9 The box must be BIS compliant.
- 10 There should be a system in place to secure content between decryption & decompression within the STB.
- 11 The boxes should be addressable over the air to facilitate Over The Air (OTA) software upgrade.

(B) Fingerprinting Requirements:

- 1 The finger printing should not be removable by pressing any key on the remote.
- 2 The Finger printing should be on the top most layer of the video.
- 3 The Finger printing should be such that it can identify the STB or the Viewing Card (VC).
- 4 The Finger printing should appear on all the screens of the STB, such as Menu, EPG etc.
- 5 The location of the Finger printing should be changeable from the Headend and should be random on the viewing device.
- 6 The Finger printing should be able to give the numbers of characters as to identify the unique STB and/ or the VC.
- 7 The Finger printing should be possible on global as well as on the individual STB basis.
- 8 The Overt finger printing and On screen display messages of the respective broadcasters should be displayed by the MSO/LCO without any alteration with regard to the time, location, duration and frequency.
- 9 No common interface Customer Premises Equipment (CPE) to be used.

- 10 The box should have a provision that OSD is never disabled.
- (C) **CAS & SMS Requirements:**
1. The current version of the conditional access system should not have any history of the hacking.
 2. The fingerprinting should not get invalidated by use of any device or software.
 3. The STB & VC should be paired from head-end to ensure security.
 4. The SMS and CA should be integrated for activation and deactivation process from SMS to be simultaneously done through both the systems. Further, the CA system should be independently capable of generating log of all activations and deactivations.
 5. The CA company should be known to have capability of upgrading the CA in case of a known incidence of the hacking.
 6. The SMS & CAS should be capable of individually addressing subscribers, on a channel by channel and STB by STB basis.
 7. The SMS should be computerized and capable to record the vital information and data concerning the subscribers such as:
 - a. Unique Customer Id
 - b. Subscription Contract no
 - c. Name of the subscriber
 - d. Billing Address
 - e. Installation Address
 - f. Landline no
 - g. Mobile No
 - h. Email id
 - i. Service /Package subscribed to
 - j. Unique STB No
 - k. Unique VC No
 8. The SMS should be able to undertake the:
 - a. Viewing and printing historical data in terms of the activations, deactivations etc
 - b. Location of each and every set top box/VC unit
 - c. The SMS should be capable of giving the reporting at any desired time about:
 - i. The total no subscribers authorized
 - ii. The total no of subscribers on the network
 - iii. The total no of subscribers subscribing to a particular service at any particular date.
 - iv. The details of channels opted by subscriber on a-la carte basis.
 - v. The package wise details of the channels in the package.
 - vi. The package wise subscriber numbers.

- vii. The ageing of the subscriber on the particular channel or package
 - viii. The history of all the above mentioned data for the period of the last 2 years
9. The SMS and CAS should be able to handle at least one million concurrent subscribers on the system.
 10. Both CA & SMS systems should be of reputed organization and should have been currently in use by other pay television services that have an aggregate of at least one million subscribers in the global pay TV market.
 11. The CAS system provider should be able to provide monthly log of the activations on a particular channel or on the particular package.
 12. The SMS should be able to generate itemized billing such as content cost, rental of the equipments, taxes etc.
 13. The CA & SMS system suppliers should have the technical capability in India to be able to maintain the system on 24x7 basis throughout the year.