GRANT INVESTRADE LIMITED

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To,

Shri S. K. Singhal,

Advisor (B&CS)

Telecom Authority of India,

NEW DELHI

Sub: **Consultation Paper on Infrastructure Sharing in Broadcasting TV Distribution Sector - 21st Sept. 2016**

Dear Sirs,

We thank you for giving us the opportunity to respond to the consultation paper on Infrastructure Sharing in the Broadcasting TV Distribution Sector. We believe that infrastructure sharing across distribution operators will be crucial in ensuring the growth of the industry, and for delivering better quality video and services at more cost-effective price points to subscribers.

In the HITS guidelines of 26th November 2009 in para 5 relating to provision of passive infra-structure facilities, the requirement to avail passive services from a HITS operator by a MSO would be contingent on his signing an Interconnection Agreement with the broadcaster containing all commercial and other relevant terms of contract. However, the guidelines as they stand make this condition implicit and not explicit. This may need to be clarified in the revised guidelines. For instance, in the case of an MSO entering into a contract with the broadcaster, the payment would automatically be his responsibility and not that of the HITS operators who is providing the passive services. In such a case the HITS operator would provide the concerned broadcaster online and mobile applications access to manage and monitor individual subscribers and operator customers who wish to avail of the particular broadcasters channel. This gives complete freedom to the broadcaster to take action on a non-conforming MSO / Customer. However, a certain section of broadcasters are taking advantage of what they perceive is a lacuna in the HITS policy and not allowing such arrangements to be made by the HITS operator.

More pertinently, infrastructure sharing should be permitted immediately, well ahead of the completion of phase 4 of digitisation to ensure that MSOs/HITS can take the benefit of this ahead of completion of digitisation.

We have herewith enclosed our detailed comments on the consultation paper questions.

Thanking you,

Yours sincerely,
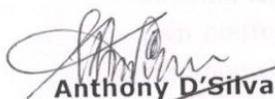
Anthony D'Silva

MD & CEO, Grant Investrade Limited (HITS)

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Infrastructure sharing among Cable TV and HITS operators

(i)   Is there a need to <u>enable</u> infrastructure sharing among MSOs and HITS operators, or among MSOs? It is important to note that no mandate for such infrastructure sharing is being proposed.

In our opinion, infrastructure sharing should be enabled for MSOs and HITS operators, and amongst MSOs, as this will ensure that both HITS operators and MSOs can reduce their transmission and other costs by sharing of infrastructure including but not limited to, CAS, SMS, Call Centre etc. which is expensive and costly to maintain. It is pertinent to note that technology expertise is expensive and not freely available. This infrastructure sharing should be enabled for the following:

1. Sharing of **Fibre Infrastructure** by one or more MSOs wanting to transmit common video signals to one or more MSOs/LCOs headends. Video signals can be simul-crypted with one or more Conditional Access systems (CAS) to enable multiple operators to share the transmission of common video signals. This provides two advantages – firstly operators can share fibre transmission costs to common locations and secondly it enables more MSOs to enter an existing market, providing customers with more options and enables ease of subscriber migration from one operator to another.

2. Sharing of **HITS Services**, which includes satellite signals, CAS, SMS etc. by HITS provider, as well as multiple MSOs. HITS has an advantage that it can reach the entire width and breadth of the country, including those locations which are difficult for existing MSOs to reach. The sharing of HITS satellite signals by multiple operators, again through the use of simulcrypting or other methods, can enable delivery of a common set of signals to remote headends for onward delivery to their cable customers.

3. Sharing of **Conditional Access System** (CAS) infrastructure which enables a single encryption of video signals for use by multiple MSOs and their STBs. This enables the same STBs to be used by multiple MSOs and even provides STB interoperability. Control of the STBs is still managed by the CAS, and can be segregated within the CAS through the use of 'network identifiers', which is a globally accepted practice. Separate conditional access systems can be used, where MSOs already have their own platforms, but where MSOs still need to implement a CAS, then a common CAS platform can be used.

4. Sharing of **Subscriber Management System** (SMS) also enables many MSOs/HITS operators to share the cost of developing SMS/billing

platforms that can manage their subscribers and ensure that they meet QoS (quality of service) regulations. So long as the SMS platform can report on each MSO individually, and is auditable, then there should be no restrictions to sharing of SMS platforms. This includes the fact that with the advent of cloud-based technology, the SMS & CAS can reside anywhere and still maintain the individuality and security of the operator.

5. Sharing of **Hybrid Fibre-Coax Networks** for onward delivery to customers amongst one or more MSOs/LCOs also enables operators to share costs of fibre, and invest in high availability solutions that would ensure better uptime for their subscribers.

Infrastructure sharing among MSOs and HITS operators is required to bring in consolidation of services which can result in all concerned coming together to invest in the best of the available service quality and addressing, instead of each operator(s) trying to establish their own service in a low cost Model adept with limitations.

Infrastructure sharing can result in sharing of not only high quality services but also Value Added Services to offer the subscribers the latest services.

Infrastructure sharing should be permitted immediately, well ahead of the completion of phase 4 of digitisation to ensure that MSOs/HITS can take the benefit of this ahead of completion of digitisation. Implementation of infrastructure sharing post completion of digitisation will be significantly more difficult and possibly unviable.

(ii) **Which Model is preferred for sharing of infrastructure among MSOs and HITS operators, or among MSOs? Kindly elucidate with justification.**

A. **HITS Infrastructure Sharing -** We believe that there are in fact 3 separate Models available for infrastructure sharing in relation to HITS.

1. **Model 1** – Where a HITS provider uplinks each Broadcaster channel once and simulcrypts this signal with one or more CAS platforms. In this scenario an MSO can either use the HITS provider's own CAS for encryption, or the MSO can provide its own CAS which can be simul-crypted on the HITS signal. Both of these options should be available in Model 1. A further extension in this Model exists also to uplink only

those channels that a specific MSO might want to deliver to his customers, which may not be in common with other MSOs. In this scenario whilst the majority of channels may be common to multiple MSOs, some channels may be specific to an operator, if other operators do not want to provide such content to their customers. This ensures maximum flexibility to MSOs to select their content for onward distribution.

2. **Model 2** – Where a HITS provider uplinks each MSO's content (made of Broadcaster channels) up to a satellite separately for each MSO. This Model goes against the ethos of infrastructure sharing and would result in unnecessary wastage of satellite transponder space to uplink the same Broadcaster channels many times over in order to support multiple MSOs. However, some MSOs may want this service on the basis of (a) that they have additional Broadcaster channels which are currently not being carried by the platform (b) would like to uplink it's (their own created) content/channels or (c) they want a differentiated service running on separate transponders. Therefore, this Model 2 should not be discounted/discarded as an option.

3. **Model 3** - (Recommended) - A third Model is also recommended, where a HITS provider could act simply as a **delivery mechanism** of Broadcaster channels to existing headends of MSOs, particularly those who have deployed technologies other than MPEG4 in their networks. In this situation, the HITS provider's signals can be received by the MSO, decrypted, re-encoded into their required formats, before re-encryption by the MSO. This Model essentially replaces the need for the Broadcaster to give out its own STBs/IRDs to these MSOs, as these will be replaced now by HITS IRDs. This Model therefore acts simply as an extension of the Broadcaster's own transmission mechanism to the MSOs, who would anyway receive the content directly from the Broadcaster, decrypt the signal using the Broadcasters' own IRDs/STBs, re-encode the signal before re-encrypting it for onward delivery to subscribers. For this Model to succeed, of course, it requires that the Broadcasters have control over the HITS IRDs that are available with each MSO, in order to be able to activate/deactivate their channels, send fingerprints for anti-piracy etc. This facility can be provided to Broadcasters through a specialised secure portal that enables the Broadcaster full control over each of its signals separately in each MSO headend, thereby not restricting the Broadcaster to requesting any action from the HITS provider on their behalf.

In our view, all 3 Models should be made available to HITS operators in order to be able to cater their services to different requirements from MSOs. In the case of MSOs who cannot afford to put in their own infrastructure or have the

skills necessary to manage CAS implementations, the HITS operator could offer Model 1 services. For certain MSOs who want to have their own secure feeds, Model 2 could be offered. For other MSOs where an existing STB technology has already been deployed and who would want to take advantage of the satellite distribution of HITS, and thereby avoid issues with existing long distance fibre connectivity, then Model 3 services could be offered. There should be no limitation on any HITS provider offering any or all of the Models to their operators.

It is important to correlate the above proposed models to the HITS guidelines of 26th November 2009 wherein para 5 relating to provision of passive infrastructure facilities, the requirement to avail passive services from a HITS operator by a MSO would be contingent on his signing an Interconnection Agreement with the broadcaster containing all commercial and other relevant terms of contract.

However, the guidelines as they stand make this condition implicit and not explicit. This may need to be clarified in the revised guidelines.

For instance, in the case of an MSO entering into a contract with the broadcaster, the payment would automatically be his responsibility and not that of the HITS operators who is providing the passive services. In such a case the HITS operator would provide the concerned broadcaster online and mobile applications access to manage and monitor individual subscribers and operator customers who wish to avail of the particular broadcasters channel. This gives complete freedom to the broadcaster to take action on a non-conforming MSO / Customer. However, a certain section of broadcasters are taking advantage of what they perceive is a lacuna in the HITS policy and not allowing such arrangements to be made by the HITS operator.

B. **MSO Infrastructure Sharing** - With respect to the sharing of infrastructure for MSOs amongst themselves, then sharing of fibre networks and video signals should also be permitted. Whilst the underlying content is the same, the video signals can be simul-crypted with multiple CAS platforms for accessing by subscribers of different MSOs. Whether a video signal is encrypted with a single CAS or multiple CAS platforms, the video signal is still encrypted using the same DVB-CSA technology, and does not in any way affect the security of the Broadcasters' own video signals from theft or piracy. Of course, a process or platform needs to be developed by the MSO who is managing the video feeds, to ensure that a Broadcaster may switch off the signals of one or more MSOs that may be sharing the video feed if this is required by the Broadcaster. This could be as simple as removing the simulcrypt encryption at the multiplexer level of the MSO that needs

to be deactivated by the Broadcaster. This is a simple exercise and can be done very quickly by the operator managing the origin headend.

The alternate Model for MSOs sharing infrastructure amongst themselves, is for each MSO to use the same fibre but transmit their own signals. This is not a cost-effective solution for MSOs, but may be an option that some MSOs prefer.

MSOs should be allowed to utilise either or both Models in order to improve services to end subscribers and make transmission more cost-effective for all parties, with ultimately the subscriber benefitting from the same. By utilising either one or both Models, an MSO is at liberty to make better decisions based on the geographies he is working in.

Infrastructure sharing among DTH operators

(i)   Is there a need to <u>enable</u> infrastructure sharing among DTH operators?

The duplication of the signals along with the relevant infrastructure provisioning which is being carried out by each of the DTH operators can be eliminated with infrastructure sharing and the capacity can be utilized to provide additional services uniformly. This will open up the bandwidth which currently is a major challenge to DTH operators, and enable them to provide greater numbers of channels to their subscribers at much lower costs. Satellite bandwidth is a costly proposition and through infrastructure sharing, the costs to subscribers can be reduced through infrastructure sharing. Of course, this can only be enabled or achieved if DTH operators use similar technologies, including modulation and encoding. However, for those DTH operators that are using similar technologies, then infrastructure sharing should be permitted and encouraged.

Relevant issues in sharing of infrastructure

(i)   What specific amendments are required in the cable TV Act and the Rules made there under to enable sharing of infrastructure among MSOs themselves? Kindly elucidate with justification.

The following amendments are required in the cable TV Act to enable various levels and Models of infrastructure sharing that should be allowed by the Regulations:

1. The current DAS Interconnection Regulations dated April 30 2012 outline that each operator/MSO should have its own headend. In an infrastructure sharing scenario, this would no longer be the case, and therefore should be removed from the regulations. Instead MSOs

should be permitted to share headends, fibre networks and simulcrypt a common set of video signals for their customers.

2. The current DAS Interconnection regulations dated April 30, 2012 also outline the need for each MSO/operator to own its own SMS platform. In an infrastructure sharing scenario, operators/distributors should be allowed to opt for sharing a common SMS platform, subject to it being able to generate individual MSO reports for each operator.

3. The Cable TV Act as amended in 2011 and the HITS Guidelines of 2009 should also be amended to enable multiple MSOs to share a common CAS, subject to the CAS being able to identify subscribers of each MSO individually through the use of an identifier for each STB/Smart card. This will enable multiple operators to use a common platform and permit STB interoperability amongst these operators.

(ii) What specific amendments are required in the MSO registration conditions and HITS licensing guidelines in order to enable sharing of infrastructure among MSOs and HITS operators? Kindly elucidate with justification.

The policy guidelines for HITS operators should be modified to explicitly permit a HITS platform to operate under any Model of infrastructure sharing as discussed earlier, and also to operator under more than one Model if so desired.

The MSO registration conditions laid down in the Cable Rules as amended in 2012 should be modified to permit MSOs without headends also to register as MSOs, subject to them meeting other conditions of the license.

An MSO should also state whether he is expecting to share infrastructure with another MSO and under what conditions the nature of this sharing will be.

However, the option should always be left open for the MSO to choose to later implement his own headend at any time should he wish to do so, or even connect to a separate MSO should this be more beneficial to his business.

(iii) What specific amendments are required in the guidelines for obtaining license for providingDTH broadcasting service to enable sharing of infrastructure among DTH operators? Kindly elucidate with justification.

A DTH operator should identify whether he is proposing to share infrastructure or implement his own infrastructure, and in the event of infrastructure sharing, who will be providing the service to them. To this end, if the DTH operator is wishing to share infrastructure, then the need

for contracts with a satellite provider, SACFA clearance, DoS (department of space) clearance will no longer be required as these will have already been entered into by the DTH platform who will be providing the shared infrastructure. For this purpose the DTH Guidelines of 2007 would need to be amended.

The DTH operator who is sharing some other operators' infrastructure will also need show the contract with the DTH operator who he will be sharing services with, to ensure that the contract covers the duration of the DTH license being offered. However, this should not preclude the DTH operator who is sharing infrastructure from setting up his own infrastructure during the license period, should he wish to do so in the future, by then getting the necessary site and other clearances as are already required by DTH platforms in India.

(iii) **Do you envisage any requirement for amendment in the policy framework for satellite communication in India to enable sharing of infrastructure among MSOs and HITS operators, and among DTH operators? If yes, then what specific amendments would be required? Kindly elucidate with justification.**

The MIB/DOS policy framework should be clearer for HITS platforms, that infrastructure sharing in the different Models discussed above, should be permitted, and that HITS operators should be at liberty of offering any one or more of these Models to their connected MSOs.

The policy framework should also be amended to enable DTH and HITS providers to share infrastructure if the HITS provider chooses to deliver its signals in Ku-band.

Separate licenses for DTH and HITS should be applicable, but as the underlying satellite delivery technology for the video is the same, there should no reason why DTH and HITS operators should not share the same infrastructure and uplinking of video signals to the satellite.

(iv) **Do you envisage any requirement for amendments in the NOCC guidelines and WPC license conditions relating to satellite communications to enable sharing of infrastructure among MSOs and HITS operators, and among DTH operators? If yes, then what specific amendments would be required? Kindly elucidate with justification.**

NOCC guidelines and WPC license conditions should be modified in the line with the proposals above, including identifying and declaring who is using the satellite video signals and where these signals are originating from. In the event of sharing of video signals, then the operator who is owning the headend and responsible for uplinking

should be responsible for all content being uplinked, including any that may be uplinked separately for another operator (e.g. the other operator's barker channel etc.).

(v)   Do you envisage any requirement for amendments in any other policy guidelines to enable sharing of infrastructure among MSOs and HITS operators, among MSOs, and among DTH operators? Kindly elucidate with justification.

As discussed above.

(i)   **W**hat mechanisms could be put in place for disconnection of signals of TV channels of defaulting operator without affecting the operations of the other associated operators with that network after implementation of sharing of infrastructure among MSOs and HITS operators, among MSOs, and among DTH operators? Kindly elucidate.**

Different facilities can be made available to the Broadcaster for ensuring disconnection of signals of TV channels of a defaulting operator:

1. In a Model where MSOs share a HITS signal in **Model 1** proposed in the paper, then the Broadcaster can be given a portal which connects directly to the SMS platform, and can deactivate all STBs related to that specific MSO he is choosing to disconnect. Care would need to be taken to enable the Broadcaster only to remove his own channels, without affecting the capability of the MSO to continue to run other Broadcasters' content. This can be achieved through effective creation of packaging which enables each Broadcasters' content to be activated/deactivated uniquely and separately at a CAS level. This portal should include the facility for Broadcasters to switch off the STBs of the HITS platform itself, in the event that it is defaulting. The HITS operator also has the facility to manually remove the simulcrypting for the Broadcasters' channels directly at the multiplexer level which would stop the defaulting operators' subscribers seeing specific channels. This could be useful, in the event that the HITS operator is not actively responsible for an MSO's CAS platform. However, the portal could be developed to 'talk' to the MSO's own CAS platform also to ensure Broadcasters can manage deactivations/activations remotely on their own.
2. In a Model where a HITS operator uplinks multiple video signals as in Model 2 proposed in the paper, the Broadcaster can provide the HITS operator with multiple IRDs/STBs for each MSO, and therefore can manage these independently from their own SMS/CAS platforms.
3. In the 3rd proposed HITS Model, again the Broadcaster may be provided with a secure portal that can enable him to control the HITS IRDs located

at each MSO headend, thereby enabling the Broadcaster to activate/deactivate these as per their contract with that specific operator.

4. In a Model where MSOs share infrastructure and simulcrypt a common video signal (Model 1), the MSO who is managing the headend, could simply remove the simulcrypt encryption from his muxes for the defaulting MSO's signals on specific channels. The Broadcaster could advise the MSO managing the headend to do this, and this could be governed by a tight tri-partite agreement between the Broadcaster, the MSO managing the headend delivering the video signals and the MSO sharing the infrastructure.

5. In a Model where the MSOs share common fibre networks, then each operator would have their own Broadcaster IRDs/STBs, and in this Model, the Broadcaster would be able to manage their own IRDs/STBs through their own SMS/CAS platform.

6. In a Model where multiple DTH operators share the same satellite bandwidth and simulcrypt their video signals, again the same Model as either (1) or (4) above could be used to ensure that Broadcasters retain full control over defaulting DTH operators.

(ii)   **Is there any requirement for tripartite agreement to enable sharing of infrastructure among MSOs and HITS operators, among MSOs, and among DTH operators? Kindly elucidate with justification.**

There should be tripartite agreements to enable sharing of infrastructure as this will protect both the Broadcaster, the MSO/HITS/DTH operator providing the infrastructure and the party wishing to share the infrastructure. This tripartite agreement should clearly elucidate responsibilities in case of default, communication channels, and actions to be taken under different scenarios (e.g. default by the MSO/HITS/DTH operator providing infrastructure, default by the operator using shared infrastructure, use of OSDs/FPs, actions to be taken during piracy situations etc.)

(i)   **What techniques could be put in place for identification of pirates after implementation of sharing of infrastructure among MSOs and HITS operators, among MSOs, and among DTH operators? Kindly elucidate.**

Existing anti-piracy systems are already sufficiently available to ensure protection of Broadcasters' content. However, the following additional requirements could also be included:

1. In a HITS Model 1 option, the operators, whether using a shared or multiple CAS should provide regular fingerprinting of their STBs. Ideally each operator can use different fingerprinting settings (e.g. different

background colours, font colours etc.) to enable a Broadcaster to quickly determine which operator's STB is being used for piracy. As a common signal will be used, then all the video signals will anyway contain the watermark of the HITS platform. The HITS operator will need to provide support to the Broadcaster in helping to identify the pirated STB and coordinate with its MSOs, if required, to ensure that pirated STBs are shut off in a timely fashion.

2. In HITS Model 2 option, the HITS platform will be sending separate signals for each MSO. Under this Model, therefore each MSO can use its own watermark which would enable the Broadcaster to identify the origin of the video signal and can then liaise with the relevant MSO to shut off signals to stop piracy.

3. In HITS Model 3 option, the Broadcaster will be able to determine the operator using the video signal from its own watermark and can then liaise with the respected MSO to ensure shutting off of the STB identified as being used for piracy.

4. In MSO Model 1 option, the MSOs can use different coloured fingerprinting to enable a Broadcaster to easily identify which MSO's STB is being used in a shared MSO headend environment.

5. In MSO Model 2 option, the MSOs are anyway delivering separate signals on shared fibre, and therefore the MSO's own fingerprinting and watermarks can be used by Broadcasters for identifying pirated STBs.

6. In a shared DTH Model, similar processes to (1) and (4) above can be used. In a shared DTH Model, anyway the watermark logos should be visible on the STBs of that operator, and therefore it will be easy for a Broadcaster to identify the operator whose box is being used for piracy.

(ii) **Is there any need for further strengthening of anti-piracy measures already in place to enable sharing of infrastructure among MSOs and HITS operators, among MSOs, and among DTH operators? Kindly elucidate with justification.**

Current anti-piracy measures are able to track the source and take corrective action to eliminate the risk. There should also be a mechanism of identifying the source operator where the infrastructure is shared as articulated earlier.

(i) **Is there a requirement to ensure geographically targeted advertisements in the distribution networks? If yes, then what could be the possible methods for enabling geographically targeted advertisements in shared infrastructure set up?**

The geographically targeted advertisements will help brands address the local market with distinct advertisements and also have Broadcasters to be able to cater differentiated advertising bringing advertising more personalized to the relevant market. There are a variety of broadcast TV localization solutions available for sharing geographically targeted advertisements which can be customized in the event any of the Broadcaster is differentiating the localized content insertion per MSO and not with respect to the region. Geographically targeted advertisements may not be possible in all platforms, specially DTH, and therefore should not be mandated.

(ii) **Whether it is possible for the network operator to run the scrolls and logo on the specific STBs population on request of either the Broadcaster or the service delivery operator after implementation of sharing of infrastructure among MSOs and HITS operators, among MSOs, and among DTH operators? If yes, kindly elucidate the techniques.**

Currently the Broadcaster agreements do not permit an operator to run scrolls or any content on top of the Broadcasters' channels. Whilst it may be possible to run messaging (for example on screen display messages or OSDs) as a scroll, this requires software development on the STB.

For operators (HITS, DTH and MSOs) that are running STB Models that may no longer have support from their manufacturers or software providers (as they may have been implemented many years ago including during the CAS regime), this new software development may not be possible.

Instead operators can send OSD to specific STB populations instead if the Broadcaster or network operator wants to send specific messaging.

In a shared infrastructure environment operators could insert their watermark at the STB level, rather than the encoder level.

However, it is recommended that at least a basic watermark should be provided by the headend that is sending the signal to ensure that all video content transmitted can be traced back to a source headend. This watermark could then be hidden by the operators' own watermark generated by the STB to ensure that customers can identify the network they are actually connected to. This requires STB software development to enable.

(iii) **Whether implementation of infrastructure sharing affects the differentiation and personalization of the TV broadcasting services and EPG? If yes, then how those**

constraints can be addressed? Kindly elucidate with justification.

Implementation of infrastructure sharing does not necessarily impact the differentiation and personalisation of TV broadcasting services for the following reasons:

1. Each operator sharing the service could broadcast different NIT (network information tables) for their customers that would enable differentiation of EPG data. ***This is particularly possible in a HITS environment.***
2. Each operator can select whether to add its own unique channels either directly at their own headend or even on a shared HITS platform that other operators may not want to distribute to their customers.
3. Operators can choose to distribute their own unique value added services using dedicated bandwidth on the shared platform.

(i)   Whether, in your opinion, satellite capacity is a limiting factor for sharing of infrastructure? If yes, then what could be the solutions to address the issue?

Satellite capacity will inevitably be a limiting factor for sharing of infrastructure for HITS and DTH operators. Additional capacity will need to provide to reduce the limiting factors.

(i)   Is there a need to permit sharing of SMS and CAS?

SMS and CAS sharing should be permitted subject to certain conditions being met:

1. The SMS platform should be able to clearly create reporting for each MSO/HITS provider/DTH provider separately
2. Shared SMS and CAS platforms should be audited together for all the affected MSOs/DTH/HITS operators. This would also significantly reduce the work for Broadcasters auditing these platforms.
3. The CAS platform should be able to tag STBs against a specific operator in order to permit Broadcasters to identify from the logs activities made by STBs of one operator or another. That said, the logs may not necessarily contain this tagging, but Broadcasters can use the tags to identify those STBs related to a specific operator and extract out of the logs those STBs identified.
4. The advantage of a shared CAS is that it permits interoperability of STBs, enabling subscribers to easily move to the other MSO/DTH/HITS operator who is also using that shared CAS.

Sharing of SMS/CAS platforms also allows operators to use the services of 3rd party managed service platforms that can provide these facilities on an opex based Model, rather than requiring significant upfront capex investments. Many MSOs are already taking advantage of shared SMS platforms. ICAS, the Indian CAS platform, is also proposing a shared CAS Model to enable interoperability of its STBs across multiple operators.

5. The advantage of a shared SMS platform is that it enables the investment required to develop and maintain an enterprise level SMS platform to be shared amongst multiple operators.

Whilst SMS and CAS sharing should be permitted, it should not be mandated to operators, thus enabling operators to select to use their own SMS/CAS platforms if they so choose.

(ii)   If yes, then what additional measures need to be taken to ensure that SMS data remain accessible to the tax assessment authorities and Authorized officers as defined in the Cable TV Act for the purpose of monitoring the compliance with relevant the Rules and the Regulations?

SMS and CAS sharing should be permitted subject to certain conditions being met:

1. The SMS platform should be able to clearly create reporting for each MSO/HITS provider/DTH provider separately
2. Shared SMS and CAS platforms should be audited together for all the affected MSOs/DTH/HITS operators. This would also significantly reduce the work for Broadcasters auditing these platforms.
3. The CAS platform should be able to tag STBs against a specific operator in order to permit Broadcasters to identify from the logs activities made by STBs of one operator or another. That said, the logs may not necessarily contain this tagging, but Broadcasters can use the tags to identify those STBs related to a specific operator and extract out of the logs those STBs identified.
4. The advantage of a shared CAS is that it permits interoperability of STBs, enabling subscribers to easily move to the other MSO/DTH/HITS operator who is also using that shared CAS.
5. The advantage of a shared SMS platform is that it enables the investment required to develop and maintain an enterprise level SMS platform to be shared amongst multiple operators.

Whilst SMS and CAS sharing should be permitted, it should not be mandated to operators, thus enabling operators to select to use their own SMS/CAS platforms if they so choose.

(iii) **Whether sharing of CAS can in any way compromise the requirement of encryption as envisaged in the Cable TV Act and the rules and the regulations.**

The sharing of CAS does not in any way compromise the requirement of encryption as envisaged in the cable TV act, as all Broadcasters' signals are anyway encrypted and therefore protected. Subject to the operators being able to manage the STBs in a controlled fashion, there are no issues in relation to sharing of CAS platforms. The sharing of CAS platforms does permit subscribers instead to move from one operator to another more easily, which is in the interest of the subscriber.

In the event that the operator wants to separate from a shared CAS environment, then he should be entitled to set up his own CAS platform, using the same encryption keys if necessary. However, the operator can then manage this separate CAS server independently and manage his customers separately from the shared environment. This ensures that operators have a facility to become independent in the future should they choose to do so.

In addition to the issues mentioned above, comments of stakeholders is also invited on any other issue relevant to the present consultation paper.

Local channel insertion:

It should be possible and regulated that in an digital cable environment, which local cable operators be permitted to insert their own local channels. This is a key source of revenue for local cable operators and ensures that localised content is available for subscribers across the country, which would not be possible for HITS/MSOs to necessarily provide. However, all these locally inserted channels should be encrypted to ensure that they are centrally controllable so that in the event of piracy or illegal content being transmitted, the MSO/HITS platform can effectively switch these signals off centrally. No unencrypted content should be permitted to be transmitted.

Encryption of the locally inserted channel content can be done remotely from a central CAS server using appropriate secure transmission mechanisms such as point-to-point links or virtual private networks (VPNs) in a public network like the Internet.

Hacking of CAS:

As per the current DAS regulations, operators may not use a CAS that has been hacked. However, in the event that during the lifetime of operation of a CAS platform by an MSO, HITS or DTH provider, the CAS version (and not necessarily

the operators' own instance) does get hacked then the Regulations should provide an appropriate timeline by which the operator and CAS provider must fix the version in order to remove the possibility of hacking. Fixing a hacked CAS system may take months of development and deployment (particularly in the case of card-based CAS platforms where new smart cards may need to be rolled out to the entire population of STBs of an operator which can be logistically very difficult and time consuming. We recommend/suggest that the Regulator provide a timeframe of at least 1 year for the operator and CAS vendor to rollout a new version of CAS in the event of a compromise.

Broadcasters should not be able to use the excuse that the CAS has been hacked to not provide signals to the operator during such a period. It is neither practical nor possible for an operator to replace his entire STB population once the CAS is hacked whilst he may wait for the CAS vendor to provide a fix for the problem and roll it out.

Also, it will be important for the Regulator to clearly define what is meant by hacking or compromise. Most CAS operators will only consider developing a solution where there is "economic" compromise of their system for developing workarounds. An economic compromise means that the hack has been proven to be used by at least a certain number of STBs or that it has caused at least a certain amount of proven commercial loss to the operator. The hacking of a single STB would not constitute the same.

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