

To,

28th October, 2016

Mr. Sunil Kumar Singhal
Advisor (B&CS)
Telecom regulatory Authority of India
New Delhi

**Ref: Consultation Paper on the Infrastructure Sharing in Broadcasting TV
Distribution Sector dated 21st September 2016**

Dear Sir,

We would like to enclose herewith our detailed response on the above captioned Consultation Paper for your consideration and records.

Thanking you,

Yours faithfully

For Videocon d2h Limited



Shivendra Krishna Singh
Head-Regulatory & Compliance

Encl: A/a

**RESPONSE OF VIDEOCON d2h LIMITED TO CONSULTATION PAPER ON THE INFRASTRUCTURE SHARING
IN BROADCASTING TV DISTRIBUTION SECTOR DATED 21st SEPT 2016**

At the outset, we would like to state that although with advancement in technology the network and services are getting fast de-coupled; we are of the view that this is more suitable and ideal for telecom sector and least ideal for the Broadcasting TV Distribution Sector. We are of the further view that independent infrastructure such as satellite transponder, earth station facilities, head-end facilities are being used by independent distribution companies to optimum use and utilization efficiently. We believe that existing policy guidelines which are in vogue since inception of DTH industry in the country are working fine and therefore, it could be a very complex exercise to couple network and services by modifying the existing guidelines. This will further result in creation of various technical and commercial issues not only from individual perspective of a DTH Company but also from perspective of correlations between various distribution platforms, which will then put breaks on the overall development of the industry.

As the Authority, is aware, there are more than seven Hundred MSOs, sixty thousand Cable Operators, six DTH Operators along with FTA DD Direct Plus, two HITS Operators along with some telecom service providers using IPTV technology for distribution of television Channels in the country. Providing an option of voluntarily sharing common infrastructure as envisaged under the present consultation paper is certainly not the ideal way forward, which will be elaborated further in our response to this consultation paper.

As the Authority is aware, every DTH Operator has already invested huge amounts of the capital in establishing, commissioning, operating and maintaining its head-end network. It is noteworthy here to mention, that on the basis of suggestion made by the Authority from time to time that practically every single DTH Operator has established an additional head-end in order to safeguard the interest of the customers and as a measure for ensuring that if due to any technological reason the primary head-end is met with interruption or if it were to go entirely bust then there is a fallback option with such a DTH Operator to rely upon the additional head-end to continue to provide DTH Services to customers without interruption or inconvenience to them. Thus, it is clear that, a DTH Operator has invested additional capital into the business and therefore it will be highly inconvenient and non-viable from technological as well as commercial point of view to make available the option of infrastructure sharing. It cannot be said that since most of the satellite channels re-transmitted by DTH/ HITS operators are

replicated resulting in inefficient use of satellite transponders. Historically, it has been experienced that DTH operators have been successfully using and extracting optimum use of the available satellite transponder space.

Further, there is no guarantee or certainty that sharing of earth station and satellite transponder space by multiple DTH / HITS Operators will result in saving of the CAPEX and OPEX without compromising either on quality of program or flexibility to provide diverse programs.

Thus, we are of the view that though the objective of the present consultation paper may be good we are afraid such an idea can be put into reality.

Without prejudice to our above contentions, we would like to state that, common infrastructure sharing amongst DTH Operators, could be at best permitted by making it purely voluntary option. There is no need for bringing in any set of rules, regulations or law for such voluntary sharing by these platforms.

We would now like to submit our detailed comments against each question as under:

Q.3 Is there a need to enable infrastructure sharing among DTH Operators?

As stated above in the introductory paragraphs of this response we do not think that infrastructure to provide services can be shared by various distribution platforms mentioned in this consultation paper.

As the Authority is aware, every DTH Operator is providing DTH Services on the basis of License Agreement executed with the Ministry of Information and Broadcasting, Government of India, which agreement has clear provisions about a DTH Operator who has to establish and complete the installation of the uplink earth-station with all monitoring facilities and thus commission the DTH Platform. The License Agreement has further provisions as to the procedures, permissions, licenses to be obtained from various other government bodies. Additionally, separate and exclusive up-linking and down-linking guidelines are in place since the inception of the industry. The nature and parameters of various distribution platforms being vastly separate and different it will be a herculean task before one and all to visualize and imagine the exercise itself.

Videocon d2h Limited

(Formerly Bharat Business Channel Limited)

Uplink Centre: Plot No. 1 D, Udyog Vihar Industrial Area, Surajpur, Greater Noida,
Dist Gautam Budh Nagar - 201 306. ☎ +91-0120 614 1000 📠 +91-0120 614 1250

Corporate Office: 1st Floor, Techweb Centre, New Link Road, Near Mega Mall,
Oshiwara, Mumbai - 400 102. ☎ +91-22 42 555 000 📠 +91-22 42 555 050

🌐 www.videocond2h.com

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Without prejudice to our above contentions, we would further like to state that, India is being served by a developing DTH industry and that features multiple private as well as a strong public-service platforms. We do not believe that any theoretical benefits from infrastructure sharing would warrant the costs and risks of forcing this industry under the thrall of a single, supplier of services.

We earnestly feel that Authority should maintain its focus on its mandate to assure provision of competitive options that expand the choices available to Indian consumers. "Optimum" infrastructure sharing is surely secondary to meeting the needs of the Indian customer base. The focus on average service criteria levels and service commonalities is subtly but surely anti-competitive. Further, to de-risk an additional head-end will have to be setup to serve as the backup to the primary common infrastructure which will be again a huge capital investment, on the same lines as the backup head-end established by practically every DTH Operator as suggested by the Authority, on which the DTH Operators have incurred enormous cost. The existing capital investment made by the DTH Operators on their primary as well as backup head-end will become redundant, thereby causing heavy financial loss to the DTH Operators concerned. The goal of competitors should be to attract consumers by providing excellent service levels, rather than some sort of average common denominator.

The common infrastructure would broadly mean sharing of the following critical technical resources –

1. Satellite Transponder Space; and
2. Earth Station/Head-end Infrastructure

However, as rightly pointed out in the consultation paper by the Authority, any type of infrastructure sharing definitely has its own limitations and issues. Implementing such scenarios depend upon whether the benefits actually outweighs the limitations and issues?

Indian pay television market is highly competitive. Infrastructure sharing would substantially worsen the reliability and resiliency of Indian broadcasting sector. This would also mean fewer choices, less capable and resilient networks, the extremely high transitional costs, and other day to day operational complexities possibly resulting in customer dissatisfaction.

Videocon d2h Limited

(Formerly Bharat Business Channel Limited)

Uplink Centre: Plot No. 1 D, Udyog Vihar Industrial Area, Surajpur, Greater Noida,
Dist Gautam Budh Nagar - 201 306. ☎ +91-0120.614 1000. 📠 +91-0120 614.1250

Corporate Office: 1st Floor, Techweb Centre, New Link Road, Near Mega Mall,
Oshiwara, Mumbai - 400 102. ☎ +91-22 42 555 000. 📠 +91-22-42 555 050

🌐 www.videocond2h.com

CIN : U92100MH2002PLC137947

If all DTH operators are forced to operate from a single satellite, the entirety of services for all Indian DTH households would be jeopardized by having a single point of failure.

In view of our above submissions, we urge the Authority to not to proceed further in having common infrastructure for existing television distribution platforms.

However, without prejudice to our above contentions, we would like to state that, common infrastructure sharing amongst DTH Operators could be at best permitted by making it purely voluntary option. There is no need for bringing in any set of rules, regulations or law for such voluntary sharing by these platforms.

- Q.6** What specific amendments are required in guidelines for obtaining license for providing DTH broadcasting service to enable sharing of infrastructure among DTH operators? Please elucidate with justification
- Q.9** 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.

Without prejudice to our detailed response to rest of the questions under this consultation paper, we would like to state that, common infrastructure sharing amongst DTH Operators, could be at best permitted by making it purely voluntary option. Apart from this liberty, which would be purely exercisable at the option of a DTH Service Provider, there is absolutely no need to interfere with the current set of rules and regulations in the form of guidelines, for obtaining license and providing DTH broadcasting service.

In view of the above discussion, we are of the view that there is no need for bringing in any set of rules, regulations or law for such voluntary sharing by these platforms.

- Q.8** Do you envisage any requirement for amendment in policy framework for satellite communication in India to enable sharing of infrastructure among MSOs and HITS operators and DTH operators? If yes, then what specific amendments would be required? Kindly elucidate with justification.

Videcon d2h Limited

(Formerly Bharat Business Channel Limited)

Uplink Centre: Plot No. 1, D, Udyog Vihar, Industrial Area, Surajpur, Greater Noida,
Dist. Gautam Budh Nagar - 201.306. ☎ +91-0120 614 1000 📠 +91-0120 614 1250

Corporate Office: 1st Floor, Techweb Centre, New Link Road, Near Mega Mall,
Oshiwara, Mumbai - 400 102. ☎ +91-22 42 555 000 📠 +91-22 42 555 050

🌐 www.videocond2h.com

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As the Authority is aware, practically every DTH Operator has a Disaster Recovery/ backup head-end to safeguard the interest of the customers in ensuring that they receive and are able to view the DTH services, in event of any disaster affecting the operation of the primary site.

In this regard, we would like to state that, since we have spent huge capital in establishing the disaster recovery backup head-end we would like to ensure that such back-up head-end does not lie unused in routine operations, it will be ideal on the part of the Authority to enable and allow us to use such backup head-end in an active mode, thus reducing burden on primary head-end.

We are of the view that instead of the concept of sharing one common infrastructure by so many television distribution platforms, it would be conducive for proper growth and development of all distribution platforms if the concept of allowing them to use and exploit their primary and backup head-ends for rendering distribution services is ideal and beneficial not only from the perspective of these distribution platforms but from the perspective of the end customers.

The reasons for the same are elucidated as under:-

DTH Operators are serving to consumers spread across the territory of India and one of the key aspects for the business is to have a site diversity plan for safeguarding the interests of all our consumers, as suggested by the Authority, and consumers should not suffer in case of an eventuality arising out of natural calamity or manmade disaster.

As the DTH services are highly capital intensive and require heavy investments in terms of the setting up the earth station and turnaround facilities and then the arrangements with the satellite providers which include the cost of transponder lease, spectrum royalty, monitoring charges etc., it will be highly cumbersome and complex processes which would be required to be put in vogue if the scheme of sharing of common infrastructure by all distribution platforms is to be thought off, and it would be equally difficult to actually translate this theoretical scheme into practise. Equally if not more will the factors like license fee, multiple taxation, high content cost be critical in further burdening a DTH Operator with additional costs since the DTH industry is still struggling to make profits.

So considering the aforementioned facts of being highly capital intensive, running this Disaster recovery site becomes a major cost and adds to the annual expenses of the company. Also, the

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(Formerly Bharat Business Channel Limited)

Uplink Centre: Plot No. 1 D, Udyog Vihar Industrial Area, Surajpur, Greater Noida,
Dist Gautam Budh Nagar - 201 306. ☎ +91-0120 614 1000 📠 +91-0120 614 1250

Corporate Office: 1st Floor, Techweb Centre, New Link Road, Near Mega Mall,
Oshiwara, Mumbai - 400 102. ☎ +91-22 42 555 000 📠 +91-22 42 555 050

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broadcast equipment needs to be powered on, manned and maintained as per the AMC and maintenance schedules, which in fact is a major expense and loss of energy for the setup which needs to be actually activated during a particular situation which may or may not arise.

However there can be a different approach to this redundant service wherein the same Disaster recovery site can be utilized more effectively and efficiently without loss of the critical resources by utilizing the same facility for partial utilization on a real time basis of the actual services in a sharing mode with the main head-end.

The sharing of services from Disaster Recovery site (secondary head-end) shall result in saving in the CAPEX and OPEX along with several advantages without compromising either on the quality of the program.

As in this case, Operator shall be up-linking some of the allocated transponders from the primary site and the remaining transponders will be uplinked from the disaster recovery site (secondary head-end).

Few of the advantages of sharing the primary with the disaster recovery site (secondary head-end) are as follows:

a) Better QOS for all the customers

With the concept of both the locations sharing the load of the live network, customers will be getting an additional advantage in terms of continuously getting seamless services at least for half of the network during any point in time. In the case of complete switching of services from the primary site to the Disaster recovery site following are the observations:

1. The time taken for restoration will be higher as compared to a shared operational Disaster recovery site.
2. The possibility of some functionality not getting triggered is high as we are not sure that since how long that feature may not have been tested or brought into use.

However in the case of a load sharing Disaster recovery site following advantages can be seen:

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Uplink Centre: Plot No. 1 D, Udyog Vihar Industrial Area, Surajpur, Greater Noida,

Dist Gautam Budh Nagar - 201 306. ☎ +91-0120 614 1000 📠 +91-0120 614 1250

Corporate Office: 1st Floor, Techweb Centre, New Link Road, Near Mega Mall,

Oshiwara, Mumbai - 400 102. ☎ +91-22 42 555 000 📠 +91-22 42 555 050

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1. Since some of the services will be live, in this case even in the event of the failure of the primary site customer will always be having some of the services available seamlessly.
2. Restoration time for the balance services shall be less as the Disaster recovery site is already active and in use due to which it will be easier to activate.

b) Efficient utilization of man power

Whether we keep the services inactive at the Disaster recovery site, it still needs to be manned with the skilled and qualified staff for ensuring health and quality of services of the equipment or the network.

In case of load sharing of the Disaster recovery site with the main site, the network will also be up-linking from Disaster recovery site which means that the manpower stationed at Disaster recovery site including shift engineers, managers etc will be dynamically active and proactively alert while operating the running Earth Station resulting in efficient utilization of time, money, efforts and energies. Productivity level would be increased when resources are utilized in best possible manner.

c) Routine Maintenance and AMC cost

In complex and sensitive networks like DTH setup, quality is a prime factor. Quality output from any machine depends on machine's repeat performance. To get repeat performance; machine maintenance is a key factor. In DR Site, all the major equipment which includes the Earth Station Equipments, RF Systems, Compression Equipment, Conditional Access Systems, IT Systems, Billing Systems, Cooling System, Air Purification system, UPS system, Power Provisioning System etc need routine and operational maintenance which needs to be carried out by the specialized teams along with entering into an annual maintenance contracts with the OEM's. This is a huge cost any may get in the tune of tens of crores annually which may only be justified if the equipment is utilized for a real time activity.

c) Life of Equipment and Depreciation of Asset

All the Broadcast and IT equipment have a limited running life where in the life of most of the RF equipment is measured in hours and the equipment of IT is considered to be in the end of life within 3 to 5 years of a life span. The losses in this case can run into crores on an annual basis. This is a huge cost and would need real operations of services to be justified.

e) Operational Network will ensure the instant and seamless switching

Most imperative functionality of DR setup is to operate in the case of failure of the primary earth station which may be due to any reason that includes natural calamities, technical and infrastructure failure. No matter what the cause, outages can lead to fail of operations, decreased productivity, Loss of revenue, unhappy customers, which in the worst case may also lead to temporary or permanent shutdown of the business.

If the DR is in idle state from a long time, the possibility of malfunctioning of the equipments cannot be ruled out in which we may find that certain equipments could not trigger or perform as per the required throughput.

Keeping this criticality in view continuous operation of the DR site is highly important and beneficial to all the stakeholders.

f) Life of Earth Station Equipments at DR Site will be degraded if kept in an idle for a long time

DR earth station comprises of several amplification and up-conversion equipments e.g. Travelling Wave Tube Amplifier ('TWTA') if kept powered off for prolonged period then life of its amplification part, electron generation part, magnetic section will be degraded over the time with respect to running condition. Excessive idling can actually damage the ground station equipments as these are the microwave equipments.

In this scenario, keeping this equipment active is consuming its rated hours of specified life without effectively utilizing its throughput and also generating radio waves which may get reflected from the network may be a point of issue considering its impact on the manpower and the adjacent networks.

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(Formerly Bharat Business Channel Limited)

Uplink Centre: Plot No. 1 D, Udyog Vihar Industrial Area, Surajpur, Greater Noida,
Dist Gautam Budh Nagar - 201 306. ☎ +91-0120 614 1000 📠 +91-0120 614 1250

Corporate Office: 1st Floor, Techweb Centre, New Link Road, Near Mega Mall,
Oshiwara, Mumbai - 400 102. ☎ +91-22 42 555 000 📠 +91-22 42 555 050

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g) Efficient utilization of Energy (Electricity)

Despite being in inactive state, still majority of the broadcast equipment and servers needs to be active in the power-on mode for effective operation.

In such case, wasting energy by just keeping the equipment powered-on for waiting an eventuality is a major loss of a critical resource (electricity) along with the financial loss to the organization.

Hence by load sharing the powered equipments will be fully utilized thereby reducing the equivalent electrical load of the primary site.

Q.10 What mechanisms could be put in place for disconnection of signals of TV channels of defaulting operator without affecting the operations of other associated operators with that network after implementation of sharing of infrastructure among MSOs and HITS operators and among DTH operators?

In case of shared DTH infrastructure, there is an assumption that addressability of all subscribers for a DTH operator is mutually exclusive to the subscribers of another. Additionally the CAS system which allows for addressability is within the control of the common infrastructure maintaining entity. With that premise the Standard CAS mechanism of de-authorization can be used to disallow all STBs from descrambling any TV channel or a subset of the TV channels. These can be done via the EMM mechanisms of the CAS.

As the CAS systems are mutually exclusive in the system although multiplexed in the same transponders, the process of un-authorizing a operator for channels or a set of channels will not impact others. Only STBs under that operator will no longer be able to descramble the set of services.

Q.11 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.

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(Formerly Bharat Business Channel Limited)

Uplink Centre: Plot No. 1 D, Udyog Vihar Industrial Area, Surajpur, Greater Noida,
Dist Gautam Budh Nagar - 201 306. ☎ +91-0120 614 1000 📠 +91-0120 614 1250

Corporate Office: 1st Floor, Techweb Centre, New Link Road, Near Mega Mall,
Oshiwara, Mumbai - 400 102. ☎ +91-22 42 555 000 📠 +91-22 42 555 050

🌐 www.videocond2h.com

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In view of our belief that the concept of sharing common infrastructure among DTH Operators being impractical and unviable based on our reasoning mentioned in relevant paragraphs of this response to the consultation paper, this question becomes in-fructuous and redundant.

Q.12 What techniques would be put in place identification of pirates after implementation of sharing of infrastructure among MSOs and HITs operators, among MSOs and among DTH operators? Please elucidate

Simulcrypt, as a long-term measure, would permanently reduce the level of security for all the common channels to that of the weakest CAS. Service providers who have invested in higher levels of security have done so in the belief that this will help them attract the most premium levels of content and avoid revenue leakage. Forcing them into a simulcrypt arrangement would vitiate these investments and impede competitive differentiation. In addition, the quality of premium video and audio provided for the common channels would be an increased incentive for commercial hacking of the weakest CAS. Currently, for the hacker the return on investment is governed by the volume per DTH operator individually in case all DTH Operators work on a simulcrypt model then the volume available to the hacker is the cumulative base of all DTH Operators and the hacker has to focus his efforts on the weakest CAS, to give an analogy, a chain is as strong as its weakest link. Hence, individual DTH Operators may not be comfortable by simulcrypting all the different CAS available for obvious reasons.

In order to identify which Head end and/or its associated STB is the source of compromise, today there are two levels of measures taken in the form of fingerprinting. One level of fingerprinting is administrated by the broadcaster IRD identifying the network or head end in which the compromise took place. The second level of fingerprinting is put in place to identify the specific STB which is compromised.

In the case of a common head end, the first level of measure has no meaning as it is same for all DTH operators, MSOs and HITs operators. Now if the STB is physically compromised and is not in a position to display the fingerprint, due to deficiency in the CAS being used, then all DTH operators/ MSOs or HITs operators will see a simultaneous loss of their revenue. Isolating the STB will be difficult as we will end up dealing with multiple STBs across multiple CASes. Even the time taken to identify the source will take months which will cause significant losses to the business in general. In the existing regime using the operator designated finger printing or conducting specific

Videocon d2h Limited

(Formerly Bharat Business Channel Limited)

Uplink Centre: Plot No. 1 D, Udyog Vihar Industrial Area, Surajpur, Greater Noida,
Dist Gautam Budh Nagar - 201 306. ☎ +91-0120 614 1000 📠 +91-0120 614 1250

Corporate Office: 1st Floor, Techweb Centre, New Link Road, Near Mega Mall,
Oshiwara, Mumbai - 400 102. ☎ +91-22 42 555 000 📠 +91-22 42 555 050

🌐 www.videocond2h.com

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tests in the video streams identifying which operator network is causing it, has been the first level of forensics applied. Subsequent to that typically a operator has management number of boxes and also small number of CASs deployed. So isolation of the same is easier. Also in most cases operators insert their own operators logos over the video streams, which further makes its easier.

This we consider as a serious issue which can seriously impair the entire eco-system. Right now available technologies cannot help in quick identification of the issue, if the STB and its associated CAS is compromised, in the context of a single common head end, as the number of devices to be analysed will become an uphill task for any agency dealing with this.

Q. 13 Is there a requirement to further strengthening of anti-piracy measures already in place to enable sharing of infrastructure among MSOs and HITs operators and among DTH operators?

As explained above the typical measures put in place were designed to isolate the operators and subsequently isolate the specific STB which the pirates have compromised. But with a single infrastructure the first level is not possible right now given the technologies mandated for CAS.

Additionally if any one of the simulcrypt CAS used by an Operator is weak and has been compromised, leading to a model or many models compromised, isolating it will be very difficult if the compromised STB is disabling the fingerprinting. Fingerprinting works on the assumption that the STB hardware and software cannot be compromised. This is assured by the CAS technology being used. In case of current working model, it is easier to isolate the compromised model, letting the operator take quick corrective actions to stem the leak by OTA etc. But in the case of all operators using the same infrastructure, even identifying the source will become a very difficult task, as the operators have no control over the common infrastructure.

We will have to revisit this topic of Piracy prevention, as we will have to possibly explore new IPs for embedding fingerprints video itself which are invisible and cannot be negated by any action of compromise, as long a given ECW is used to descrambling a set of video frames. Most of the cost effective CAS don't use it.

This is a cascading cost factor, as these will also require more advanced chips with newer protection methods. Piracy and the fear that the weakest link will cause the entire industry its business is something which we believe must be discussed openly and its consequences have to

Videocon d2h Limited

(Formerly Bharat Business Channel Limited)

Uplink Centre: Plot No. 1 D, Udyog Vihar Industrial Area, Surajpur, Greater Noida,
Distt Gautam. Budh Nagar - 201 306. ☎ +91-0120 614 1000 📠 +91-0120 614 1250

Corporate Office: 1st Floor, Techweb Centre, New Link Road, Near Mega Mall,
Oshiwara, Mumbai - 400 102. ☎ +91-22 42 555 000 📠 +91-22 42 555 050

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be understood before we go down this path, which we strongly request the Authority to refrain from.

Q.14 Is there a requirement to ensure geographically targeted advertisements in distribution networks? If yes, what could be the methods for enabling geographically targeted advertisements in shared infrastructure set up?

Targeted advertisement is essentially a revenue stream for which DTH operators have created frameworks. The targeted advertisement is done on the basis of profiling a user based on his user information (location, age group etc). Advertisements are carried in DSM-CC based solutions, the bandwidth of this data is dedicated by DTH operators in each transponders. In case of common Head end solutions, these streams have be reserved for each of the DTH operators as the campaigns are specific to Operators. Additionally within the common head end it will be also good if SCTE-35 based markers are inserted into the streams to enable these types of campaigns for Video based Ad insertion. For single operator scenarios the bandwidth is dedicated and utilized for these. But in case of common solution, the amount of Bandwidth which will be needed to be dedicated might not be practical as each of the operators might have different set of campaigns which might be run by them. This along with dedicated VAS stream bandwidth is two major scalability problems as we see in common Headend. Without VAS and Advertisement related innovations, the service will stop having any differentiation. We would request the Authority to take serious view of these limitations and scalability problems which impede the Operators revenue streams which they have as of today.

Q.15 Whether it is possible for the network operator to run the scrolls and logo on specific STBs population on request of either the broadcaster or service delivery operator and HITS operator , among MSOs and among DTH operators?

Technically it possible to use either EMM based signalling or DSM-CC based solution and/or both to achieve what is being asked above. For which the CAS system or the Head solution has to support creation of such control packets and streaming of it with addressability. The STB middleware inturn has to support the display and control of such scrolls and logos. This mechanism is not available in many of the solutions existing today. These will require newer software in STB to build. On legacy STBs this will have to answered on a case by case basis.

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(Formerly Bharat Business Channel Limited)

Uplink Centre: Plot No. 1 D, Udyog Vihar Industrial Area, Surajpur, Greater Noida,
Dist Gautam Budh Nagar - 201 306. ☎ +91-0120 614 1000 📠 +91-0120 614 1250

Corporate Office: 1st Floor, Techweb Centre, New Link Road, Near Mega Mall,
Oshiwara, Mumbai - 400 102. ☎ +91-22 42 555 000 📠 +91-22 42 555 050

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Q.15 Whether implementation of infrastructure sharing affects the differentiation and personalization of TV broadcasting service and EPG? If yes, then how these constraints can be addressed?

There is a need to carry different programme guide (EPG) information (DVB Service Information and MPEG-2 Programme Specific Information) for all broadcasted services. Such information plays a key role in helping consumers “discover” content they wish to watch and is an essential part of competitive program offerings. Electronic programme guide schedule information may require significantly more capacity than CAS data. Being exclusive in nature, VAS also needs to be carried for each operator separately. VAS services based on standard DVB Application standards like MHP, allow an operator to bring differentiated services in the form of games, educational content and other multi-media application. As the STBs are in majority one way devices, each Service provider will have to provided with a dedicated bandwidth for the same, which in effect is not a scalable model.

To state in brief, following are key impediments in achieving the common infrastructure are:-

1. Requires consensus on choosing the technology partners
2. Compression and Modulation Technology;
3. Separate transponder space and infrastructure catering to exclusive content;
4. Separate VAS and EPG set up for each Operator;
5. Simulcrypt related challenges;
6. Operator’s logo – essential from service branding perspective. Some of the Operator’s have implemented their logo on the STB. This will pose a challenge as some DTH Operator’s transmit their logo in broadcast stream.
7. Piracy and related issues;
8. STB to have common architecture and to be on the lowest denominator to tune the services;
9. Commercially, transition/shifting of the existing subscriber base to new Tuning Parameters will be gigantic cost for all the Operators.
10. Absence of level playing field amongst various TV distribution platforms.
11. Major concerns revolve around commercial terms between interconnecting entities, dispute resolution, piracy, billing and audit of subscribers, disconnection of services, which will have to be thoroughly looked into.

12. Common Infrastructure Sharing will give rise to the requirement of multiple licensing regime for network service provider as well as all kinds of distribution platforms.
13. Different types of Operational constraints and issues will recur intermittently, thereby, inconveniencing uninterrupted services to customers.
14. Given the eventual number of aggregated subscribers which will be on this common infrastructure, the additional bandwidth required to sent Entitlement and other control messages to the large subscribers will eventually will require a large chunk of bandwidth getting dedicated per transponder, which will impact the bandwidth efficiency of a common infrastructure.

Q. 17 Whether, in your opinion, satellite capacity is a limiting factor for sharing of infrastructure? If yes, then what could be possible solutions to address the issue?

While having a common infrastructure to transmit TV programs and channels is a good idea, but on a practical front there are many issues.

- Each operator will require additional dedicated bandwidth for EMM and other control messages.
- Additional bandwidth for VAS services to be enabled for its service and customers.
- Targeted Advertisement both graphical as well Video will require additional dedicated bandwidth in the common infrastructure.

These additional requirements present a scalability issue given constraint of fixed head room in satellites. In current independent operation scenarios the decision making and rolling out a new VAS service is nimble and efficient as the business case is only analysed and approved by a DTH operator. But in case of single infrastructure, commissioning of additional bandwidth on demand will eventually become a non-scalable proposition as there will be competing requirements and agility will be lost. Again we request Authority to take note of these additional aspects. As quality and technology are the key differentiating factor between DTH operators from MSOs and other competing platform.

Q.18 If yes, then what additional measures need to 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?

Q.19 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.

Q.20 In addition to the issues mentioned above, comments of stakeholders is also invited on any other issue relevant to the present consultation paper.

Since we consider common infrastructure sharing by DTH service providers amongst themselves is not feasible and practical for the reasons discussed and elaborated in the forgoing paragraphs we believe and as the Hon'ble Authority has also agreed that questions of sharing of CAS and SMS do not survive as they become redundant. However, we strongly advocate permitting the simultaneous use of primary and secondary head-end site by respective DTH Service providers, so as to enable efficacious and optimum utilization of resources and equipment. In addition to heightening the efficiency of service provider, allowing simultaneous use of primary and secondary head-ends would be in the ultimate interest and benefits of the end subscriber, which in turn is paramount.

Videocon d2h Limited

(Formerly Bharat Business Channel Limited)

Uplink Centre: Plot No. 1 D, Udyog Vihar Industrial Area, Surajpur, Greater Noida,
Dist Gautam Budh Nagar - 201 306. ☎ +91-0120 614 1000 📠 +91-0120 614 1250

Corporate Office: 1st Floor, Techweb Centre, New Link Road, Near Mega Mall,
Oshiwara, Mumbai - 400 102. ☎ +91-22 42 555 000 📠 +91-22 42 555 050

🌐 www.videocond2h.com

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