To,
Sh. Sunil Kumar Singhal,
Advisor (B&CS),
Telecom Regulatory Authority of India
New Delhi.

4th July, 2016

Ref: Pre-Consultation Paper on the Infrastructure sharing in Broadcasting TV distribution sector dated 23rd May 2016

Dear Sir,

We would like to enclose herewith our detailed response on the above captioned pre-consultation paper for your consideration and records.

Thanking you,

Yours faithfully

For Videocon d2h Limited,

Shivendra Krishna Singh
Head-Regulatory & Compliance

Encl: A/a

Videocon d2h Limited
Uplink Centre: Plot No.1D, Udyog Vihar, Industrial Area, Surajpur, Greater Noida, Dist Gautam Budh Nagar- 201 306.
+91 120 6141000 +91-120-6141250.
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

RESPONSE OF VIDEOCON d2h LIMITED TO PRE - CONSULATION PAPER ON THE INFRASTRUCTURE SHARING IN BROADCASTING TV DISTRIBUTION SECTOR DATED 23rd MAY 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 pre-consultation paper is certainly not the ideal way forward, which will be elaborated further in our response to this pre-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 and 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 highly inconvenient from technological as well as commercial point of view to make available the option of voluntary 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 pre-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, internet service provider through Ku Band and HITS Operators could be allowed and should be made voluntary. 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:

a. In addition to infrastructure sharing possibilities discussed in pre-consultation paper what more can be shared by the DPOs (MSOs, HITS, DTH) for better utilization of infrastructure?

Response:

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 pre-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 start up the exercise itself.

Without prejudice to our above contentions, we would further like to state that, India is being served by a growing DTH industry that features multiple private as well as a strong public-service platform. 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, state 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 pre-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.

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, internet service provider through Ku Band and HITS Operators could be allowed and should be made voluntary. There is no need for bringing in any set of rules, regulations or law for such voluntary sharing by these platforms.

b. What could be the operational, commercial, technical and regulatory issues which require to be addressed at the time of developing policy and regulatory framework for enabling infrastructure sharing in the broadcasting TV distribution space?

c. Do you envisage any requirement for change in the existing licensing / registration framework laid for DTH, DAS and HITS broadcasting services? If yes, please specify those changes clearly for each platform?

d. What could be the implications of allowing separation of network and service provider functions at distribution level? How the responsibilities can be divided between the network and service providers?

Response:

As the Authority is aware, multiple and critical operational, commercial, technical and regulatory issues will have to be faced and addressed before, at the time of and after developing policy and regulatory framework for enabling infrastructure sharing in the broadcasting TV distribution space.

In addition to the above, since various types of TV distribution platforms exist today in the country and since they are governed by different licensing, regulatory, taxation, quality and administrative regimes, they will have to be first brought under the same umbrella and create a level playing field amongst these different television distribution platforms before any steps are taken in furtherance of creating an option of voluntary sharing of infrastructure by them. However, common infrastructure sharing, only on voluntary basis, amongst DTH Operators, internet service provider through Ku Band and HITS Operators could be permitted, without introduction of any new set of rules, regulations or law for such voluntary sharing by common infrastructure by these platforms.

Without prejudice to the above, we would like to state that, in Digital TV sector the signal transmission from a MSO/DTH head-end to the subscriber STB involves a number of processes which ensures error free and secures transmission. The base band audio-visual signal is compressed using MPEG standards. The compressed signal is then scrambled to ensure that only the intended users are able to view the signal after descrambling.

The multiple programs are multiplexed using a multiplexer to form a Transport Stream **('TS')**. The Control Word **('CW')** used for scrambling purpose is also transmitted in encrypted mode along with the TS. The TS is modulated for transmission purpose using the DVB standards. The signal is then uplinked to KU band Satellite for DTH for direct reception by the subscribers. Whereas in case of Cable, the signals are converted into optical mode and transmitted thorough optical fibers and Coaxial RF cable as last mile connectivity to the intended subscribers.

At the receivers end, in case of DTH Services the signal is captured via dish antenna whereas Co-axial cable is used to receive transmission of cable network.

Front end in STB consists of (i) Tuner and (ii) Demodulator.

(i) The Tuner tunes the signal and passes the required band of signal to the succeeding modules of the STB, which is different for different DVB receivers as their transmission schemes are different.

(ii) The Demodulator demodulates the signals. The demodulated signals are then descrambled using the same CW which was used for scrambling the content. The descrambled signals are then decompressed using MPEG decoders which may again be different depending on the coding scheme used.

Scrambling of the compressed data is done according to a standard as specified by DVB, known as Common Scrambling Algorithm (DVB-CSA). During Scrambling, two messages are added to the TS namely, Entitlement Control Message ('ECM') & Entitlement Management Message ('EMM').

ECMs are added to TS on per channel basis. It contains the CW which is used to scramble a program. ECM also includes the channel ID and the time and date information which allows the STB to know what the current time is and to make a decision if the user is allowed to watch the channel or not. EMM is unique for each subscriber. It carries a list of channels which the owner of that STB is entitled to view and also the date up to which he is entitled to receive them.

The current business model used in Pay Television systems follows a circle of dependency, wherein DTH operator/ MSO, CAS vendor and STB manufacturer have to work in a controlled vertical market for ensuring that the signals are well encrypted to prevent hacker attacks. A STB manufacturer needs to pay licence fee to CAS vendor, in order to use CAS in his STB and sign a confidentiality agreement with the CAS vendor in order to enable his STB to work under security considerations adopted by the CAS vendor.

It is important to segregate and understand the functions, as each of these as they individually pose a different set of challenges:-

1. Ability to tune to Service Operators carrier on which the service is being broadcasted.
2. Demodulate the signal and extract the Transport Streams (TS) in which the channels or programs are being sent.
3. Descramble the TS packets based on a complex combination of EMM and ECM processing.
4. Decode the descrambled TS packets and display on the output ports.

In the case of tuning and demodulation we are looking at a Myriad of existing technologies like DVB-S, DVB-S2, DVB-C, DVB-C2. These technologies are not mutually compatible in nature. It is also important to understand there is a drive to adopt further to newer technologies DVB-

S2X for further maximizing the bandwidth utilization in the existing networks.

The flip side of the issue is that a DVB-S STB cannot receive or demodulate the signals from DVB-S2 based Ku-Band transmission. So while the technologies try to remain backward compatible, the forward compatibility cannot be ensured.

Today different DTH operators have diversity in the way of transmission, which make the transmission difficult unless all the boxes upgrade to highest common denominator, which leads to an increase the cost, and will render the existing DVB-S boxes useless, and will lead to scrapping of such inventory.

Further at cable operator side, DVB-C based STBs are designed with lower cost frontend, loading the cost of additional DVB-S2 to them will render them expensive for the cable end users. Right now universal demodulators are not commercially available in existing STB Main Silicon solutions.

Across the different DTH platforms, not all services are delivered with same Compression and Modulation Technologies. The service providers offer very different numbers of SD, HD and UHD channels and have different opinions and strategies on what mix of these to offer to their subscribers that is also competitive service differentiation in action.

A given channel however appear common in nature may differ on various counts such as Modulation Technology, Bandwidth/Average Bit Rate, Encoding Technology, Resolution/Video Quality, Audio Compression, Audio languages and bit rate and Operator's Watermark.

Significant amount of investments have been made over the number of years to finalize the technology and operational choices. It is rather difficult to visualize a DTH Service Provider without its own head-end,

more so in case of existing six DTH Service providers who have been operating with their own and independent head-ends for years together.

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 the 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 simultcrpting all the different CAS available for obvious reasons.

There is also 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.

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.

e. Any other issue which you feel will be relevant for enabling the infrastructures sharing and separation of network and service provider functions in TV distribution sector?

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 share, 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 a major population of India and one of the key aspects for the business becomes to have a site diversity plan for safeguarding the interests of all our consumers, as suggested by the

Authority, who should not suffer in the case of an eventuality which may be due to 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 etc and then the arrangements with the satellite providers which include the cost of transponder lease, spectrum royalty, monitoring charges etc. We also need to factor the heavy license fee, multiple taxation, high content cost because of which the DTH industry is still struggling to make profits.

So considering the aforementioned DTH 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 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 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.

Few of the advantages of sharing the primary with the disaster recovery site are mentioned below:

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 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 to the DR following are the observations:

1. The time taken for restoration will be higher as compared to a shared operational DR.

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 DR following advantages can be seen:

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 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 DR which means that the manpower stationed at DR 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 critical equipment and 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.

d) 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.

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.

In view our above submissions, we urge the Authority to leave the subject issue to forbearance.