

Telecom Regulatory Authority of India



Consultation Paper

on

**‘Provision of Cellular backhaul connectivity via Satellite
through VSAT under Commercial VSAT CUG Service
Authorization’**

29th January, 2020

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Written Comments on the Consultation Paper are invited from the stakeholders by 26th February, 2020 and counter-comments by 11th March, 2020.

The comments and counter-comments may be sent, preferably in electronic form, to Shri Syed Tausif Abbas, Advisor (Networks, Spectrum and Licensing), TRAI on the Email-Id advmn@traigov.in Comments and counter-comments will be posted on TRAI's website www.traigov.in.

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CHAPTER – I

BACKGROUND

- 1.1 Telecommunication services have played an important role in bridging rural-urban divide in geographically wide-spread India and has emerged as a key enabler of economic and social development in the country. However, there are some far-flung areas and around 43,000 remote villages in India, still devoid of having any mobile services. The reasons, inter-alia, includes remote and difficult terrain, diversely located areas with distributed population, poor accessibility and commercially non-viable operations for the telecom operators to provide services. Satellite communication can play a very useful role in such applications for connecting remote and inaccessible areas.
- 1.2 Very Small Aperture Terminal (VSAT) is one of the satellite communication technologies, which is very useful for providing connectivity to remote locations like rural areas, ships, coastal regions, hills, etc. where there is limited or no terrestrial connectivity. The capability of VSAT technology to deliver host of services over a very large area in a multicast mode, directly from the satellite, provides it with a unique advantage over other technologies. Currently there are 7 Commercial VSAT CUG Service licensee providing VSAT CUG services in the country. At the end of September 2019 there are 2,97,047 total number of VSAT subscribers, as reported by these Commercial VSAT CUG Services licensees to TRAI.
- 1.3 One of the missions categorised under the National Digital Communications Policy, 2018, released by the Government of India, is ‘Connect India’, which envisages “Strengthening Satellite Communication Technologies in India” as one of the strategies. This strategy requires ‘review of regulatory regime for satellite communication technologies’, including

- (i) revising licensing and regulatory conditions that limit the use of satellite communications, such as speed barriers, band allocation, etc.
 - (ii) simplifying compliance requirements for VSAT operators to ensure faster roll out and
 - (iii) expanding the scope of permissible services for the effective utilisation of High Throughput satellite system through appropriate licensing mechanism.
- 1.4 Another strategy under this mission, 'Connect India' is "Ensuring Inclusion of uncovered areas and digitally deprived segments of society", which suggests "channelising the Universal service Obligation Fund (USOF) for ensuring connectivity for all uncovered areas" in the North eastern states, Himalayan region, Left Wing Extremist (LWE) areas, aspirational districts, islands, and border areas.
- 1.5 Recent years have been remarkable to India in terms of the new multiband, multibeam High Throughput Satellite (HTS) launches and capacity addition. GSAT-19 with 6 Gbps bandwidth throughput has 50% coverage of India, GSAT-29 with 5 Gbps bandwidth has mainly coverage to J&K, NE part of the country, GSAT-11 with 16 Gbps bandwidth throughput has national coverage. GSAT-20 with 70 Gbps bandwidth throughput having national coverage is expected to be launched by Indian Space Research Organisation (ISRO) in the next few months. These HTS launches enable lower cost per bit, eventually making the VSAT services more affordable and capable.
- 1.6 Department of Telecommunications (DoT), through its letter No. DS-14/92016-DS-I dated 13th August 2019 (Appendix-I) has requested TRAI to furnish recommendations under the terms of the clause (a) of sub-section (1) of Section 11 of the Telecom Regulatory Authority of India Act, 1997 (as amended) by TRAI Amendment Act, 2000 on terms and

conditions of Unified License and Unified License VNO agreement for permitting backhaul links for mobile network via. satellite through VSAT. Vide the said reference dated 13th August, 2019, DoT has also forwarded a copy of the representation received from VSAT Services Association of India (VSAI) dated 21st May 2018, requesting to allow cellular backhaul services under Commercial VSAT CUG Service licence to enhance provisioning of internet and voice services in remote / inaccessible areas. It has been further stated by VSAI in their letter that VSAT Service providers have an installed base of 250000 terminals across the country, which are technically capable of being used as backhaul for cellular networks very effectively. As per the present rules, however, such services are considered in the nature of “carrier services” which fall under the National Long Distance (NLD) Service Authorization.

- 1.7 As per the present licensing regime, the backhaul provisioning is to be done by the telecom service provider itself under the Access Service Authorization. However, the telecom service provider providing the mobile services under the Access Service Authorizations is permitted to obtain the backhaul bandwidth from any of the National Long Distance (NLD) service providers. Whereas, the Commercial VSAT CUG service licensees are not permitted to provide backhaul connectivity to the mobile operators. Further, licensee having both NLD Service Authorization and Commercial VSAT CUG Service Authorization is not permitted to share the VSAT Hub installed to provide the backhaul bandwidth under the NLD service authorization. Additionally, the VSAT Hub has to be in the same service area where the Main Switching Centre (MSC) is located. VSAI has also submitted that as per VSAT CUG Service authorization, the VSAT terminal may be used as a distribution point to provide internet service to multiple independent subscribers, if the VSAT CUG licensee is also having Internet Service Authorization. However, there is no similar clause available enabling VSAT terminal's use as a backhaul for providing mobile services.

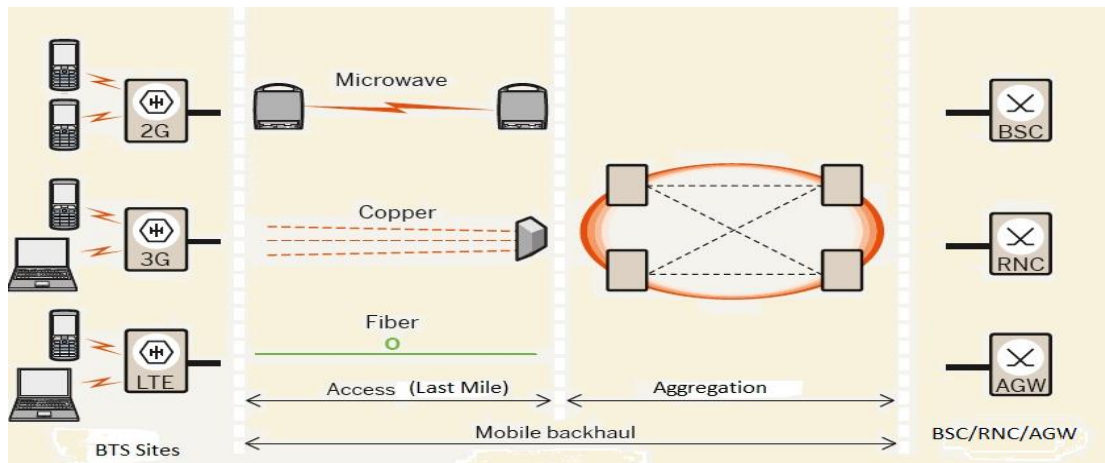
- 1.8 There is a need to examine the issue in permitting the sharing of VSAT Hub installed under Commercial VSAT Authorization, which would enable extending internet services along with voice services in the uncovered areas. As per the present terms and conditions of the VSAT Commercial license, there are restrictions in sharing the existing VSAT hub for providing service under NLD Authorization. By enabling such sharing, VSAT capabilities can be utilised by allowing backhaul for connecting the BTS/ Mobile network in far-flung areas under Commercial VSAT CUG license.
- 1.9 In this background, DoT vide letter under reference dated 13th August 2019 has requested TRAI to furnish recommendations on amendments in Unified License and Unified License VNO agreement terms and conditions for permitting backhaul links for mobile network via satellite through VSAT, under section 11(1)(a) of the TRAI Act (as amended by TRAI Amendment Act, 2000).
- 1.10 In view of the above, this consultation paper has been prepared to discuss the issues involved and to seek comments and counter comments of all the stakeholders. Chapter-I provides background information, Chapter-II examines the request of DoT and discusses various issues for consultation. Chapter-III provides the issues for consultation and solicits the comments of stakeholders.

CHAPTER-II: ISSUES IN EXISTING COMMERCIAL VSAT CUG SERVICE LICENSE /AUTHORIZATION

A. Role of backhaul in telecom networks

- 2.1 The current mobile networks are deployed in various technologies such as 2G/CDMA, 3G, 4G/ LTE-A. These mobile networks require transport network that connects the core network and the RAN (Radio Access Network) of the mobile network. This transport network is referred to as backhaul in mobile network. In the small cells' scenario, the transport network that connects the macrocell to the small cells is known as fronthaul, however, the term mobile backhaul is generally used to encompass both fronthaul and backhaul concepts.
- 2.2 From the implementation point of view, the backhaul architecture is generally divided into two parts:
- Cell access part of backhaul (pre-aggregation segment) provides last mile backhaul connectivity to Base Station (BTS/Node-B/ eNode-B) from aggregation point, and;
 - The aggregation segment which aggregates traffic from different access parts and backhauls it to BSC/RNC/AGW.
- 2.3 The cell access part of the backhaul typically aggregates traffic from several base station sites and feeds it into the aggregating network. Depending on operator's strategy and availability at the site, one or a combination of various available physical link technologies (microwave, copper, fiber or satellite) can be used in this part. Each type of backhaul link has certain advantages and disadvantages. However, Microwave is the dominating backhaul technology in majority of cell sites. Aggregation part of the backhaul network mainly relies on optical fiber considering its higher bandwidth requirement. However, microwave can also be used in places of lesser bandwidth requirements.

Fig. 1.1: Mobile Backhaul



Prevailing backhaul techniques

2.4 Different techniques are used by the operators around the world for backhaul. The prevailing techniques worldwide includes Copper Line, Fibre Optic, Wireless/Microwave Backhaul and Satellite Backhaul. A brief on these techniques is mentioned below: -

(a) Copper line- To provide backhaul connectivity in pre-aggregation segment, copper pairs can be used by deploying xDSL technologies. Copper line backhaul technique was one of the most deployed technique in 2G and 3G networks. Copper-based backhaul is based on the T1/E1 protocol, which supported 1.5 Mbps to 2 Mbps. With the rising bandwidth requirements, the cost of copper line backhaul increased linearly. Due to the constraints of bandwidth and other maintenance issues, copper based backhaul technique became less preferable and Fiber Optic backhaul solutions were adopted by most of the service providers.

(b) Fibre Optic – Optical fibre has evolved as the most practical solution for backhaul as well as backbone network. Owing to its high capacity and scalability, it is the right choice for high-capacity routes where logistics are manageable, capacity need is high; and the potential revenue gain offsets the expense of its installation. It is used as a

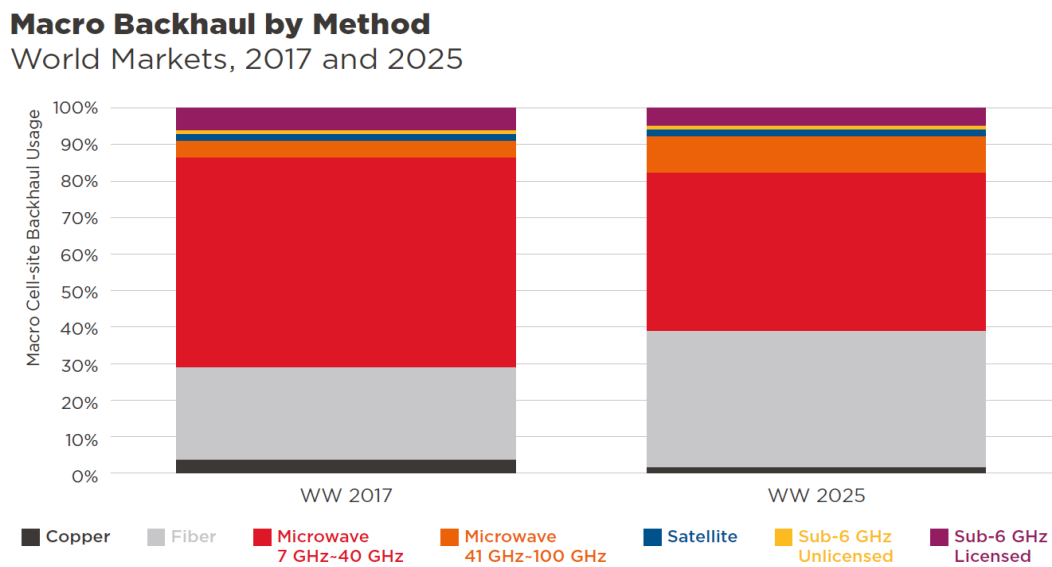
physical medium to connect cell sites to Mobile Switch Centres (MSCs) and to other elements of core network. The flip side of the fibre deployment is that it is costly and requires time for deployment. Pulling fibre to every cell site is practically difficult due to high costs and logistical challenges.

- (c) Microwave Backhaul** – It is one of the low-cost options for mobile backhaul and provides higher frequency and wider coverage. It is relatively easy to deploy as compared to fiber, making it one of the most popular techniques for mobile backhaul. Microwave and E-band technologies are developing rapidly with innovations that include Adaptive Coding and Modulation (ACM), high order Quadrature Amplitude Modulation (QAM), Cross Polarization Interference Cancelling (XPIC), compression accelerators and Multiple Inputs-Multiple Outputs (MIMO) - all aimed at increasing bandwidth. Backhaul links using V-band or E-band are well suited to support 5G due to their 10 Gbps to 25 Gbps data throughput capabilities and are being used globally. The process of establishing microwave link also involves frequency authorizations and clearances from Standing Advisory Committee on Radio Frequency Allocation (SACFA). For deployment of mobile backhaul in higher frequency bands particularly in V-band and E-band, is either unlicensed or light licensed in the many countries. TRAI in its recommendations on ‘Allocation and Pricing of Microwave Access (MWA) and Microwave Backbone (MWB) RF carriers’ dated 28th August 2014 has recommended that both E-band (71-76 / 81-86 GHz) and V-band (57-64MHz) should be opened with ‘light touch regulation’ and allotment should be on a ‘link to link basis’. However, a decision is yet to be taken on this by the Government.
- (d) Satellite Backhaul** - Satellite backhaul is a niche backhaul solution deployed in fringe areas of the network, usually in rural areas and difficult terrains. Satellite-based backhaul solution is provided through VSAT Hub connecting to the base station and services can be deployed

rapidly. This VSAT terminal is connected via satellite directly to the aggregator (Hub), from where the traffic is carried on optical fibre to the core network elements and internet. There are challenges of latency, however, these challenges have been reduced using new techniques. Improved bandwidth and lower latency can be achieved by implementing data compression, byte-level caching, predictive cache loading, and data stream de-duplication.

2.5 As per the projections of the Global System for Mobile Communications (GSMA) for ‘Macro Backhaul by Methods’ (see Fig 1.2 below), by the year 2025, the percentage share of the optical fiber and Microwave (41 GHz – 100 GHz) based backhaul will increase significantly whereas, the share of Satellite based technologies as backhaul will still remain intact in world market.

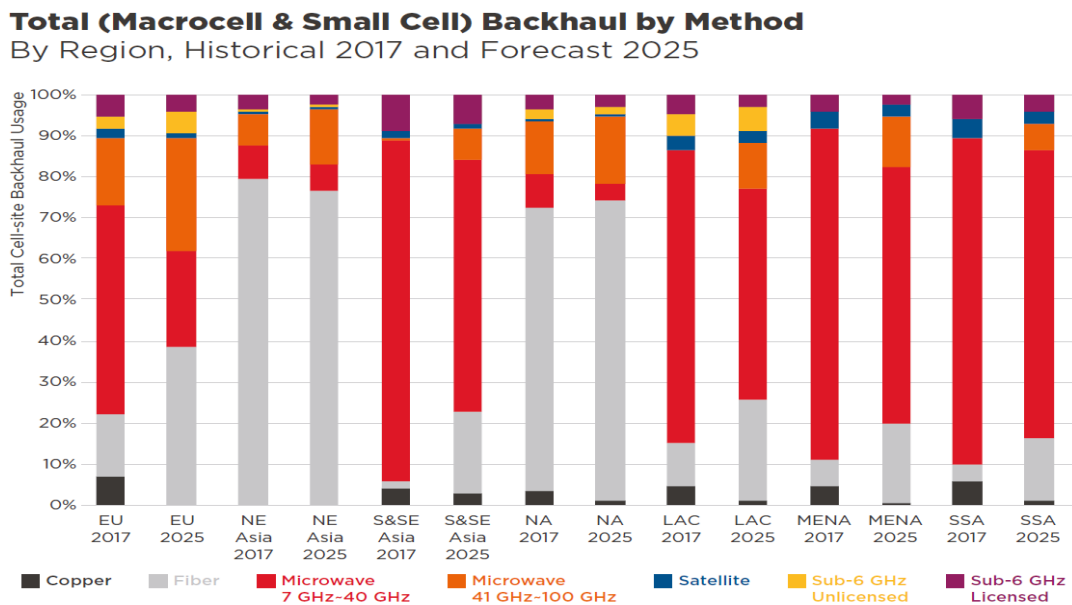
Figure 1.2: Macro Backhaul by Methods (Source: GSMA)



2.6 A region-wise study and forecast by GSMA (Fig 1.3 below) on ‘Macro Backhaul by Methods and forecast’, showing historical data of 2017 and forecast of 2025 has depicted and forecasted growth trend in optical fiber and Microwave technologies particularly in the 41 GHz – 100 GHz range

across all the regions including South and South East Asia (S & SE Asia) region. The utility of satellite based backhaul techniques remains significant across all the regions despite some negative growth predicted in some regions viz. Middle East & North Africa (MENA), European Union (EU) and Sub- Saharan Africa (SSA) regions. The projections of GSMA indicate that despite increased deployment of optical fiber and Microwave (particularly in mmWave) technologies for macro and small cell backhaul, the role of Satellite based technologies particularly VSAT technology will be significant and relevant.

Figure 1.3: Region-wise Backhaul by Methods and forecast (Source: GSMA)



2.7 Mobile operators rely on various techniques of backhaul depending upon the business, logistic, budgetary and capacity aspects. There are comparative merits of different techniques as one technique does not fit all the scenarios. Keeping in view the GSMA forecast for Macro Backhaul techniques for 2025, the role of satellite based backhaul service remains significant in Indian context too, particularly due to the geographical diversities.

B. Existing policy for the provisioning of backhaul

2.8 Reference from DoT dated 13th august, 2019 has referred to the letter of VSAT Services Association of India (VSAI), dated 21st May 2018. As per VSAI, in the present licensing regime: -

- a) The backhaul provision can be done under the NLD authorization of UL. The sharing of existing commercial VSAT Hub's usage to provide these services is not allowed.
- b) There are restrictions in sharing the existing VSAT Hub for the "carrier services" like providing the backhaul.
- c) Further, the VSAT Hub has to be in the same service area where the MSC is located.

2.9 VSAI has also submitted that as per VSAT CUG Service Authorization, the VSAT terminal may be used as a distribution point to provide internet service to multiple independent subscribers, if the VSAT CUG licensee also has Internet Service Authorization. However, there is no similar clause available enabling VSAT terminal's use as a backhaul for providing mobile services.

2.10 DoT has further mentioned that there is also a need to permit the sharing of VSAT Hub installed under NLD and / or Commercial VSAT Authorizations. This would also enable extending the internet services along with voice services in the hitherto un-covered areas.

C. Existing policy on usage of VSAT

2.11 Following provisions are available under the scope of the Commercial VSAT CUG Service Authorization under Unified License (UL):-

- (i) The scope of service is to provide data connectivity between various sites scattered within territorial boundary of India using VSATs. The users of the service should belong to a Closed User Group (CUG). However, the VSAT licensee after obtaining ISP license may use same

Hub station and VSAT (remote station) to provide Internet service directly to the subscribers, and in this case VSAT (remote station) may be used as a distribution point to provide Internet service to multiple independent subscribers.

- (ii) Long distance carriage rights, granted for NLD, ILD and Access service, are not covered under the scope of this service.
- (iii) The Closed User Group Domestic Data Network via INSAT Satellite System using VSAT shall be restricted to geographical boundaries of India.
- (iv) The Licensee can set up a number of CUGs using the shared hub infrastructure.
- (v) PSTN/PLMN connectivity is not permitted.
- (vi) Data Rate, as specified in TEC Interface Requirements No. TEC-IR/SCB08/02-SEP.2009, is allowed, subject to the compliance of the Technical parameters as specified in TEC Interface Requirements No. TEC-IR/SCB08/02-SEP.2009, as modified from time to time.

2.12 Provision and distribution of internet using VSAT is already permitted in the license. The UL has enabled provisions of internet services utilizing the VSAT terminal to connect and provide services to unserved and underserved areas. Clause 2.1(vii) of Internet Service authorization Chapter-IX of UL provides that: -

(vii) Internet Service to any VSAT Service subscriber can be provided, if the VSAT is located within the Service area of the Licensee. For this purpose, a direct interconnection of VSAT Network Hub through leased line obtained from an authorized service provider to the Licensee's node/server shall be permitted only for the Internet traffic. The Licensee shall provide to the Licensor a monthly statement of VSAT subscribers served with their

locations and details of leased line interconnection with the VSAT Hub. The VSAT Hub, however, need not be located in the service area of the Licensee.

D. Restriction on sharing of existing Commercial VSAT Hub

2.13 Provisions of the Commercial VSAT CUG Service License/ Authorization prohibits the licensee to share the existing VSAT Hub, except for providing the internet service using VSAT as a distribution point. As per the terms & conditions of Unified License, the VSAT Hub installed under the VSAT CUG authorizations is not permitted to be shared by the licensee for providing services under its NLD authorization. This un-necessarily entails extra CAPEX by the operator(s).

2.14 DoT through the reference has stated that *there exists a requirement for utilizing VSAT capabilities & allowing backhaul for connecting BTS/ Mobile network in far flung areas under the commercial VSAT CUG license. It is felt that in the context of extending the backhaul connectivity in far-flung and hitherto unconnected areas, the VSAT technological capability should not be restricted.* Accordingly, DoT has sought suitable modification in the UL and UL(VNO) license agreements in the respective clause(s) of “Scope of Service” & “Sharing of infrastructure” mentioned in both commercial VSAT license & sharing of Hub in NLD Authorization.

2.15 Through the reference, it has been envisaged to enable the relevant clause under VSAT CUG authorization for permitting mobile backhaul via satellite through VSAT.

2.16 For carriage of intra-circle and inter-circle traffic, the Access Service authorization under UL provides that: -

2.2 Licensee may carry intra-circle long distance traffic on its network. However, subject to technical feasibility, the subscriber of the intra-circle long distance calls, shall be given choice to use the network of another Licensee in the same service area, wherever possible. The Licensee may also enter into mutual agreements with other UL Licensee (with

authorization for access service)/ other Access service licensee/National Long Distance Licensee for carrying its intra-Circle Long Distance traffic.

6.1 Inter-Circle traffic from one service area to another shall be routed through the network of NLD licensee or the Unified Licensee having authorization of NLD service.

2.17 The provision under clause 2.2 as mentioned in the para above implies that intra-circle traffic can be carried by the licensee through its own network or through mutual agreement with the other UL Licensee (with authorization for access service)/ other Access Service licensee/National Long Distance Licensee. However, the provision 6.1 mentioned in the para above necessitates that the inter-circle traffic from one service area to another service areas has to be carried through the network of NLD licensee or UL licensee with NLD authorization.

2.18 Generally, a service provider prefers fibre optic or microwave backhaul, as both have capacity advantages, however in the absence of both these media options, the service provider resorts to the VSAT backhaul. VSAT backhaul is not only used for the mobile cellular communication but also for connecting the remote or rural exchanges at the locations where laying of the OFC or microwave connectivity is not feasible. Telecommunication systems in many places/ parts of the country particularly in hilly areas and islands of Andaman Nicobar and Lakshadweep are either completely or partially dependent on satellite-based technologies for backhauling as there are no other alternatives available.

2.19 National Long-Distance Authorization under UL in Chapter X of UL, *inter-alia* provides that: -

2. Scope of the NLD Service:

2.1 (a) The NLD Service Licensee shall have the right to carry inter-circle switched bearer telecommunication traffic over its national long-distance

network. The Licensee may also carry intra-circle switched traffic where such carriage is with mutual agreement with originating access service provider.

(b) The Licensee can also, in respect of Basic Service, make mutually agreed arrangements with the concerned Service Providers for picking up, carriage and delivery of the traffic from different legs between Long Distance Charging Center (LDCC) and Short Distance Charging Centers (SDCCs).

(c) In the case of Cellular Mobile Telephone Service traffic, the inter-circle traffic shall be handed/taken over at the Point of Presence (POP) situated in LDCA at the location of Level I TAX in originating/terminating service area.

2.2 (i) the licensee can provide bandwidth to other telecom service licensee also.

2.20 DoT, in its reference vide letter dated 13.08.2019, has mentioned that there is also a need to permit the sharing of VSAT Hub installed under the NLD service authorization for providing services under Commercial VSAT CUG service authorization by the same licensee. In fact, sharing of all active and passive infrastructure established by a licensee under any of the service authorization under UL should be permitted for providing other service(s) authorised to licensee under other authorisations.

2.21 To this effect, an enabling clause 4.3, already available in Access Service Authorization in Chapter -VIII of UL, provides that: -

4.3 Further, the Licensee may share its own active and passive infrastructure for providing other services authorized to it under the license.

2.22 However, this clause is only applicable to those licensees who have obtained Access Service Authorization. There is need to explore the possibility of extending this enabling clause for all the service

authorizations of UL and across all the licenses. Accordingly, views of the stakeholders are sought whether the licensee should be permitted to share its own active and passive infrastructure for providing various services authorized to it under the other service authorization of UL and other licenses.

- 2.23 DoT in present reference has also mentioned that the scope of NLD license is much wider and should not limit provision of backhaul services for BTS/BSC/MSC by Access Service Providers/ Commercial VSAT Service Providers. The license fee for Access/NLD/Commercial VSAT Service Providers is AGR based and is at 8% uniform rate. DoT, has further mentioned that, in UL regime, for IP based Next Generation Network, Media Gateway Controller (MGC)/ Softswitch can be deployed within geographical boundaries of any one of the authorized service areas for Access Service or anywhere in the country, if licensee has Authorization for NLD/ILD service also.
- 2.24 In this regard, DoT on 23.06.2017 has issued amendment to the respective conditions of clause 'Location of switches and other network elements' under 'Technical and Operating Conditions' in UL and UASL licenses. The amended clause has allowed the licensee to host any of its equipment anywhere in India subject to the interconnection points being located and operated in the respective service area for inter operator, inter service area, NLD & ILD calls and meeting the security conditions as mentioned in the license. Eventually the conditions of mandatory hosting of the Media Gateway Controller/ Softswitch and other common systems in a license service area have been done away with by DoT.
- 2.25 As per clause 2.2 (i) of NLD authorization (Chapter- X of Unified License), NLD Licensee can provide bandwidth to another telecom service licensee also. NLD service providers are providing backhaul bandwidth to Access Service providers under this clause. NLD service providers are permitted

to establish transmission bandwidth using any media such as optical fiber, microwave, satellite etc.

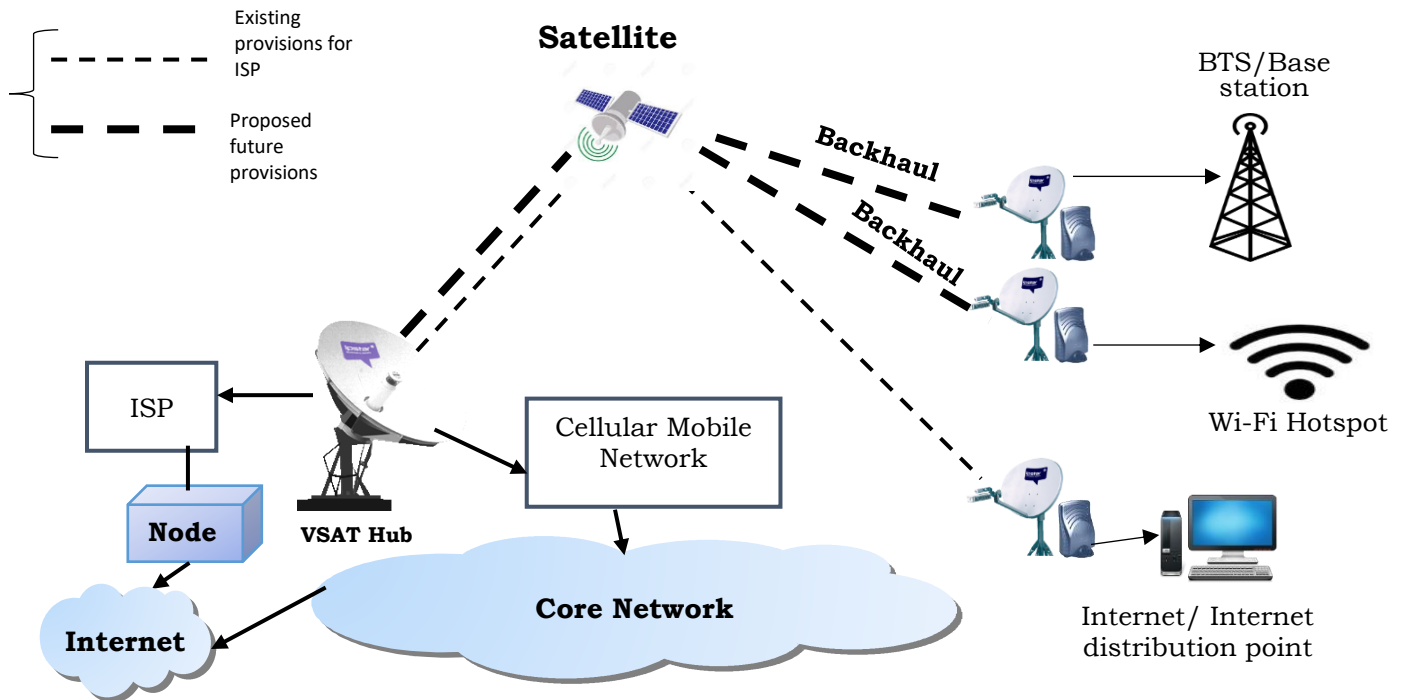
- 2.26 NLD operators have made significant progress in fiberisation of the network across length and breadth of the country. OFC reach has slowly percolated to small towns and rural areas. However, to fulfill the dream of Digital India, the licensees having Commercial VSAT CUG Authorization can play vital a role in addition to contributions of the major TSPs and NLD Service providers for last mile connectivity options. Digital infrastructure is the basic requirement in addressing the Digital Divide among the different strata of the society. Access to ubiquitous, good quality and affordable telecom service and broadband is the key to roll out various citizen centric programs/initiatives that help in eliminating inequalities on access and obtaining information.
- 2.27 The Government, under Digital India programme has identified e-governance; digital empowerment and citizen inclusiveness as key drivers of the economy. For these to happen, seamless connectivity is utmost important. To this end, in 2, 50,000 Gram Panchayats (GPs), the Government has initiated connectivity throughout the country upto Gram Panchayats using Optical Fibre Network, under BharatNet and during the recent years thousands of Gram Panchayats have already been connected. However, it is not possible to cover every village, every nook and corner of the country through Bharatnet fibre. The alternate medium will be required to connect the remotest geographical areas where laying of OFC will be constrained due to hostile terrain conditions and economic unviability. In such areas, which are significant in number in the country, satellite communication emerges as the most suitable option. It is a cost effective medium for communication and broadband in the remotest & inaccessible areas. Therefore, satellite connectivity can ensure faster roll out of Digital India initiatives and fulfill the government's motto to connect

the unconnected and provide them access to information and e-governance services at their doorstep.

- 2.28 In order to provide quality broadband in remote and rural areas, the government is promoting installation of Wi-Fi Hotspots in rural areas funded through the Universal Service Obligations Fund (USOF). In the recent past USOF Administration/ DOT and Bharat Sanchar Nigam Limited (BSNL) have entered into an agreement for setting up 25,000 Public Wi-Fi Hotspots at BSNL Telephone Exchanges in rural areas using fibre network for providing the Internet services over Wi-Fi Network to all users. The proposed Wi-Fi penetration opens a new vista for VSAT technology to be used as backhaul for Wi-Fi Hotspots in rural areas where connectivity through fibre is either not possible or not available.
- 2.29 Recently, the government has floated Request for Proposal (RFP) for “provision of 2G+4G based mobile services at MHA identified tower locations in Left Wing Extremism (LWE-II) affected areas” covering 2217 sites spanning over 80 Districts in the States of Andhra Pradesh, Telangana, Odisha, Madhya Pradesh, Uttar Pradesh, Maharashtra, Bihar and West Bengal. In the RFP, the provision for backhaul technology has been permitted through either Microwave or VSAT or OFC and BharatNet backhaul as preferred wherever available. VSAT backhaul is permitted for maximum of 5% sites out of total sites with minimum bandwidth of 4 Mbps. In such a scenario, VSAT providers can bring in the competitiveness in providing capacity and connectivity to backhaul the mobile base stations within the LSA, if permitted in their licenses.
- 2.30 Allowing the provisions of backhaul links via satellite can be restricted to backhaul connectivity for mobile network and Wi-Fi hotspots only by Commercial VSAT CUG Authorization, so that these entities do not overreach or overlap the business interests of NLD service providers. Backhaul to the mobile services through VSAT can be allowed within the jurisdiction of Licensed Service Area (LSA) / Circle. The VSAT Hub can be

located anywhere in the country. In the backend, the VSAT Hub will be connected to BSC/ RNC/GW through the terrestrial links. The proposed schematic of the VSAT connectivity in different scenarios has been shown in the figure 1.4 :-

Fig 1.4: Proposed backhaul provisioning by Commercial VSAT licensee



E. Spectrum charging for VSAT services in Commercial VSAT CUG Service Authorization & National Long Distance (NLD) License / Authorization

2.31 As mentioned earlier, satellite is used as a very useful backhaul mechanism for telecom networks (in difficult terrain and remote areas) and for community wi-fi networks and used by large enterprises as a backup connection for their mission critical applications and as a primary network for the terrestrially unreachable locations. For providing the mobile services in remote and inaccessible areas, a telecom service provider (Access Service provider) is authorized to establish VSAT based backhaul links via. satellite. In case TSP do not have its own arrangements,

alternatively, provisioning of the service in the above-mentioned scenario may be done through the network of NLD license or the NLD Authorization holder under UL. Commercial VSAT licensee are presently not permitted to provide such services, though such VSAT licensees have large number of VSAT stations already deployed across the country.

2.32 Under the Commercial VSAT CUG Service Authorization, the Royalty Charges and spectrum License Fee is clubbed together and is termed as Spectrum Usage Charges (SUC). DoT vide circular dated 16.04.2003 had migrated to the AGR based mechanism for charging of spectrum charges (Royalty and License Fee) for the Commercial VSAT service authorization. SUC in Commercial VSAT CUG license is charged on AGR basis and varies from 3 to 4% of AGR depending upon the data rates. Whereas, the charging mechanism for VSAT related services in NLD License/ Authorization is formulae-based and governed by the formula prescribed by DoT Order No. P-11014/34/2009-PP (III) dated 22.03.2012 (**Annexure -II**). The Royalty charge is applied to the total licensed bandwidth of each frequency of any type of the satellite-based Radio-communication network (including ILD, NLD, Teleport, DSNG, DTH, VSAT, INMARSAT and Satellite Radio). To arrive at the amount of annual Royalty per frequency, R, a Bandwidth Factor (Bs) is applied as per the table given below. Royalty 'R' is payable for an Uplink or a Downlink as per the following formula:

$$\text{Royalty, R (in Rs.)} = 35000 \times \text{Bs}$$

Table A: Bandwidth Factor (Bs) for Satellite Communications

Bandwidth assigned to a Frequency (W KHz)	Bandwidth Factor (Bs) for an Uplink		Bandwidth Factor (Bs) for a Downlink	
	Broadcast	Others	Broadcast	Others
Up to and including 100 KHz	0.25	0.20	NIL	0.20
More than 100 KHz and Up to and including 250 KHz	0.60	0.50	NIL	0.50
More than 250 KHz and upto 500kHz	1.25@	1.00@	NIL	1.00@
For every 500 kHz or part	1.25@	1.00@	NIL	1.00@

[@for every 500KHz or part thereof]

- 2.33 In its recommendations of 3.10.2005, on 'Growth of Telecom services in rural India - The Way Forward', the Authority had recommended that there should be a single rate of WPC fee (SUC) and the ceiling of 4% should be lowered to 1% to cover administrative charges only. Further, TRAI vide its recommendations dated 7.03.2017 on 'Spectrum Usage Charges and Presumptive Adjusted Gross Revenue for Internet Service Providers and Commercial Very Small Aperture Terminal Service Providers' has reiterated that the SUC should not be more than 1% of AGR irrespective of the data rate in respect of Commercial VSAT CUG Services.
- 2.34 As per the present licensing regime, the VSAT based backhaul bandwidth can be created by the Access Service Provider itself or alternatively can be obtained as leased bandwidth from the NLD service provider. Creating VSAT based network involves obtaining the satellite transponder from Department of Space (DoS) and frequency authorizations from WPC wing of DoT. For frequency authorizations for VSAT network, the prescribed Royalty Charges and license fee are to be paid to DoT. Under the Access Service Authorization and NLD Service Authorization, the Royalty Charges of frequency authorization for satellite-based system is calculated as per the formula prescribed by DoT vide Order dated 22.03.2012 as referred to in para 2.32 above. The Royalty charges prescribed vide the said letter are very high and increase as the number of VSAT terminals increases while utilising the same amount of spectrum.
- 2.35 Many Commercial VSAT CUG licensees have existing network of large number of terminals across the country which may be used for providing the backhaul connectivity, if suitable enabling provisions are made in the Commercial VSAT CUG Authorization. However, the method of calculating SUC Charges (Royalty Charges) towards frequency authorizations will result in different charges under the Commercial VSAT CUG Service

Authorizations and NLD Service Authorization. Therefore, it may also be explored to shift the calculation of Royalty Charges of satellite-based system from the existing formula based to AGR based for the Access Service as well as NLD Service Authorizations. However, such provisioning in respective license/ authorizations may require accounting separation in the revenue reports of the license/ authorization holder.

- 2.36 Keeping in view the important role of VSAT technology in connecting the unconnected and providing the telecom services to the far-flung and difficult terrains, the viability and affordability of the service is an important aspect. Many unconnected areas in the country can be connected to the telecom networks, if providing VSAT based connectivity under NLD Service License can be made more affordable.
- 2.37 The Authority has taken a note of the fact that there is dissimilarity in charging mechanism for the services provided through same technology i.e. VSAT services provided through Commercial VSAT License/ Authorization and VSAT services through NLD License/ Authorization. Though there is difference in scope of these Service Authorizations but both the Authorizations are to cater for commercial requirement of telecom services. It is worth mentioning that in most of the service authorizations, spectrum charging has been prescribed based on percentage of AGR rather than on formula basis. In the past, the Authority has recommended for spectrum charging on AGR basis for services such as GMPCS/ INMARSAT, Microwave Access backhaul and PMRTS.

CHAPTER-III: QUESTIONS FOR CONSULTATION

3.1 Based on the discussion made and issues raised in previous Chapters, comments of the stakeholders are solicited with proper justification on the following issues: -

Q1. Keeping in view the connectivity requirements in remote and difficult areas, should the Commercial VSAT CUG service provider be permitted to provide backhaul connectivity for mobile services and Wi-Fi hotspots via Satellite? Please justify your answer.

Q2. Whether the scope of Commercial VSAT CUG Service Authorization be enhanced under both Unified License and UL(VNO) license to enable the provision of the said backhaul connectivity? Please justify your answer.

Q3. Should the licensee having authorization for both Commercial VSAT CUG and NLD services be allowed to share VSAT Hub & VSAT terminals for the purpose of providing authorized services? Please justify your answer.

Q4. Whether the licensee should be permitted to share its own active and passive infrastructure for providing various services authorized to it under the other service authorization of UL and/ or other licenses?

[In other words, whether clause 4.3 of Chapter -VIII (Access Service authorization) be made applicable for all other authorizations also]

Is there a need to impose any restrictions? Please enumerate and justify your answer.

Q5. Whether formula-based spectrum charging mechanism for VSAT services in NLD/Access license is adequate and appropriate? If not, whether spectrum charging for VSAT services in NLD/Access service license should be made on AGR basis instead of existing formula basis mechanism? Whether it will require accounting/ revenue separation

for satellite based VSAT services under NLD/Access license? Please elaborate and provide proper justification.

Q6. Please give your comments on any related matter not covered in this Consultation paper.

Government of India
Ministry of Communications
Department of Telecommunications
Sanchar Bhawan, New-Delhi -110001.
(DS-Cell)

No. DS-14/9/2016-DS-I

Dated: 13th August, 2019

To

✓
The Secretary,
Telecom Regulatory Authority of India,
Mahanagar Doorsanchar Bhawan,
Jawahar Lal Nehru Marg, (Old Minto Road),
New Delhi- 110 002.

Subject: TRAI recommendations on Unified License and Unified License VNO agreement terms & conditions, inter-alia provisions for permitting mobile backhaul links via satellite through VSAT.

This is with reference to letter dated 21.05.2018 of VSAT Services Association of India (VSAI) requesting to allow cellular Backhaul services under Commercial VSAT service license to enhance the provisioning of internet and voice services in remote/inaccessible areas by allowing backhaul-links provisioning under Commercial VSAT authorization in unified-license (**copy of letter enclosed as Annexure-I**). VSAI has stated that Commercial VSAT Service Providers have an installed base of 250,000 terminals across the country. These terminals are technically capable being used as backhaul for cellular networks very effectively. As per the present rules, however, such services are considered in the nature of "carrier services" which fall in the domain of NLD.

2. In the above context, it has been submitted by VSAI that as per the present licensing regime:

- a) The backhaul provisioning can be done under the NLD authorization of UL. The sharing of the existing commercial VSAT Hub's usage to provide these services is not allowed.
- b) There are restrictions in sharing the existing VSAT Hub for the "carrier services" like providing the backhaul.
- c) Further, the VSAT Hub has to be in the same service area where MSC is located.

3. Further, VSAI has also submitted that VSAT authorization scope in the Unified License (**copy enclosed as Annexure-II**) 2.1(i) provides VSAT as a distribution point to provide internet services. However, there is no similar clause is available enabling VSAT terminal's use as a backhaul for providing mobile services.

4. It is well known fact that in last few years internet is being proliferated to the public at large through 3G/4G mobile network of Access Service Providers. Likewise, there is a case that the Access Service authorization should have enabling provisions to give broadband through VSAT also.

Continued/----

There is also a need to permit the sharing of VSAT Hub installed under NLD and /or Commercial VSAT authorizations. This would also enable extending the internet services along with voice services in the hitherto un-covered areas.

5. It is also felt that the scope of NLD license is much wider and should not limit provision of backhaul services for BTS/BSC/MSC by Access Service Providers/ Commercial VSAT service providers. The license fee for Access/NLD/Commercial VSAT Service Providers is AGR based and is at uniform rate of 8%.

In UL regime, for IP based Next Generation Network, Media Gateway Controller(MGC)/ Soft Switch can be deployed within geographical boundaries of any one of the authorized service area for Access Services or anywhere in the country, if licensee has authorization for NLD/ILD service also.[clause 4.5 of the Access Service authorization in UL] (copy enclosed as Annexure-III)

6. As per present terms and conditions of VSAT commercial license there is restrictions in sharing the existing VSAT Hub. Also for license holders the sharing of the VSAT hub installed for the two authorizations of VSAT & NLD is not permitted. This un-necessarily entails extra CAPEX by the operator(s).

Thus there exists a requirement for utilizing VSAT capabilities & allowing backhaul for connecting BTS/Mobile network in far flung areas under Commercial VSAT CUG license. It is felt that in the context of extending the backhaul connectivity in far-flung & hitherto unconnected areas, the VSAT technological capability should not be restricted.

7. Thus a suitable modification in the Unified License in "Scope of Service" & "Sharing of infrastructure" related clause(s) mentioned in both commercial VSAT license & Sharing of Hub in NLD authorization needs suitable changes/ enabling provision for backhaul provisioning. The proposed modification in UL and UL (VNO) is enclosed as Annexure-IV.

8. Further, objectives for strengthening satellite based services/VSATs have been stipulated in para 1.3 "*Strengthening Satellite Communication Technologies in India*" of NDCP-2018. The terms & conditions of VSAT authorisation may be examined in light of NDCP-2018 also.

9. Therefore, TRAI is requested to furnish their recommendations in terms of clause 11(1)(a) of TRAI, Act, 1997 as amended by TRAI Amendment Act, 2000 on Unified License and Unified License VNO agreement for permitting backhaul links for mobile network via satellite through VSAT.



13.8.19

(Suneel Niraniyan)
Director (DS-I)
Tel: 23036139

Email ID: dirids1-dot@nic.in

Enclosures: As above.

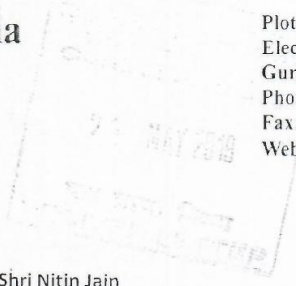
DDG (DS)
4250/3192/2018
21/5/18
Annexure
6/6
VSAI

VSAT Services Association of India

21st May 2018

DDG Data Services
Department of Telecom
Ministry of Communications
30, Ashoka Road,
New Delhi – 110001

Plot No. 1, Sector 18
Electronic City
Gurgaon 122 015, (Haryana)
Phone: 91-124-3072500
Fax: 91-124-2398840
Website: www.vsatindia.org



Kind Attention: Shri Nitin Jain

Re: Cellular Backhaul Services using commercial VSAT license

Dear Sir,

At the outset, we laud the efforts of the Department of Telecom in its efforts to bring cellular connectivity to the rural areas to the country. There has been a significant thrust in the telecom unserved and underserved areas of the country such including the north eastern part of the country, Jammu & Kashmir and the Andaman & Nicobar Islands. The Government is funding major initiatives in these areas using the USO Fund.

Commercial VSAT service providers have a large installed base of 250,000 terminals all across the country. All of these terminals are Internet Protocol (IP) enabled and can be used as backhaul for cellular networks very effectively. Many of these terminals can be used for the purpose of cellular backhaul in addition to being used for providing data connectivity including internet. This will not only bring about a quicker roll-out option, but also reduce the cost of setting up dedicated infrastructure. A VSAT terminal with a small cell can provide effective coverage in the nearby areas.

For the proliferation of internet, the Government had relaxed the policy and allowed the distribution of internet using VSATs. Today a number of businesses are benefitted by this intervention by the Government and VSAT service providers are able to use the VSAT terminal as a backhaul for providing internet to unserved and underserved areas.

A similar approach could be followed for cellular backhaul as well. One can argue that internet access is an access service and backhaul is a carrier service and a VSAT service provider cannot provide a carrier service. This distinction has diminished when the Government made the license fees in terms of a per cent age of AGR uniform across both National Long Distance and VSAT services. The only difference exists in the entry fees for National Long Distance authorisation and Commercial VSAT authorisation under the Unified License.

This in the opinion of the association should not be a barrier for the Government to tap into a large potential that the VSAT terminals offer for backhaul services. DoT could enable this by offering an option to the VSAT service providers, who wish to provide backhaul services, to pay additional one time entry fee (that will bridge the gap in entry fees between commercial VSAT and National Long Distance authorisations) and begin to provide the backhaul service to other telecom service providers.

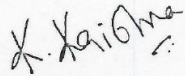
94581/DDG (DS) /2018.
21/5/18.

This will help the Government leverage the existing infrastructure setup by commercial VSAT service providers for extending cellular coverage to unserved and underserved areas. This will also help the VSAT service providers to put their investment in satellite hubs to optimal use.

We at the association are committed to providing any assistance that may be required by the department in this regard.

Thanking you,

Yours truly,



K. Krishna
President
Mobile: +91 9811055671

Copies to:

1. DDG NOCC
2. Special Secretary (T)

CHAPTER-XIV

COMMERCIAL VSAT CUG SERVICE

1. **Service Area:** The Service Area of Very Small Aperture Terminal (VSAT) Closed User Group (CUG) Service shall be at National Level.

2. **Scope of VSAT CUG Service:** Scope of this Authorization covers the following:

2.1 (i) The scope of service is to provide data connectivity between various sites scattered within territorial boundary of India using VSATs. The users of the service should belong to a Closed User Group (CUG). However, the VSAT licensee after obtaining ISP license may use same Hub station and VSAT (remote station) to provide Internet service directly to the subscribers, and in this case VSAT (remote station) may be used as a distribution point to provide Internet service to multiple independent subscribers.

(ii) Long distance carriage rights, granted for NLD, ILD and Access service, are not covered under the scope of this service.

(iii) The Closed User Group Domestic Data Network via INSAT Satellite System using VSAT shall be restricted to geographical boundaries of India.

(iv) The Licensee can set up a number of CUGs using the shared hub infrastructure.

(v) PSTN/PLMN connectivity is not permitted.

(vii) Data Rate, as specified in TEC Interface Requirements No. TEC-IR/SCB-08/02-SEP.2009, is allowed, subject to the compliance of the Technical parameters as specified in TEC Interface Requirements No. TEC-IR/SCB-08/02-SEP.2009, as modified from time to time.

3. **Financial Conditions:**

3.1 **Gross Revenue:**

The Gross Revenue shall include all revenues accruing to the Licensee on account of goods supplied, services provided, leasing/hiring of infrastructure, use of its resources by others, application fees, installation charges, call charges, late fees, sale proceeds of instruments (or any terminal equipment including accessories), VSAT hardware/software, fees on account of Annual Maintenance Contract/ Annual Comprehensive Maintenance Contract income from value added services, supplementary services, access or interconnection charges, etc. and any other miscellaneous item including interest, dividend etc. without any set-off of related item of expense etc.

2.6 For provision of Internet Telephony, Internet Services, Broadband Services and triple play i.e. voice, video and data, the Conditions No. 2.1(i), 2.1(vii), 2.1(ix), 2.1(x), 2.2, 5, 6, 7 and 8 of Chapter IX (Internet Service) shall also be applicable.

3. FINANCIAL CONDITIONS

3.1 GROSS REVENUE

The Gross Revenue shall be inclusive of installation charges, late fees, sale proceeds of handsets (or any other terminal equipment etc.), revenue on account of interest, dividend, value added services, supplementary services, access or interconnection charges, roaming charges, revenue from permissible sharing of infrastructure and any other miscellaneous revenue, without any set-off for related item of expense, etc.

3.2 Adjusted Gross Revenue (AGR)

For the purpose of arriving at the "Adjusted Gross Revenue (AGR)", following shall be excluded from the Gross Revenue to arrive at the AGR:

- I. PSTN/PLMN/GMPCS related call charges (Access Charges) actually paid to other eligible/entitled telecommunication service providers within India;
- II. Roaming revenues actually passed on to other eligible/entitled telecommunication service providers and;
- III. Service Tax on provision of service and Sales Tax actually paid to the Government if gross revenue had included as component of Sales Tax and Service Tax.

4. Technical & Operating Conditions

4.1 The Licensee's network shall be compliant to the Regulations/Directions/instructions issued by TRAI/Licensor in respect of Mobile Number Portability (MNP) before commencement of mobile services.

4.2 The sharing of infrastructure, owned, established and operated by the Licensee under the scope of this Authorization, is permitted as below:

- (i) Sharing of "passive" infrastructure viz., building, tower, dark fiber, duct space, Right of Way etc. with other Licensees.
- (ii) Provision of point to point bandwidth from their own infrastructure within their Service Area to other licensed telecom service providers for their own use. However, the Licensee hiring the bandwidth shall not resell such bandwidth.

4.3 Further, the Licensee may share its own active and passive infrastructure for providing other services authorized to it under the license.

4.4 Moreover, sharing of active infrastructure with other licensees shall be governed by the license conditions/amendments issued by the Licensor from time to time.

4.5 Location of switches and other network elements

- (i) The licensee shall install applicable system within its service area. However, for IP based Next Generation Network, Media Gateway Controller (MGC)/ Soft Switch can be deployed within geographical boundaries of any one of the authorized service area for

Access Services or anywhere in the country if the Licensee has authorization for NLD/ILD service also. However, the Media Gateways shall be installed in each service area to perform the function of switching subscriber traffic under the control of MGC for call control.

(ii) The MGC/ Soft Switch and common service support systems such as Intelligent Networks (IN), Billing, Network Operations Center (NOC) or any other equipment specifically permitted by the Licensor, shall be located in a service area where the licensee has Access service authorization or anywhere in the country if the Licensee has authorization for NLD/ILD service also. Location of MGC/ soft switch and common service support systems shall be intimated to Licensor as and when commissioned. In respect of Short Message Service Center (SMSC), it can be installed in any of the service areas where Licensee has authorization of access service.

5. **Provision of IPTV Service:**

5.1(a) The Licensee while providing TV channels through IPTV shall transmit only those television channels and in exactly same form (unaltered), which are registered with or are otherwise permitted by the Ministry of Information and Broadcasting. In such cases, the responsibility to ensure that content is in accordance with the extant laws, rules, regulations etc. shall be that of the broadcaster and telecom Licensee will not be held responsible. The Licensee shall not carry any television channels prohibited either permanently or temporarily or not registered with the Ministry of Information & Broadcasting.

5.1(b) The Licensee can obtain content from the Multi System Operator or the Cable Operator for providing IPTV services.

5.1(c) The Licensee providing IPTV will show only those News and Current Affairs television channels which have been registered with Ministry of Information and Broadcasting. The Licensee will not produce or provide any other broadcast or non-broadcast channel having any element of News and Current Affairs.

5.1(d) The provisions of Programme code and Advertisement code as provided in Cable Television Network (Regulation) Act 1995 and Rules there under shall be applicable even in the case of contents other than TV channels from broadcast provided by the Licensee. Since the Licensee will be providing this content, the Licensee shall be responsible for ensuring compliance to the codes with respect to such content. In addition to this, such LICENSEES will also be bound by various Acts, instructions, directions, guidelines issued by the Central Government from time to time to regulate the contents.

5.1(e) If the contents are being sourced from content providers other than Licensee, then it will be the responsibility of Licensee to ensure that their agreements with such content providers contain appropriate clauses to ensure prior compliance with the Programme and Advertisement Codes and other relevant Indian laws, civil and criminal, regarding content.

5.1(f) The Central Government in the Ministry of Information and Broadcasting shall have the right to notify the number and names of channels of Prasar Bharati or any other channel for compulsory carriage by the Licensee and the manner of reception and retransmission of such channels.

Annexure - IV

F.No.20-405/2013-AS-I
Government of India
Department of Telecommunications
AS-I Cell

Dated the

To: All UL Licensees

Subject: Amendment to Unified License for permitting mobile backhaul links via satellite through VSAT.

In exercise of the powers conferred in pursuance of Condition 5 of the Unified License Agreement the LICENSOR hereby amends following for permitting mobile backhaul links via satellite through VSAT in the Unified License agreement.

S.No.	Existing clause	Amended clause
1.	<p>Chapter VIII</p> <p>Clause 2.2 Licensee may carry intra-circle long distance traffic on its network. However, subject to technical feasibility, the subscriber of the inter-circle long distance calls, shall be given choice to use the network of another Licensee in the same service area, wherever possible. The Licensee may also enter into mutual agreements with other UL Licensee (with authorization for access service)/other Access service licensee/National Long Distance Licensee for carrying its intra-Circle Long Distance traffic.</p>	<p>Chapter VIII</p> <p>Clause 2.2 Licensee may carry intra-circle long distance traffic on its network. However, subject to technical feasibility, the subscriber of the inter-circle long distance calls, shall be given choice to use the network of another Licensee in the same service area, wherever possible. The Licensee may also enter into mutual agreements with other UL Licensee (with authorization for access service)/other Access service licensee/National Long Distance Licensee for carrying its intra-Circle Long Distance traffic.</p> <p>In case the licensee has obtained VSAT authorization/license, the "backhaul-links/connectivity" for mobile access network can be provided through VSAT link(s). For this purpose a direct interconnection with the VSAT Hub through leased line shall be permitted. Use of the existing VSAT hub set up under the commercial VSAT CUG license/authorization is permitted.</p> <p>The licensee shall provide to the Licensor, a monthly statement of VSAT subscribers served with their locations and details of leased line interconnection with the VSAT Hub. The VSAT Hub, however, need not be located in the service area of the Licensee.</p>

2.		<p>Chapter-X Clause 2.2(iii)</p> <p>In case the licensee has obtained VSAT authorization/license, the “backhaul-links/connectivity” for mobile access network can be provided through VSAT link(s). For this purpose a direct interconnection with the VSAT Hub through leased line shall be permitted. Use of the existing VSAT hub set up under the commercial VSAT CUG license/authorization is permitted.</p> <p>The licensee shall provide to the Licensor a monthly statement of VSAT subscribers served with their locations and details of leased line interconnection with the VSAT Hub. The VSAT Hub, however, need not be located in the service area of the Licensee.</p>
3.	<p>Chapter-XIV Clause 2.1(ii)</p> <p>Long distance carriage rights, granted for NLD, ILD and Access service, are not covered under the scope of this service.</p>	<p>Chapter-XIV Clause 2.1(ii)</p> <p>Long distance carriage rights, granted for NLD, ILD and Access service, are not covered under the scope of this service.</p> <p>However, the licensee can provide “backhaul-links/connectivity” for mobile access network through VSAT link(s) to other telecom service providers. For this purpose a direct interconnection with the VSAT Hub through leased line shall be permitted. For this purpose, licensee is permitted to use the existing VSAT hub set up under any of the commercial license/authorization under unified-license.</p> <p>The licensee shall provide to the Licensor a monthly statement of VSAT subscribers served with their locations and details of leased line interconnection with the VSAT Hub.</p>

74/c

No.20-405/2013-AS-I

Government of India
Department of Telecommunications
AS-I Cell

Dated the

To: All UL(VNO) Licensees

Subject: Amendment to Unified License(VNO) for permitting mobile backhaul links via satellite through VSAT.

In exercise of the powers conferred in pursuance of Condition 5 of the Unified License (VNO) Agreement the LICENSOR hereby amends following for permitting mobile backhaul links via satellite through VSAT in the Unified License(VNO) agreement.

S.No.	Existing clause	Amended clause
1.	Chapter VIII Clause 2.2 Licensee may carry intra-circle long distance traffic on its network.	Chapter VIII Clause 2.2 Licensee may carry intra-circle long distance traffic on its network. In case the licensee has obtained VSAT authorization/license, the "backhaul-links/connectivity" for mobile access network can be provided through VSAT link(s). For this purpose a direct interconnection with the VSAT Hub through leased line shall be permitted. Use of the existing VSAT hub set up under the commercial VSAT CUG license/authorization is permitted. The licensee shall provide to the Licensor, a monthly statement of VSAT subscribers served with their locations and details of leased line interconnection with the VSAT Hub. The VSAT Hub, however, need not be located in the service area of the Licensee.

2.		<p>Chapter-X Clause 2.2(iii)</p> <p>In case the licensee has obtained VSAT authorization/license, the “backhaul-links/connectivity” for mobile access network can be provided through VSAT link(s). For this purpose a direct interconnection with the VSAT Hub through leased line shall be permitted. Use of the existing VSAT hub set up under the commercial VSAT CUG license/authorization is permitted.</p> <p>The licensee shall provide to the Licensor a monthly statement of VSAT subscribers served with their locations and details of leased line interconnection with the VSAT Hub. The VSAT Hub, however, need not be located in the service area of the Licensee.</p>
3.	<p>Chapter-XIV Clause 2.1(ii)</p> <p>Long distance carriage rights, granted for NLD, ILD and Access service, are not covered under the scope of this service.</p>	<p>Chapter-XIV Clause 2.1(ii)</p> <p>Long distance carriage rights, granted for NLD, ILD and Access service, are not covered under the scope of this service.</p> <p>However, the licensee can provide “backhaul-links/connectivity” for mobile access network through VSAT link(s) to other telecom service providers. For this purpose a direct interconnection with the VSAT Hub through leased line shall be permitted. For this purpose, licensee is permitted to use the existing VSAT hub set up under any of the commercial license/authorization under unified-license.</p> <p>The licensee shall provide to the Licensor a monthly statement of VSAT subscribers served with their locations and details of leased line interconnection with the VSAT Hub.</p>

ANNEXURE-II

Government of India
Ministry of Communications & IT
Department of Telecommunication
Wireless Planning & Co-ordination (WPC) Wing

Sanchar Bhavan,
20, Ashoka Road,
New Delhi-110 001

No. P-11014/34/2009-PP (III)

Date: 22nd March, 2012

O R D E R

Subject: Royalty charges for Assignments of Frequencies to 'Captive Users' (users being charged on formula basis) including all Government Users, involving **Satellite based systems**.

In pursuance of Power conferred by section 4 of the Indian Telegraph Act, 1885(13 of 1885) and in supersession of this Ministry's Orders order no. J-19011/1/98-SAT, dated 14/09/1998, and No. R-11014/26/2002-LR, Dated 06/05/2003, the Central Government has decided the following Royalty charges for Assignments of Frequencies to 'Captive Users' (users being charged on formula basis) including all Government Users, involving all Satellite based systems (i. Broadcasting: Radio, Television, DSNG etc; and ii. Other networks; ILD, INMARSAT, NLD, Teleport, VSAT etc):-

2. *The Standard Annual Royalty Factor shall be Rs.35000 per Frequency.* It shall be applied to the total licensed bandwidth of each frequency of any type of satellite-based *Radio-communication* network (including ILD, NLD, Teleport, DSNG, DTH, VSAT, INMARSAT and Satellite Radio), together with the relevant *Bandwidth Factor (B_s)* given in *Table D* below, to arrive at the amount of *Annual Royalty per Frequency, R*, payable for an Uplink or a Downlink as per the following formula:

$$\text{Royalty, R (in Rs.)} = 35000 \times B_s$$

Table D: Bandwidth Factor (B_s) for Satellite Communications

Bandwidth Assigned to a Frequency (W KHz)	Bandwidth Factor, B _s , for an uplink		Bandwidth Factor B _s for a downlink	
	Broadcast	Others	Broadcast	Others
Up to and including 100 KHz	0.25	0.20	NIL	0.20
More than 100 KHz and Up to and including 250 KHz	0.60	0.50	NIL	0.50
More than 250 KHz and upto 500 kHz	1.25 @	1.00 @	NIL	1.00@
For every 500 kHz or part thereof	1.25 @	1.00 @	NIL	1.00@

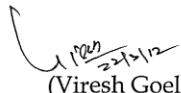
[@ for every 500 kHz or part thereof]

3. In addition to above, the explanatory "Notes" on the applicability of royalty charges, are as follows:

- i. As a principle, charges for radio spectrum be levied for both uplinks and downlinks, as the nature of the resource remains the same. Charging will however only be in respect of the frequencies transmitted from or into Indian Territory.

Royalty Charges, Satellite based systems

- ii. The DSNG, SNG etc., be levied royalty charges for radio frequencies used on both Uplinks and Downlinks, because these are dedicated links that cannot be equated with broadcasting service.
 - iii. For DSNG's, in case the same frequency carrier is used by the user (assignee of RF) from different OB vans belonging to him, additional royalty @ 25% of the basic royalty be charged from him, however if the additional OB vans are located within the same premises additional royalty @ 25% of the basic royalty will not be charged.
 - iv. For Temporary Unlinking, a minimum royalty equivalent to that for one month be charged.
4. For Charging of "Licence fee and other fees, Surcharge/ late fee and Charging Methodologies for Royalty / licence fees, Order No. No. P-11014/34/2009-PP (IV) dated 22nd March, 2012 shall be applicable.
5. This issues with the concurrence of the Wireless Finance Division, vide thir Dy. No.482/Sr.DDG(WPF), dated 19/3/12.
6. This Order shall come into force from 1st April 2012.


(Viresh Goel)
Deputy Wireless Advisor
to the Government of India

Copy to:

1. All concerned
2. Wireless Finance Division
3. Wireless Monitoring Organisation
4. Director, IT DoT for uploading on DoT website
5. DWA(ASMS) for uploading on WPC Wing website