

CHAPTER- IV: ISSUES FOR CONSULTATION

We welcome the move of TRAI for issuing consultation paper on IFC. We however, would like to emphasize that the Mobile Satellite Services (MSS) or Earth Station in Move (ESIM) is new in India and is yet to be permitted. There are various applications based on the MSS / ESIM and IFC is just one of them. MSS or ESIM is an earth station that communicates with FSS Space stations but operate on moving platforms such as Ship, Aircraft and land vehicles. The various services are like –

- a. ESV (Earth Station onboard Vessel) under the MMSS (Maritime Mobile Satellite Services)
- b. AES (Aircraft Earth Station) under the AMSS (Aeronautical Mobile Satellite Services)
- c. VMES (Vehicle mounted Earth Station) under the LMSS (Land Mobile Satellite Services)

Note: IFC is a terminology often used in synonym for AES

All of these mobile applications have common behaviour – they require high pointing accuracy and are mostly used to provide broadband Internet connectivity to its passengers, with a few specific features related to the respective services.

Hence, we request TRAI to expand the consultation covering all the MSS / ESIM services and not just restricted to IFC alone.

Though, we are reverting to the questions shared by TRAI specific to IFC as given below, we would want TRAI to prepare a common consultation paper for MSS / ESIM which will have a bigger scope than only IFC and will benefit the industry.

Q.1 Which of the following IFC services be permitted in India?

- a. Internet services
- b. Mobile Communication services (MCA service)
- c. Both, Internet and MCA

TATANET: We suggest that to start the IFC services, it should begin with Internet services only. Once the Internet services are settled, DoT may look for allowing the MCA services. However, as currently TRAI is also evaluating “Internet Telephony”, there actual is no need to have separate MCA services, as the IFC services will provide Internet onboard and passengers may opt for “Internet Telephony” services using onboard Internet Wi-Fi services.

Q.2 Should the global standards of AES/ESIM, shown in Table 2.1, be mandated for the provision of AMSS in Indian airspace?

TATANET: The AES/ESIM are unique services and require to be stable while they are in motion. Globally standards have evolved to ensure safe and secure transmission from AES/ESIM.

The equipments onboard AES / ESIM are designed as per the ITU guidelines and the ITU-R M.1643 is a universally accepted standard. Hence, it is imperative that India adopts the global standards as well.

Q.3 If MCA services are permitted in Indian airspace, what measures should be adopted to prevent an airborne mobile phone from interfering with terrestrial cellular mobile network? Should it be made technology and frequency neutral or restricted to GSM services in the 1800 MHz frequency band, UMTS in the 2100 MHz band and LTE in the 1800 MHz band in line with EU regulations?

TATANET: As suggested above, the immediate need of the airlines is to provide Internet connectivity to their passengers onboard and the MCA services are not urgently desired initially. The Internet Telephony call services when permitted will meet the passengers' voice call requirements. If the Government still feels MCA is a necessary service, then the Voice traffic should be carried on the VSAT backhaul link from a VSAT CUG license provider, who will tie-up with a Mobile Services provider at the backend to provide MCA services onboard aircraft. If Internet Telephony is allowed, then there is no need for onboard Mobile frequency as it will run on Wi-Fi Internet onboard. If MCA is allowed then *the frequency bands should be restricted to GSM services in the 1800 Mhz frequency band, UMTS in the 2100 Mhz band and LTE in the 1800 Mhz band in line with EU regulations.*

Q.4 Do you foresee any challenges, if the internet services be made available 'gate to gate' i.e. from the boarding gate of the departure airport until the disembarking gate at the arrival airport?

TATANET: It is suggested that the Internet services be made 'gate to gate' to avail the maximum benefit of the Internet services by the passengers. The passengers spend considerable time on-board the aircraft while they are grounded or are not-flying. Enabling "gate to gate" Internet access will help the passengers efficiently use the Internet services.

Q.5 Whether the Unified Licensee having authorization for Access Service/Internet Service (Cat-A) be permitted to provide IFC services in Indian airspace in airlines registered in

India?

TATANET: The current UL permits only the Access & NLD services apart from VSAT for provision of satellite based internet. The internet authorisation on a standalone basis cannot provide this service.

Moreover, IFC is a VSAT based service. As per our understanding the question asked means - Unified Licensee having authorisation for Access/Internet Service (CAT-A) be permitted to provide IFC only if it also has **VSAT authorisation**.

We highly recommend that the current License structure for VSAT services be honoured and continued. Additionally, we also suggest that no fresh authorisations should be created for providing this service.

Q.6 Whether a separate category of IFC Service Provider be created to permit IFC services in Indian airspace in airlines registered in India?

TATANET: The IFC Service providers are going to provide In-Flight Wi-Fi based Internet services to the passengers onboard the aircraft. The Internet backhaul will however ride on the VSAT service providers' network. Since the IFC providers are going to share Internet with the passengers, a new category may be made under the "Other Service Provider - OSP". All the rules and regulations for the OSP should be applicable for the IFC providers.

Q.7 Whether an IFC service provider be permitted to provide IFC services, after entering into an agreement with Unified Licensee having appropriate authorization, in Indian airspace in airlines registered in India?

TATANET: We suggest that the IFC service provider be permitted to provide IFC services, after entering into an agreement with UL having appropriate authorization (including VSAT services & Internet Cat (A) ISP authorization) or a CUG VSAT provider with Internet Cat(A) ISP License, in Indian airspace in airlines registered in India. Once this is done, the IFC providers through the UL/CUG VSAT licensee can automatically provide connectivity under the existing norms.

Q.8 If response to Q.7 is YES, is there any need for separate permission to be taken by IFC service providers from DoT to offer IFC service in Indian airspace in Indian registered airlines? Should they be required to register with DoT? In such a scenario, what should be the broad requirements for the fulfillment of registration process?

TATANET: The IFC service providers should register in a new category defined under “Other Service Provider”. All the IFC providers would be required to register with the DoT under the OSP license.

Q.9 If an IFC service provider be permitted to provide IFC services in agreement with Unified Licensee having appropriate authorization in airlines registered in India, which authorization holder can be permitted to tie up with an IFC service provider to offer IFC service in Indian airspace?

TATANET: Only CUG VSAT service providers having atleast 5 years of experience in running commercial VSAT services in India, be permitted to tie up with an IFC service provider to offer IFC services in Indian airspace. The existing VSAT service providers in India have relevant knowledge, experience, and desired infrastructure and VSAT and Cat (A) ISP license for provisioning of Internet VSAT services. Providing VSAT connectivity for IFC services is no different than the existing scope of VSAT providers.

Q.10 What other restrictions/regulations should be in place for the provision of IFC in the airlines registered in India.

TATANET: As per the VSAT services norms in India, the traffic of all the VSAT terminals should land in a Gateway in India. Hence, it is highly desired that the gateway for provision of the IFC service should be in India.

In addition to this, the AES/IFC should ensure that -

- IFC should be within the envelope of coordination agreements of satellite networks of other administrations
- IFC should be permanently monitored and controlled by a Network Control and Monitoring Centre(NCMC) in India
- IFC should be capable of receiving and acting upon at least “enable transmission”

and “disable transmission” commands from the NCMC in India

- IFC not be used for safety-of-life applications
- IFC employ techniques to track the associated GSO FSS satellite and resistant to capturing and tracking adjacent GSO satellites to avoid interference with adjacent satellites
- Not claim protection & not cause interference too the primary services.

Q.11 What restrictions/regulations should be in place for the provision of IFC in the foreign airlines? Should the regulatory requirements be any different for an IFC service provider to offer IFC services in Indian airspace in airlines registered outside India vis-à-vis those if IFC services are provided in Indian registered airlines?

TATANET: The following restrictions / regulations should be in place for the provision of IFC in the foreign registered airlines –

- a. There should be seamless and auto switching / handover of the AES from / to the foreign VSAT provider and foreign satellites to the Indian VSAT provider and ISS/DoS leased foreign satellites in India as the AES moves in / out of the Indian Airspace.
- b. The traffic originating from the AES while in the Indian airspace should land only in a gateway in India. The traffic should be available for monitoring by the Indian Law Enforcing Authorities.

In addition to this, the AES/IFC should ensure that -

- IFC should be within the envelope of coordination agreements of satellite networks of other administrations
- IFC should be permanently monitored and controlled by a Network Control and Monitoring Centre(NCMC) in India
- IFC should be capable of receiving and acting upon at least “enable transmission” and “disable transmission” commands from the NCMC in India
- IFC not be used for safety-of-life applications
- IFC employ techniques to track the associated GSO FSS satellite and resistant to capturing and tracking adjacent GSO satellites
- Not claim protection & not cause interference too the primary services.

Q.12 Do you agree that the permission for the provision of IFC services can be given by making rules under Section 4 of Indian Telegraph Act, 1885?

TATANET: The permission for the provision of IFC services can be given by making rules under section 4 of the Indian Telegraph Act, 1885 and it should be in line with the restrictions / regulations prevalent in India as given below –

- a. The traffic should pass through a Gateway installed in Indian territory
- b. The VSAT network should be operating on ISS / DOS leased foreign Satellites to comply with the ISRO/DoT regulations
- c. Foreign registered Airlines should be allowed within the Indian Airspace using their existing installed radio transmitter equipment, which should be in line with the ITU guidelines (ITU-R 1643) and comply to IR requirements of TEC for AES services and should follow the above restrictions

Q.13 Which of the options discussed in Para 3.19 to 3.22 should be mandated to ensure control over the usage on IFC when the aircraft is in Indian airspace?

TATANET: For both India registered airlines and foreign registered airlines operating in the Indian Airspace, the option in Para 3.20 is the best suited option. It is in the national interest to authorize the use of ISS/ DoS leased foreign satellites space segment with Gateway in India having facility for LIM (lawful interception and monitoring) for all the flights operating in the Indian Airspace.

However, any traffic landing in a Gateway outside India with mirrored traffic for LIM will lead to severe security concerns as the mirrored traffic may always be tampered with and compromised leading to breach of data security. The very purpose of monitoring the traffic and the lawful interception will be defeated.

Q.14 Should the IFC operations in the domestic flights be permitted only through INSAT system (including foreign satellite system leased through DOS)?

TATANET: Yes this is the best option and also in the National Interest

Q.15 Should the IFC operations in international flights (both Indian registered as well as foreign airlines) flying over multiple jurisdictions be permitted to use either INSAT System or foreign satellite system in Indian airspace?

TATANET: Both Indian registered aircraft as well as foreign airlines flying in (landing in India or transiting over) Indian Airspace should be under similar regulations. The AES should use an Indian gateway operating on ISS/ DoS leased foreign satellites space segment with facility for LIM (lawful interception and monitoring) for Indian registered as well as foreign airlines operating (landing in India or transiting over) in the Indian Airspace. DoS may also look into authorizing the Indian VSAT providers to operate on a foreign satellite with Gateway in India, if need be.

Moreover, the treatment of both the Indian and Foreign registered airlines should be same as we foresee common security threats which may be detrimental to national interest. A terrorist may board an Indian or a foreign registered airline and use IFC for communications. The data will be required to be intercepted by the law enforcing and the security agencies. Hence, an Indian gateway for all the airlines flying in Indian airspace is required.

Q.16 Please suggest how the IFC service providers be charged in the following cases?

- (a) Foreign registered airlines.**
- (b) Indian registered airlines.**

TATANET: We have suggested that the IFC service providers be registered under the "OSP" license. Under the "OSP" license, there are no separate license fees to be paid by them and they are exempted from any license fees. However, to provide the IFC services they have to tie up with a CUG VSAT licensee with Cat (A) ISP license which fall under the revenue share model with the DoT. Hence, the revenue to the government for the IFC services will be routed through the VSAT service providers registered and operating in India.

Q.17 Should satellite frequency spectrum bands be specified for the provisioning of the IFC services or spectrum neutral approach be adopted?

TATANET: The choice of bands should be in line with the International Standards (ITU guidelines) as this is Global service and not India specific. All the equipments are designed as per the ITU standards. Similar standards are being adopted by the NFAP/TEC to accommodate the IFC services in India. The ITU recommends the use of either KU band or the KA band for the AES communications.

Q.18 If stakeholders are of the view that IFC services be permitted only in specified satellite frequency bands, which frequency spectrum bands should be specified for this purpose?

TATANET: The frequency bands should be KU or KA bands with the frequency spectrum as follows –

KU Band

14.00 - 14.50 GHz (Earth-to-space)

10.70 - 11.70 GHz (space-to-Earth)

12.25 - 12.75 GHz (space-to-Earth)

OR

KA Band

19.7-20.2 GHz (space-to-Earth)

29.5-30.0 GHz (Earth-to-space)