

Introduction

1.The set top box block diagram in the consultation paper needs to be understood differently.

2.Set top box(STB) follows, in reverse, the sequence adopted for transportation of turned around content at the earth station . At the uplinking facility, content is encoded, encrypted, multiplexed, modulated(and CAS injected), frequency up converted, power amplified and beamed upwards to the satellite.

3.At the STB, tuner down converts the frequency, demodulator strips the carrier, demultiplexer selects a particular transport stream and processes the stream through OS (Operating System) for scrutiny through EMM, ECM and Control Word(CW) processing for decryption to feed the encoded signal to decoder for retrieving the AV (Audio Video Output) to be fed to TV set, or to built in sub-modulator for RF output on a pre-determined channel.

4.Inter-operability, a feature in the DTH guidelines, at the time of drafting the guide lines, perhaps envisaged procurement of CPE (Customer Premises Equipment), comprising of mini dish antenna, LNB, few metres of coaxial cable and two connectors at a high personal cost. It, therefore, aimed at providing such a feature so that if the subscriber switched from one service provider to another, he/she would NOT have to procure another STB at additional cost.

5.In practice, if the subscriber wishes to change service provider in the same location, dish antenna, LNB coaxial cable and connectors would be inter-operable i.e. usable with re-alignment of dish antenna.

6.Basic STBs are now being provided free to the subscriber. Therefore, that consideration of subscriber being required to incur expenditure for a different STB is no more applicable.

7. Different service providers use different encryption techniques, SMS (Subscriber Management Systems) and features such as EPG and VOD listing and DRM.

8. Basic STBs, designed outside India,are, therefore, NOT designed specifically for conformance to Indian Standards, use chip sets which are a group of integrated circuits designed to perform a set of functions for a particular service provider. Chip set manufacture, through integration of customized functions lowers the costs. If functions of entitlement management, confirmation and CW retrieval are separated into a separate modules, the cost and population space on the circuit board will increase.

9.This can probably be met if decryption and OS(Operating Systems) functions (including interactive EPG and DRM) are embedded on CAM circuit of the externally inserted CAM in the CI slot, by design, and cost of CPE is to be borne by

the end user. BIS, envisaged a mandatory CI slot in the STB towards this feature of interoperability, as intended in the guidelines, through insertion of CAM (Conditional Access Module) for decryption of content of the changed service provider.

10. It is a different matter that CA Modules are not easily available or available at high cost when supplied. Hence in the scenario of providing STBs free has made this requirement of inter-operability a non-entity.

11. Answers to Issues For Consultation

(a)3.1 Is it possible to have an Open Architecture based Set Top Box (STB) for DTH services that could ensure technical interoperability i.e. technical compatibility and effective interoperability among different DTH operators who have adopted same or different standards?

Theoretically.. Yes ! as a hobbyist project model, keeping a separate circuit board for every function of demodulation, demultiplexing, Stream selection, decryption and decoding. The PCB will increase in size and cost will rise. It may be commercially absurd.

One suggested design is to have EMM, ECM and CW management on the CAM from the beginning on the STB, rather than embedded CAS. However, FPGA (Field Programable Gateway Access) chips would be required to alter EPGs and consumer end interactivity.

In such a customizable STB, these functions shall be provided on insertable CAM in the CI slot.

Primarily DTH, in other countries, addresses cable dark areas, with very few DTH service providers. Hence off shore designs do NOT envisage viewers using DTH as an alternative to wireline broadcasting or flirting with service providers involving change of STB.

(b)3.2 If yes, how can the interoperability be implemented and what would be implications to the stakeholders?

First dish antenna, LNB, coaxial cable and 2 Nos connectors must be paid by the subscriber. Regarding STB, one option is providing commercial interoperability against a non-interest bearing security deposit linked with the condition of refund of such deposit against return of STB in serviceable condition.

The other option is to get STBs designed as described above in the response to 3.1 above. The CAM shall have to be provided by the preferred service provider to insert alternate CAM in the CI slot.

(c) 3.3 Is there a need to mandate any particular standard so that objectives of

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technical interoperability can be achieved? If so, which standard?

No !

That will enhance chances of piracy so that one hack beats every security.

(d)3.4 If technical interoperability for STB is not possible, is there any other mechanism to safeguard the interests of the subscribers.

See reply to 3.2 above.

(e)3.5 Any other relevant issue that you may like to mention or comment upon

Clause of interoperability should NOT be treated as an issue of loss of face by the authorities. This clause is NOT practical and hence its deletion is recommended.

There is a need to get DTH services audited for QoS prescribed TRAI at least once every year QoE (Quality of Experience) derived from such audit, and researched, on implementation of guide lines enshrined in regulations may reveal the gap between what is intended and what is practised..