

Study Of Recent Developments In DTH (Direct-To-Home) Technology

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ABSTRACT

As the customer becomes more and more aware of the technology, he or she will look for a decent package all together, including all the advanced features of a package he can have. Hence the search for new technology is always the main motive of the leading DTH giants to out innovate their competitors. DTH stands for Direct-To-Home television. DTH is defined as the reception of satellite programmers with a personal dish in an individual home. This paper describes the needs that demand continued development of DTH, and explains some background on who is involved and what is currently happening in bringing DTH world.

Keywords – Advantages, DTH, Players in DTH, Recent developments.

I. INTRODUCTION

Direct to home technology refers to the satellite television broadcasting process which is actually intended for home reception. This technology is originally referred to as direct broadcast satellite (DBS) technology. The technology was developed for competing with the local cable TV distribution services by providing higher quality satellite signals with more number of channels.

In short, DTH refers to the reception of satellite signals on a TV with a personal dish in an individual home. The satellites that are used for this purpose is geostationary satellites. The satellites compress the signals digitally, encrypt them and then are beamed from high powered geostationary satellites. They are received by dishes that are given to the DTH consumers by DTH providers.

Though DBS and DTH present the same services to the consumers, there are some differences in the technical specifications. While DBS is used for transmitting signals from satellites at a particular frequency band [the band differs in each country], DTH is used for transmitting signals over a wide range of frequencies [normal frequencies including the KU and KA band]. The satellites used for the transmission of the DTH signals are not part of any international planned frequency band. DBS has changed its plans over the past few years so as to include new countries and also modify their mode of transmission from analog to digital. But DTH is more famous for its services in both the analog and digital services which includes both audio and video signals. The dishes used for this service is also very small in size. When it comes to commercial use, DBS is known for its service providing a group of free channels that are allowed for its targeted country.

II. WHAT IS DTH

DTH stands for Direct-To-Home television. DTH is defined as the reception of satellite programmers with a personal dish in an individual home.

DTH does away with the need for the local cable operator and puts the broadcaster directly in touch with the consumer. Only cable operators can receive satellite programmers and they then distribute them to individual homes.

III. DTH – HOW IT WORKS

Early satellite TV viewers were explorers of sorts. They used their expensive S-Band, then C-Band dishes to discover unique programming that wasn't necessarily intended for mass audiences. The dish and receiving equipment gave viewers the tools to pick up foreign stations, live feeds between different broadcast stations and a lot of other stuff transmitted using satellites.

Some satellite owners still seek out this sort of programming on their own, but today, most satellite TV customers in developed television markets get their programming through a direct broadcast satellite (DBS) provider, such as DISH TV or the recently launched Doordarshan DTH platform. The provider selects programs and broadcasts them to subscribers as a set package. Basically, the provider's goal is to bring dozens or even hundreds of channels to the customer's television in a form that approximates the competition from Cable TV. Unlike earlier programming, the provider's broadcast is completely digital, which means it has high picture and stereo sound quality.

Early satellite television was broadcast in C-band - radio in the 3.4-gigahertz (GHz) to 7-GHz frequency range. Digital broadcast satellite transmits

programming in the Ku frequency range (10 GHz to 14GHz).

There are five major components involved in a direct to home (DTH) satellite system: the programming source, the broadcast center, the satellite, the satellite dish and the receiver.

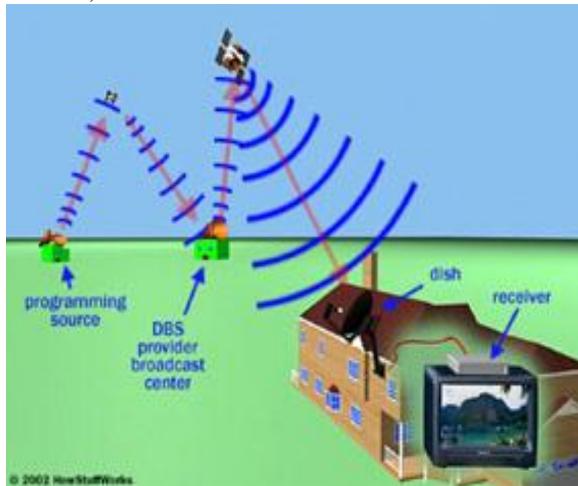


Fig. working procedure of DTH

i. THE COMPONENT

Programming sources are simply the channels that provide programming for broadcast. The provider (the DTH platform) doesn't create original programming itself; it pays other companies (HBO, for example, or ESPN or STAR TV or Sahara etc.) for the right to broadcast their content via satellite. In this way, the provider is kind of like a broker between the viewer and the actual programming sources. (Cable television networks also work on the same principle.)

The broadcast center is the central hub of the system. At the broadcast center or the Play out & Uplink location, the television provider receives signals from various programming sources, compresses using digital compression, if necessary scrambles it and beams a broadcast signal to the satellite being used by it.

The satellites receive the signals from the broadcast station and rebroadcast them to the ground. The viewer's dish picks up the signal from the satellite (or multiple satellites in the same part of the sky) and passes it on to the receiver in the viewer's house. The receiver processes the signal and Passes it on to a standard television.

Let's look at each step in the process in greater detail.

ii. THE PROGRAMMING

Satellite TV providers get programming from two major sources: International turnaround channels (such as HBO, ESPN and CNN, STAR TV, SET, B4U etc.) and various local channels (SaBe TV, Sahara TV, Doordarshan, etc.). Most of the turnaround channels also provide programming for cable television, so sometimes some of the DTH

platforms will ad in some special channels exclusive to itself to attract more subscriptions.

Turnaround channels usually have a distribution center that beams their programming to a geostationary satellite. The broadcast center uses large satellite dishes to pick up these analog and digital signals from several sources.

iii. THE BROADCAST CENTER

The broadcast center converts all of this programming into a high-quality, uncompressed digital stream. At this point, the stream contains a vast quantity of data — about 270 megabits per second (Mbps) for each channel. In order to transmit the signal from there, the broadcast center has to compress it. Otherwise, it would be too big for the satellite to handle.

The providers use the MPEG-2 compressed video format — the same format used to store movies on DVDs. With MPEG-2 compression, the provider can reduce the 270-Mbps stream to about 3 or 10 Mbps (depending on the type of programming). This is the crucial step that has made DTH service a success. With digital compression, a typical satellite can transmit about 200 channels. Without digital compression, it can transmit about 30 channels.

At the broadcast center, the high-quality digital stream of video goes through an MPEG-2 encoder, which converts the programming to MPEG-2 video of the correct size and format for the satellite receiver in your house.

iv. ENCRYPTION & TRANSMISION

After the video is compressed, the provider needs to encrypt it in order to keep people from accessing it for free. Encryption scrambles the digital data in such a way that it can only be decrypted (converted back into usable data) if the receiver has the correct decoding satellite receiver with decryption algorithm and security keys.

Once the signal is compressed and encrypted, the broadcast center beams it directly to one of its satellites. The satellite picks up the signal, amplifies it and beams it back to Earth, where viewers can pick it up.

v. THE DISH

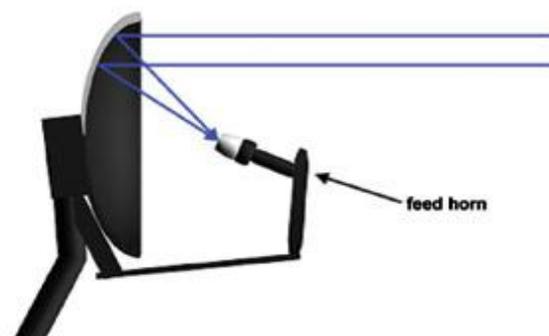


Fig. The dish

A satellite dish is just a special kind of antenna designed to focus on a specific broadcast source. The standard dish consists of a parabolic (bowl-shaped) surface and a central feed horn. To transmit a signal, a controller sends it through the horn, and the dish focuses the signal into a relatively narrow beam.

The dish on the receiving end can't transmit information; it can only receive it. The receiving dish works in the exact opposite way of the transmitter. When a beam hits the curved dish, the parabola shape reflects the radio signal inward onto a particular point, just like a concave mirror focuses light onto a particular point.

The curved dish focuses incoming radio waves onto the feed horn.

In this case, the point is the dish's feed horn, which passes the signal onto the receiving equipment. In an ideal setup, there aren't any major obstacles between the satellite and the dish, so the dish receives a clear signal.

In some systems, the dish needs to pick up signals from two or more satellites at the same time. The satellites may be close enough together that a regular dish with a single horn can pick up signals from both. This compromises quality somewhat, because the dish isn't aimed directly at one or more of the satellites. A new dish design uses two or more horns to pick up different satellite signals. As the beams from different satellites hit the curved dish, they reflect at different angles so that one beam hits one of the horns and another beam hits a different horn.

The central element in the feed horn is the low noise block down converter, or LNB. The LNB amplifies the signal bouncing off the dish and filters out the noise (signals not carrying programming). The LNB passes the amplified, filtered signal to the satellite receiver inside the viewer's house.

vi. THE RECEIVER

The end component in the entire satellite TV system is the receiver. The receiver has four essential jobs:

It de-scrambles the encrypted signal. In order to unlock the signal, the receiver needs the proper decoder chip for that programming package. The provider can communicate with the chip, via the satellite signal, to make necessary adjustments to its decoding programs. The provider may occasionally send signals that disrupt illegal de-scramblers, as an electronic counter measure (ECM) against illegal users.

It takes the digital MPEG-2 signal and converts it into an analog format that a standard television can recognize. Since the receiver spits out only one channel at a time, you can't tape one program and watch another. You also can't watch two different programs on two TVs hooked up to the same receiver. In order to do these things, which are

standard on conventional cable, you need to buy an additional receiver.

Some receivers have a number of other features as well. They pick up a programming schedule signal from the provider and present this information in an onscreen programming guide. Many receivers have parental lock-out options, and some have built-in Digital Video Recorders (DVRs), which let you pause live television or record it on a hard drive.

While digital broadcast satellite service is still lacking some of the basic features of conventional cable (the ability to easily split signals between different TVs and VCRs, for example), its high-quality picture, varied programming selection and extended service areas make it a good alternative for some. With the rise of digital cable, which also has improved picture quality and extended channel selection, the TV war is really heating up. Just about anything could happen in the next 10 years as all of these television providers battle it out.

IV. CHARACTERISTICS OF DTH

i. Advantages

DTH service provides ensure superior picture quality in the first place and with the introduction of high definition (HD) channels, viewers have a lot to gain from this service. Plus, you have the freedom to select the channels you want to watch and pay only for those. For instance, a typical North Indian may not like to subscribe to watch regional channels from the South (because of the language barrier) and similarly a South Indian may not be keen on subscribing to Hindi language channels.

However, there is more to it, in terms of consumer freedom. As a subscriber, you have complete control over your profile and you can easily exercise the power of your choice. In other words, you can add more channels to your list (for a fee, of course), modify them or even delete them from the list without calling up the operator every time. Additionally, the interactive features provided by DTH operators in the form of video-on-demand, games, quizzes, puzzles, paid shows, etc., are also a big attraction. All these make DTH a formidable opponent of the existing cable TV.

Another advantage of DTH is that customers have the convenience of selecting their mode of payments. They have the option of buying a recharge coupon, getting a recharge done from a local dealer or they can simply make online payments. While in the case of cable operators, the payment mode is mostly limited to cash payments made to the operator directly. So in the case of DTH, the power of selecting the mode of payment rests in the hands of the consumers.

ii. Disadvantages

But the DTH service is not without its fair share of woes. Consumers often complain that the dish antennas frequently malfunction during the rainy season and consequently, the transmission suffers. Otherwise, too, those antennas cause a lot of headache as they have to be placed outside the houses/flats and that may not be an easy proposition. There are societies in Mumbai that do not allow members to take DTH connections as the antennas spoil the overall look of the buildings. Other metros are more lenient but the quality of transmission remains an issue when the weather is bad.

Then, there is the service issue that plagues all and sundry. Sometimes large DTH companies may take up to a week to fix a complaint you have lodged. Also, once the due date for the monthly renewal passes, DTH operators shut down the service until the payment is made. This means keeping a tab on the billing date and paying on time, every time, if you are not fond of TV blackouts.

V. V.DTH vs. Digital Cable TV

DTH Service	Digital Cable TV
Service can take 1 to 7 days	prompt service once a complaint is lodged
Flexible membership option	Fixed price of membership
Already offer HD channels	Will offer HD channels
Transmission problem in rainy season	Transmission remain same all year
Localized content not available	Can offer localized content
Dish antenna installation required	No dish antenna required
Flexible mode of payment	Mode of payment not flexible
Already well established	A lot of back-end work required

VI. PLAYERS IN DTH

1. Airtel Digital TV

Airtel digital TV is an Indian direct-broadcast satellite service provider owned and operated by Bharti Airtel. Its satellite service, launched in 2008, transmits digital satellite television and audio to households in India. It uses MPEG-4 digital compression with DVB-S2 technology, transmitting using the satellite SES-7 108.2°E. [1] As of 15th September 2013, Airtel digital TV has total 350 Channels and Services including 18 HD channels.

A premium DVR Digital Video Recorder allows 150 hours of recording live TV on a 160 GB hard disk with MPEG 4 picture clarity. This product was discontinued after the launch of [HD] Recorder.

Airtel Digital TV HD provides channels in their native resolution of 1080i or 720p with 16:9 aspect ratio. The STB is compatible with 7.1 Channel Dolby Digital Plus surround sound as well and is in fact the first HD STB in India to be compliant with Dolby digital Plus.

Airtel Digital TV HD+ is a recorder that records content on an external USB drive/ hard disk drive. It is different from the Digital TV [HD] recorder that records content on an in-built hard disk drive. HD+ offers potentially unlimited recording, as the capacity depends on that of the external hard disk drive/ USB drive. However, it only has a single tuner and hence only a single channel can be watched and recorded at the same time. This is in contrast to the [HD] recorder that enables one to watch and record two different channels at a time and to also supports simultaneous multiple channels recording.

On 4 May 2010, Airtel digital TV from bharti airtel announced the launch of its 3D ready High Definition Personal Video Recorder (HD Recorder). Retaining its pioneering Remote Recording feature, airtel digital TV's HD Recorder offers unique features of Automatic Favorites, Search and Genre and Category sort and is 3D ready. It is also the first STB in India to support compatibility for 1080p signals in future.

On 24 May 2011, Airtel announced that its digital TV HD and HD-DVR boxes are software-enabled to view standard definition (SD) content up scaled to 1080i HD.

2. DD Direct+

DD Direct+ is an Indian free-to-air digital satellite television owned by Doordarshan, providing digital video and audio programming to households and businesses in India.

DD Direct+ offers 59 Television and 25 Radio channels. The total capacity for DD Direct+ is 59 television and 25 radio channels. 26 of these TV channels are broadcast by DD itself (With Doordarshan Logo) and the remaining 33 are private channels (Various private broadcasters in India) and 25 radio channels include all India radio regional channels and F.M Satellite channels.

3. Dish TV

Dish TV (stylized as dishtv), is an Indian direct-broadcast satellite service provider. It is a division of Zee Network Enterprise (Essel Group Venture). It uses MPEG-2 digital compression technology, transmitting using NSS-6 Satellite at 95.0. Dish TV's managing director and Head Of Business is Jawahar Goel who is also the promoter of Essel Group and is also the President of Indian Broadcasting Foundation. Zee Network incorporated dishtv to modernize television (TV) viewing. It provides features such as Electronic Programmed Guide (EPG), parental lock, games, 400+ channels

and services, interactive TV and movies on demand. [2]

DTH service was launched in India back in 2004 with the launch of Dish TV by Essel Group's Zee Entertainment Enterprises.

Dish TV was the only DTH service provider in India to carry the two Turner channels: Turner Classic Movies and Boomerang. But, both the channels were removed from its platform due to unknown reasons in March 2009. Dish TV uses NSS-6 to broadcast its programmers. NSS-6 was launched on 17 December, 2002 by European-based satellite provider, New Skies. Dish TV hopped on to NSS-6 from an INSAT satellite in July 2004. The change in the satellite was made to increase the channel offering as NSS 6 offered more transponder capacity. However, Dish TV booked additional transponders on the new AsiaSat 5 satellite for starting its MPEG-4 based HD services. Dish TV is currently using 4 transponders on Asiasat 5.

Dish TV launched its high definition service called Dish truHD in the year 2010. With this service, subscribers can enjoy 5X picture clarity on their HDTV, a 16:9 wide aspect ratio and 5.1 surround sound.

Dish TV Recently introduced its DVR service which requires an External USB Hard disk drive to be plugged into the Set Top Box's USB Port, the DVR can provide & support recording space up to 2 TB.

4. Reliance Digital TV

Reliance Digital TV is one of the largest Indian pay TV providers, providing direct broadcast satellite service—including satellite television, audio programming, and interactive television services—to commercial and residential customers in India. It uses MPEG-4 digital compression technology transmitted using MEASAT-3 91.5°east. It is the 5th DTH service launched in India. [3]

DTH service was first launched in India in 2004 by launch of Dish TV by Essel Group's Zee Entertainment Enterprises.

Reliance ADAG launched their DTH service on 19 August 2008.

Reliance digital TV limited is a part of Reliance Communications Ltd., a subsidiary of Reliance Anil Dhirubhai Ambani Group founded by the Late Dhirubhai Ambani, the Indian business tycoon and owned by his son Anil Ambani. BIG TV started operations from 19 August 2008 with the slogan "TV ho Toh BIG Ho" ("If you have a TV, make it BIG"). It currently offers close to 250 channels and many interactive ones, 32 cinema halls (i.e. Pay per View Cinema Channels) as well as many Radio channels. The company plans to increase the number of channels in the near future to 400 and begin High Definition (HD) broadcast. There are also plans to introduce services like i-Stock, i-News and other such interactive services in the future.

The available opportunity today is huge considering the fact that India has an existing population of 225 million TV households out of which 130 million are C&S households and 16.5 Million are DTH households. When Reliance BIG TV was launched, the overall DTH penetration was just about 4 million households.

Reliance BIG TV's launch in August deployed the MPEG4 technology MPEG4 technology can support HD TV and not MPEG2 which is used by the earlier entrants in the DTH industry.

The MPEG4 technology helps to broadcast up to 35 to 40 channels per transponder. With 12 transponders they are able to broadcast over 400 channels [citation needed]. They are currently utilizing only 9 of their transponders to broadcast over 230 channels.

Reliance digital TV's retailer network is spread across 100,000 outlets in 6,500 towns in India. They also introduced 32 Pay-Per-View Movie Channels, the highest by any DTH player. But as on march 2012 they have only 4 Pay-Per-View channels.

5. Sun Direct

Sun Direct is an Indian direct broadcast satellite service provider. Its satellite service, launched in 2007, transmits digital satellite television and audio to households in India. Sun Direct uses MPEG-4 digital compression technology, transmitting on INSAT 4B at 93.5°E. And MEASAT-3 at 91.5°E. It is the country's first MPEG-4 technology DTH service provider.

Sun direct is a joint venture between the Maran's Sun Network family and the Astro Group of Malaysia. Sun TV entered into a MoU with the Astro group in January 27, 1997, when Aircel was not in existence, but since the government of India did not allow the use of KU band transponders for DTH services the project was put on hold, the firm said in a statement. After the DTH policy was announced by the government in December 2007, Astro picked up a 20% stake in Sun Direct TV, the stake was valued at approximately \$115 million.[3] Sun Direct TV was registered on February 16, 2005. However, the failed launch of INSAT 4C resulted in a lack of transponders, delaying the launch. The service was finally launched on 18th Jan 2008 after availability of transponders from INSAT 4B.

Sun Direct offered subscribers a satellite dish and Set-top box for free and basic monthly plan as low as 75(approximately). Currently basic monthly plan costs 143(approximately).

Sun Direct spread rapidly all over the country owing to lowest pricing of any DTH services in India. In December 2009, Sun Direct was launched in Mumbai, Country's financial capital and announced its pan India launch. By 2009 it became the leading DTH provider with 3 million subscribers. This makes it the second largest DTH service provider of India. In April 2010 Sun Direct became

the No. 1 DTH service provider of India with 5.8 million subscribers and officially launched its HD service in India.

Sun Direct is also the first to provide high-definition television services in India. It provided the HD beam from Measat 3 at 91.5. Starting with two HD channels, National Geographic Channel HD and Tamil / Telugu HD Service. Now the HD beam is from INSAT-4B. It is the first DTH service provider to show IPL 3 in HD format and has tie up with Dolby Digital.

Sun Direct has introduced recording feature facility as an addition to its HD services. Subscribers can now record unlimited HD or SD television content via USB port facility in the all new PVR box. The new Sun Direct HD boxes let us attach any external storage like a USB drive or HDD & record TV content on it. The direct-to-home (DTH) company claims the new HD boxes have following advantages: unlimited recording, recording content from a channel while watching other channels, ability to set time up to a week in advance to record future programs, and facility to pause the live channel and watch after a short break.

6. TATA Sky

TATA Sky is a direct broadcast satellite television provider in India, using MPEG-2 and MPEG-4 digital compression technology, transmitting using INSAT 4A satellite. Incorporated in 2004, Tata Sky is a Joint venture between the TATA Group and British Sky Broadcasting Group plc. [4]

Is a joint venture between the Tata Sons, that owns 80% and STAR India that owns a 20% stake. Tata Sky was incorporated in 2004 but was launched only in 2006. It currently offers close to 245 channels (as of September 15, 2013); this count includes some numbers of HD channels offered by Tata Sky (as Tata Sky-HD) and interactive services also.

In March 2010, Sun Microsystems partnered with Tata Sky to provide IT Infrastructure solutions and support for the launch of the company's direct-to-home (DTH) television.

The company uses the Sky brand owned by British Sky Broadcasting.

In October 2008, Tata Sky announced launching of DVR service Tata Sky+ which allowed 90 hours of recording in a MPEG-4 compatible Set Top Box. The remote is provided with playback control keys and is being sold with special offers for existing subscribers. After 2011, TATA Sky+ started selling only HD Version of TATA Sky+ know as TATA Sky+ HD.

Tata Sky is a basic set-top-box offering picture and sound along with interactive services.

Tata Sky HD was launched on June 14, 2010 and has channels in their native resolution of 1080i or 720p.

The STB is compatible with 7.1 CH surround sound as well.

Tata Sky have launched their HD DVR Set Top Box which comes with a 500 GB Hard Disk. However, Almost 120 GB is reserved for future services like VOD leaving about 425 hours of SD recording or 380 GB that is actually usable by customers. This is still the highest capacity recorder in the Indian Market as of May 2012.

On December 25, 2011 Tata Sky launched Video on Demand (Vod) services for their Tata Sky+ HD set-top boxes.

7. Videocon d2h

Videocon d2h is one of the largest Indian pay TV providers, providing direct broadcast satellite service—including satellite television, audio programming, and interactive television services—to commercial and residential customers in India. It uses MPEG-4 with DVB S2 digital compression technology.

Videocon d2h is the DTH service provided by the Videocon Group. Videocon Group is an industrial conglomerate with interests all over the world, and is an Indian multinational company. The group has 17 manufacturing sites in India and plants in China, Poland, Italy and Mexico. It is also the third largest picture tube manufacturer in the world. The group is a USD 4 billion global conglomerate. Videocon d2h has been providing DTH services in India since its inception in Aug 2009.

As a pioneering offer in the Indian DTH market, Videocon d2h offered Satellite LCDs & TVs which were DTH enabled with sizes ranging from 19" to 32".

Videocon d2h's tagline initially was Direct Hai Correct Hai which was later changed to Digital DTH Service in Nov 2011. As of September 2013, it offers 400+ channels and services which include 22 Asli "HD" channels, 1 3D channel and 21 Active Music Services. In May 2011, it launched its HD Digital Video Recorder (DVR) box with 3D which could record live content. With the launch of its 3D Set Top Box (STB), Videocon d2h became the first DTH provider in India to offer a 3D compatible STB since none of the other DTH providers had a 3D compatible Box.

Videocon d2h became the first DTH service provider in India to offer a 3D ready Set Top Box in India. Videocon d2h subscribers can view 3D content on their TV provided they have a 3D TV. Videocon d2h was also the first DTH service in India to have an active channel with 3D content.

HD DVR with 3D Videocon d2h has its own HD Digital Video Recorder (DVR) Set Top Box which has features like Slow Motion, Rewind, and Fast Forward. Videocon d2h's HD DVR has a Hard Disk capacity of 500 GB & 1TB (1000 GB) which can record up to 600/1500 hours of content respectively.

Videocon d2h uses the ST 2 satellite at 88 ° east. Videocon d2h has 8 transponders for transmitting its services. Videocon d2h uses MPEG 4 and DVBS 2 compression technology.

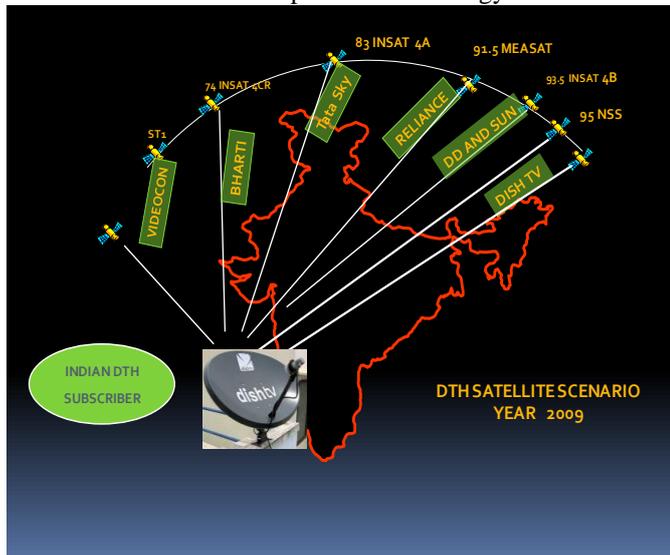


Fig. Satellite connections of DTH in India

VII. RECENT DEVELOPMENTS

With the advent of HDTV many changes took place in DTH world, to understand it we should learn about HDTV

1. HDTV

Stands for "High Definition Television." HDTV is a high-quality video standard developed to replace older video formats often referred to as SDTV (standard definition television). While HDTV's video quality is one of the most noticeable improvements over SDTV, HDTV includes a number of other important improvements as well.

First of all, the HDTV signal is digital. Instead of an analog signal, used by traditional NTSC broadcasts, HDTV is always digital. This eliminates analog interference caused by electrical currents and magnetic fields. Secondly, HDTV uses a different aspect ratio than SDTV. While previous broadcasts used a 4:3 ratio (4 units wide for every 3 units tall), HDTV uses a ratio of 16:9. This wider aspect ratio more closely emulates how humans see the world, making the image appear more realistic. This ratio is also better for watching widescreen movies, which are recorded in widescreen for the same reason. [5]

True to its name, high definition television offers a much higher resolution than standard definition video. While a typical analog broadcast in the U.S. contains a maximum of 525 horizontal lines of resolution, an HDTV signal supports up to 1080. The three formats used by HDTV are 1080i (interlaced), and 720p and 1080p (progressive). HDTV's higher resolution produces images that are much finer and contain more detail and more color than previous formats. HDTV also provides a higher-

quality digital audio signal than SDTV and supports up to six audio channels compared to the two channels allowed previously.

To watch HDTV, you need an HDTV-compatible television and a means of receiving an HDTV signal. HDTVs come in both 16:9 and 4:3 formats (for backwards compatibility). Some HDTVs include HDTV tuners for receiving over-the-air broadcasts, but others require the receiver to be bought separately. Fortunately, most cable and satellite TV companies offer HDTV-compatible boxes with their digital service plans.

2. Pause/Record/Rewind live TV:

This makes the DTH more interesting. One of the biggest benefits of the Advanced HDPVR is that you can pause and rewind live TV. It really makes the most of your viewing experience. You can choose to record at any time and if you have been watching from the beginning, the complete program will be added to the PVR list.

Live program recording when you turn on your TV, your Advanced HDPVR will start recording your current channel. The recording will be saved to a special temporary part of the disk, allowing you to rewind or pause.

you can save the program you are watching to your PVR list, by simply pressing RECORD. Your program will be stored in hard disk/usb provided for storage DTH companies provide these services at no extra cost. You just have to buy a set top box with storage capacity which is a bit costly.

3. 3D TV

3D television (3DTV) is television that conveys depth perception to the viewer by employing techniques such as stereoscopic display, multi-view display, 2D-plus-depth, or any other form of 3D display. Most modern 3D television sets use an active shutter 3D system or a polarized 3D system, and some are auto stereoscopic without the need of glasses [6]

Many DTH services are beginning to introduce the 3D channels also.

4. Internet through DTH

Satellite Internet is very popular in the US and some parts of Europe in country / hilly areas where setting up lines is expensive and time consuming. It could be a boon for India if implemented properly

5. Advent of 4k TV:

Technically speaking, 4K denotes a very specific display resolution of 4096 x 2160. This is the resolution of all 4K recordings, though many people use 4K to refer to any display resolution that has roughly 4000 horizontal pixels. Ultra HD TVs have a resolution slightly lower than that - 3840 x 2160.

That's exactly four times higher than the full HD resolution of 1920 x 1080.

U.K. pay television provider BSkyB successfully demonstrated what it claims was the world's first satellite broadcast done in 4K resolution. The event took place Aug. 31 and featured coverage of a soccer game between two British teams, Stoke City and West Ham. The match was linked via satellite to BSkyB's main office and broadcasting facility located in Osterley

VIII. CONCLUSION

This paper described the needs that demand continued development of DTH, and explains some background on who is involved and what is currently happening in bringing DTH world

DTH has made the hopes of the people of rural areas to come true. In near future, launch of DTH internet service is expected in our country.

It provide the wide thinking of rural people which helps to develop the culture of society DTH connects to every part of the country and provides desire information communication, education and entertainment to next level with just a click of a button.

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