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Author Name:

Author Email:  
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Globally, IPTV market has successfully reached an advanced stage where it has been growing rapidly since the last three to four years. IPTV has grown from strength to strength from its first deployment in 1999 to 2009 in terms of number of subscribers and revenue. At the end of 2008, global IPTV subscriber base was 23 mn that grew to 26.7 mn in 2009, and is expected to grow at a CAGR of 32% to 81 mn by the end of 2013. In terms of service revenue, global IPTV market is \$6.7 bn in 2009 and is expected to grow to \$19.9 bn by 2013 as per industry estimates. Globally, there are around 120 IPTV service providers in over sixty countries, with Europe and the far eastern markets taking the top spots. Currently, Hong Kong, France, Taiwan, and Belgium are leading the pack in terms of IPTV penetration. By 2013, Europe and North America will generate a larger share of global revenue, due to low ARPUs in China and India, the fastest growing markets (and the biggest) in Asia.

In the last few years major developments have taken place in the global IPTV market. One of the major developments that should interest companies who are planning to foray into IPTV deployment in India, China, and other emerging markets is the deployment of IPTV services over ADSL access on telephone wire or without internet connection. Operators like Deutsche Telekom (German telecom operator) and Akash Optifibres in India are providing IPTV without Internet/broadband connection. Other major milestone for IPTV was approval of a new ITU standard that supports global rollout of IPTV services. This should definitely encourage many global IPTV service providers to look at the Indian market either to provide services directly or the cable operator route. This is another major development in the global IPTV space, wherein cable operators are providing IPTV services through their existing network. Butler-Bremmer is one such recent example of a leading cable operator providing IPTV services. Though examples like these are still few and far between, but cable operators abroad are starting to deliver IPTV services over Docsis 3.0, a CableLabs platform that bursts data in excess of 100 Mbit/s.

### Indian Scenario

As stated in our earlier report that Indian IPTV market is at a nascent stage where it is being deployed over DSL, ADSL and ADSL2+ network infrastructure owned by operators like BSNL, MTNL, and Airtel. Indian market has witnessed an interesting battle where for the first time state owned companies are aggressively promoting IPTV when private players have kept a low profile. Till now state-owned telecom companies-BSNL and MTNL-were not considered formidable competitors to private telecom companies. But interestingly these two are aggressively marketing IPTV in India. Recently BSNL and MTNL along with Smart Digivision (official franchisee for IPTV) announced 'MyWay' that will be launched in over fifty-four cities, the largest IPTV launch in the country. Smart Digivision plans to offer IPTV services to 1.6-1.7 mn broadband subscribers of BSNL and MTNL in these selected cities which comprise 80% of the country's broadband subscriber base. Private players like Airtel and Reliance have not aggressively promoted their IPTV services. In fact, Reliance has quietly launched their services in some areas in Mumbai without much fuss. While on the other hand, Airtel has been going slow on IPTV, they are still in the process of evaluating more cities (Bengaluru, Mumbai, and Chennai) before launching the services aggressively. Private players believe DTH is for masses and IPTV is for the classes. However private players do realize that IPTV in the long run can become an ARPU driver. Some of the other interesting developments that took place in the Indian IPTV market in the last few months was the roll out of wireless STBs (hardware essential for accessing IPTV, digital cable or DTH services) for its IPTV services by Aksh Optifibre. Aksh has plans of commercially rolling out its wireless STBs for IPTV services. This will enable consumers to access IPTV services in any part of their home without having to physically make wire connections from the STB to the TV sets. Though this is very expensive right now (three times costlier than the a normal box for accessing digital cable or a DTH, IPTV service) but we believe if this is commoditized just like mobile handsets it can penetrate in India creating a mass consumption drive eventually resulting in price reduction.

India is not only a potential market for IPTV, but can also become a hub for innovation and the next technological breakthrough in global IPTV market. Indian IPTV market has the potential to bring new innovative technology,

breakthrough business models and world class content just like the Indian wireless telecom. This is clearly evident from the amount of interest shown by biggies like Cisco, UTStarcom, CopperGate, etc. UTStarcom opened its IPTV technology center and center of excellence in India to develop and enhance standards for IPTV deployments in the country and support global development. CopperGate is also keenly looking at India as a huge market in the near future. CopperGate sets up one IPTV connection every 7 seconds somewhere in the world.

## The Value Chain

India's first IPTV deployment was in 2006, when MTNL rolled out its IPTV service in Mumbai followed by BSNL. Other major players like Bharti Airtel and Reliance Communications were given the go ahead to launch their IPTV services in the Indian market in February 2008 by Trai. Airtel has launched its service in January 2009, while Reliance has launched their services in Mumbai. The scenario for IPTV market in India is driven by certain factors like interactivity, value added services, customer end benefits, and fueling broadband demand.

However, India still has a long way to go before IPTV can pick up momentum like wireless communication or DTH services. India has a lot of problems that exists as a barrier for growth of IPTV in India.

Some of the key issues are listed below:

**Physical infrastructure:** One of the biggest challenges India faces is the required infrastructure for growth of IPTV. India lacks the required high-speed wiring and copper cables and is still dependent on copper or coaxial cables for deployment of IPTV network. Some parts of the world have successfully shifted to optic fiber for deploying high quality IPTV services.

**Broadband penetration and n/w capability:** One of the biggest and most important factor for success of IPTV in any country is its infrastructure for broadband services and broadband penetration. India's broadband penetration is one of the lowest in the world and the success of IPTV is directly dependant on broadband penetration. India's broadband penetration rate is 2% (rate of Internet penetration of the total households). Although, it is expected to pick up pace in the coming years, advanced technologies like VDSL, WiMax or LTE can save the day for IPTV in India.

**Network capability:** IPTV requires at least 1.5 Mbps line (with MPEG-4) for basic services at a good QoS and 8 Mbps line (with MPEG-4) for HDTV services. Some part of the broadband networks, especially MTNL and BSNL networks are not ready yet. Most of the major cities like Delhi, Mumbai, Pune, Bengaluru, Chennai, etc, are SDTV compatible this is largely due BSNL and MNTL network and these are the cities where BSNL and MTNL first launched its IPTV in India. Quality of service: India lacks the required infrastructure to support IPTV. Current subscribers have criticized the QoS offered by these companies.

**Content readiness and cost:** Content is critical for success of IPTV and to compete with DTH and cable operators IPTV service providers will have to provide high quality innovative content. With respect to content there are various costs which are involved and it totally depends on what route does the player take. It can be either fixed fee deal with broadcaster or Ala carte price per channel. Operators will have to offer services that are not being already provided by their competitor including live TV, video on demand (VOD) and digital video recorders (DVRs).

**Cost of service for user:** The cost of IPTV services offered are quite competitive but the cost of IPTV STBS is still very high. Cost of IPTV STBS will have to fall further, as they are more expensive than traditional DTH or Cable set top boxes

**Regulatory framework:** Some of the potential regulatory issues identified includes advertising: targeted advertising and advertisement less content delivery to allow next generation business models; time shifted TV: legal framework to support content storage, redistribution and super-distribution (for example, access from multiple devices); privacy: protect privacy of user content (with consideration for lawful intercept); piracy: provide a framework for detection and prosecution. Alternate models: watermarking, crawling, etc ; multimedia communications: triple play, voice, video and data regulations; and content classification: larger scale production.

**IPTV ecosystem:** When we dig deeper into specific infrastructure and ecosystem required for IPTV we find the following trend in India.

IPTV infrastructure is not at par or as required for areas like broadband/transport infrastructure and technology, favorable regulations, customer understanding of product proposition, content readiness and cost, unified standards development and pricing and promotions

## **SDTV and HDTV**

Not all the available set-top boxes in India are scalable from standard definition to high definition technology. Most of the IPTV or DTH set-top boxes are just meant for SDTV. Customer has the choice to choose HD compatible set-top box and pay much more for it. In addition he needs to have high definition LCD, plasma TV, etc.

Also one of the reasons why not many players are aggressively looking to promote IPTV services is because currently in India, TV program producers are not making programs in HD TV format.

The price drop in HDTV in India expected, as DishTV, Reliance BIG TV and Tata Sky satellite TV channel providers are having plan to start HDTV channels.

Experts say the push to HD TV has been prompted by the government's decision that the 2010 Commonwealth Games will be broadcast only in high-definition. As a result, Doordarshan is also expected to launch HDTV on an experimental basis, has stated it will produce content for the Commonwealth in this format.

Sun Direct (DTH) is the only player either in DTH or IPTV or digital cable areas who is providing 'Sun Direct HD' which provides high definition broadcast service on the DTH platform in India. It provides two HD channel in India, both are movie channel and regional languages (Tamil and Telugu).

## **Challenges**

Challenges like robustness and scalability of IPTV technology. Choice of middleware platforms and video server architectures, changes in bandwidth requirements and availability and interoperability among enabling technology products are the key challenges to effectively delivering high-quality video services. The market is in its infancy and the more established commercial rollouts attracting limited take up. Growth of over-the-top (OTT) video consumption poses a particular challenge to the growth of IPTV, which shares many functional attributes with Internet video-such as time shifting, interactivity and on-demand program scheduling-but which currently still relies primarily on a subscription based revenue model.

Basic deployment challenges are classified as network issues like bandwidth drop offs that have a direct effect on video quality due to copper usage , operational issues like frequently updating routing tables, bandwidth issues and network management concerns and in home issues like wiring, interference, additional CPE requirements ,post installation requirement and multi-room DVR and HDTV requirement.

## **Cost Optimization**

The cost metrics for IPTV provisioning vary significantly by provider and are based on in-home topology, the complexity of the installation and the cost of the technical workforce. The average calculated installation cost comes around Rs 287. An exception to our model is the Asia-Pacific market, where several factors lower installation costs. There are fewer wiring issues in homes because they are significantly smaller than those in North America and Europe. Also on support side we estimate that the average technical support call lasts 17 minutes further adding to the cost.

For cost optimization DDR2 DRAM controller specification was enhanced to support transparent auto entry into an auto-precharge power-down mode (APPD) when the memory is infrequently used. This can save up to 90% of the power consumed by the memory devices in an idle system, with no impact to the software running on the device.

In addition to cost and size emphasis is given to reduction of capacity, power and noise. Installation of 2.5" drives serves the purpose which is one-fifth the total size, with a volume of about 67,000 mm<sup>3</sup> and weighs just 100 grams, compared to 3.5" drives at nearly 400,000 mm<sup>3</sup> and 710 grams. Second, 2.5" HDDs fit naturally within Green initiatives, which are now an important aspect of every technology sector using a 5V power supply, the latest 2.5" HDD consumes just .5 Watts while idle, nearly 10 times fewer Watts than a 3.5" HDD. The 2.5" HDD also operates at only 20 decibels while the typical 3.5" HDD is three times louder. Finally, 2.5" HDDs have three times the shock tolerance of their bigger counterparts.

## **Pricing in India**

Indian market is extremely sensitive to price and to succeed stakeholders will have to carefully price their services to win in a competitive environment. Currently, IPTV packages are aggressively priced. In fact some of the packages are at par with prices of DTH packages. However, cost of set top boxes are extremely high and needs to come down drastically to attract more subscribers. This can be the potential make or break for success of IPTV in the Indian market. The Indian market offers a great opportunity for set top box manufacturers for a long term growth. These manufacturers can look at

innovative design models with low cost manufacturing capabilities to support mass demand from the Indian market. Companies would have to draw inspiration from mobile/handset manufacturers like Nokia, LG, Samsung, etc, who churned out low cost customized devices targeted at the Indian market. Globally companies are trying to integrate HDTV with a built-in set top box which acts as a multi compatible device that can support cable, DTH, and IPTV. One such initiative in India is taken by Aksh Optifibre which is currently testing an integrated television set in which IPTV has been integrated so that consumers do not need any extra box. This is just a beginning of various innovative business models to push IPTV into the of consumers. The next wave of development in highly competitive markets like India and China might bring global innovation for IPTV. Below is a snapshot of some of the available packages and pricing models for IPTV in India

## Outlook

**Wireless IPTV:** Wireless IPTV also called 'Quadruple Play' is going to be a revolution in India. Launch of 3G and WiMax technology will bring about a huge change in the Indian market.

**User generated content:** IPTV is much beyond DTH when it comes to user generated content. Exclusivity of content and differentiation will be key requirements for IPTV to be successful has gone beyond DTH potential to go beyond DTH when it comes to brining user interactivity believes that wireless IPTV is going to be a revolution in India. Launch of 3G and WiMax technology will bring about a huge change in the Indian market.

**Interactivity:** IPTV is all about interactivity, services from a cable or satellite operator are 'pushed' into your home. The user has limited choice and has to keep on surfing channels for variety. Cable TV is a one-way communication where as IPTV provides for a two-way communication. Users have complete control over the content they wishes to view. Content providers and operators will have to come up with more innovative interactive services to capture the imagination of Indian consumers.

Windows embedded based solutions will enable more flexibility and versatility in offering services ranging from IP based broadcasting to video-on-demand, IP telephony, gaming, and vertical markets such as media (internal content distribution within news broadcasting, movie and video production services); hospitality (hotels, resorts, cruises, and luxury apartments such as Leoplace21); interactive point-of-sale advertising ; education; corporate; and government.

**Competitive environment:** IPTV is not just restricted to telecom operators, globally leading cable operators have also aggressively marketed IPTV services to reach out to new customers. Cable operators can leverage their existing cable network infrastructure, existing customer base and customer reach to offer comprehensive and high quality services at affordable prices. One of the recent example of IPTV deployment by cable operator is by Butler-Bremer Communications, which launched cable IPTV services with Harmonic (on-demand video's Direct-2 Edge solution) and Falcon IP/Complete Solutions (For "bird to box" video solution)

## Recommendations

Indian operators providing IPTV services have not aggressively pushed and promoted IPTV like the way they have promoted DTH. The marketing efforts have been lacking to a great extent. Though BSNL has tried to some extent, for example, with live demonstration at its Kerala circle to promote IPTV in smaller cities but it has become more of an evaluation strategy rather than a marketing strategy. We believe a more focused marketing strategy would yield better results for these companies. Also we think to be successful in the long run operators will have to collaborate with content developers, content providers and VAS providers to offer unique customized customer centric content. Exclusive content, such as any sporting event exclusive rights, is another area where global operators have not been able to push IPTV.

IPTV operators should leverage flexibility of IP platform to extend services to mobile platforms and develop effective approach for content acquisition. They should build advanced services and offer more options for bundling with other services to improve value proposition, embrace the ascent of web based and mobile video delivery by working on IPTV into a cross platform strategy, use remote management to significantly reduce support costs, take advantage of CPE visibility in consumers' homes. Operators should devise appropriate business models to harness the latent demand for premium home networking management and support services.

Operators should work together with both carrier grade CPE and high-street CE vendors to promote adoption of digital home equipment and services.

The Indian market could be the next billion dollar opportunity for the equipment providers. Global and Indian IPTV equipment providers need to understand that the Indian market offers them a huge untapped potential. They will have to come up with cutting-edge customized STB technology to produce low cost customized set top boxes that can cater to

Indian masses. Equipment makers will have to draw inspiration from mobile devices manufacturers like Nokia and to some extent healthcare device makers like GE who have learned the art of building low cost and quality products targeted at Indian consumers. A few companies like Aksh Optifibre are currently testing an integrated television set with build in IPTV compatible set top box so that consumers do not pay anything extra. These television sets can support cable, DTH, and IPTV.

Telco equipment manufacturers and CE vendors must work closely with BSPs and network operators to bring devices to market that serve the digital home needs of today and tomorrow. They should collaborate to ensure that telcos and BSP partners, as owners of the ongoing customer relationship, are able to manage and support the use of your digital home equipment. Vendors and operators should work with the standards bodies to overcome the barriers to wider digital home implementation.

Amit Goel and Gaurav Vasu

The authors are managing partner and senior consultant at Knowledgefaber respectively

[vadmail@cybermedia.co.in](mailto:vadmail@cybermedia.co.in)

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