

TveeBoX Allows Computing and Communications on TV

Bengaluru-based NextBiT Computing has built a set-top box named TveeBoX that brings triple-play features of entertainment, communication and computing to a single device—the television

■ VANISHA JOSEPH

Matrimony between the television and the Internet – that is what TveeBoX, an over-the-top set-top box (OTT STB) developed by Bengaluru-based NextBiT Computing, has achieved. Watching movies from your USB, browsing the Internet, streaming live from YouTube, connecting to a hosted cloud computing service, digital TV and videoconferencing, the TveeBoX allows you to do it all from your TV.

The TveeBoX features a LAN interface, with which the STB can be connected to the Internet. It also features support for USB wireless broadband modems provided by major Indian telecom Internet service providers (ISPs). With these modes of Internet connectivity, the TveeBoX when connected to a TV, using RCA, VGA or HDMI connectivity, allows the user to access Internet content formatted for the TV screen. It is compatible with 2G, 3G, HSDPA, EVDO and upcoming technologies like WiMaX and LTE. The device features an ARM9 core running at sub-300 MHz, and presents itself in two models, basic and high end, with differentiated features and application capabilities.

Transforming the idiot box into an infotainment package

So what makes TveeBoX a cut above other STBs in the market? The triple-play features of entertainment, com-



TveeBoX over-the-top set-top box (OTT STB)

munication and computing in a single box, enhanced user experience, power efficiency, low bandwidth requirements and low cost make TveeBoX truly sensational.

All-in-one STB. The TveeBoX is one of the first STB platforms to be truly convergent. It brings capabilities of computing, communication and social media to a device that is available in every household in India – the humble idiot box. The user can access browser, cloud PC, YouTube, Facebook, Bittorrent, Twitter, Flickr and many more applications directly on his TV screen. Most STBs do not allow cloud computing and video phone applications, which is why TveeBoX is special.

“The TveeBoX is a perfect blend of low-cost computing/Internet access terminal as well as high-end digital media adaptor and social media on

TV platform. Imagine receiving your Facebook updates whilst watching your favourite TV programme, or making/receiving video calls on your CRT/high-definition TV, or connecting to a hosted cloud PC service. That is the power this device gives in your hand,” says Vishal Borker, CEO and technical director, NextBiT Computing.

But how did NextBiT achieve such high levels of convergence? This convergence was possible due to integration of various applications and the ORB platform.

“We have developed both the server side as well as set-top box side applications and middleware, which makes this kind of convergence possible. Further, a lot of these features are built into our ORB platform, which is also licensable as a software core (pretty much like Android) to other

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CE players. The ORB core allows us to build and integrate rich graphics, feature-rich media and convergence applications into next-generation devices," says Borker.

Low bandwidth demands and cost-efficiency. TveeBoX uses NextBiT Computing's patented Modya client-server architecture, which results in huge savings and scalability to the operation of a video-on-demand network.

"The patented Modya video-on-demand server architecture and middleware technology features a mechanism to store, encrypt and deliver secured media over an Internet connection. The mechanism of storage and transfer employed in Modya results in reduction of bandwidth requirements and bandwidth costs to 3 per cent of what would traditionally be required. This is achieved through a content encoding mechanism that we have devised. This patented mechanism of encoding also features an integrated DRM, allowing content owners to deliver content to the end user at no additional content DRM costs," says Borker.

Further, the use of Linux operating system and GNU tools helps keep the software costs in check. As a result, a basic media adaptor STB with cloud PC interface costs around \$160 and the more advanced DVB-C PVR box with cloud PC and video phone costs around \$250. The device is also power-efficient, consuming a peak power of 10 watts and minimum of 4 watts. Thus, TveeBoX is light on the pocket.

Growing user experience

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The NextBiT team

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"Due to the higher resolution of TV, videos (like YouTube videos) may lose quality in the process of scaling to fit the TV resolution. We developed efficient post-processing algorithms that allow better display of content rather than the lousy display otherwise observed. The beauty of the video remains or gets enhanced due to the post-processing techniques we employ," vouches Borker.

Further, NextBiT is working on an application store that will allow the TveeBoX users to download new applications released for the TveeBoX platform. It plans to release widgets and application interfaces to the periodic top 50 Internet portals.

Path wasn't easy though

Developing the TveeBoX from ground up—including hardware design, testing, validation, operating system porting, driver development and bug fixing, development of multimedia and IPTV middleware, user interfaces and applications—wasn't a cakewalk. A development team of over 18 engineers spent more than three years to build this feature-rich and powerful convergent STB platform. They surpassed multiple challenges *en route*, like the lack of

a manufacturing and sourcing ecosystem and support from processor companies.

"It is quite a financial drain getting prototypes developed in India. Further, we were not getting support from processor companies. Today, we are forced to look towards China for mass manufacturing due to reasons of cost-effectiveness. Thereafter, keeping the technology minds working at NextBiT aspired was also a challenge," recalls Borker.

The road ahead!

NextBiT has begun mass manufacturing of two models. It is working directly with operators and, over the next 18 months, plans to enter the open STB market for hybrid digital cable and IP services.

Looking ahead, NextBiT plans to introduce the server gaming concept on the TveeBoX. It is also following the developments in the open source community and evaluating how best it can use them to enhance the user experience.

"Over a period of time, when we have substantial user base, we hope to open up our development APIs to allow a more open method of adding user-generated features and applications to our devices," says Borker.

Alongside, it is in talks for funding of another product expected to be launched in August. ●

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