

Fiber Installations and Customers Grow Worldwide

Asia/Pacific Leads the Charge to Fiber

The Asia/Pacific region stands in the forefront of the FTTx revolution worldwide, according to a new report from industry analyst In-Stat (www.instat.com). By the end of 2006, there were more than 10 million fiber subscribers in Japan and South Korea alone, where carriers such as Korea Telecom and NTT have committed to investing heavily to change copper infrastructures to fiber by 2010. The China and India markets continued to grow impressively,

accounting for the bulk of new subscribers. Overall, FTTx represented 9.5 percent of the total Asia/Pacific broadband subscriber base in 2006.

The total number of Asia/Pacific broadband subscribers reached 109.0 million in the region's 13 major markets, up about 26 percent from 2005. In-Stat expects the total market to reach 231.3 million subscribers by 2011, with the fastest growth in the "broadband laggard markets."

This growth reflects increasing demand for broadband applications, particularly media-rich content.

"The next-generation broadband access services strategy, as proven in markets like Japan, South Korea, and Hong Kong, is to focus on market proliferation of value-added broadband services, driven by the launch of compelling broadband content (i.e. IPTV and VoIP) and innovative broadband pricing plans," says Bryan Wang, In-Stat analyst.

Why We Need More Fiber

Skype Brings Prepaid Video Calling to Wal-Mart

Add this to your list of unexpected bandwidth-devouring applications: Remember when videophones were big-ticket business-only items you had to go to special call centers to use? Now anyone can pick up a prepaid calling card down at the Skype Internet Communications stand at Wal-Mart's. The cheapest cards are \$8.00 for three months of unlimited North American calls to cell phones or landlines, or \$20 for per-minute international calls.

True, you can buy Skype calling time on-line anyway if you have a credit card, but this is easier – and is perfect for use with WiFi-enabled mobile phones. Also true: Skype is free when calling from computer-to-computer. You need the prepaid card only to call a regular phone from your Skype account.

For \$25, Wal-Mart also sells a Skype-certified webcam. That's not a great bargain – SDTV-quality webcams are available for less than \$10 after rebate at many electronics and office supply stores, for those who do not have cameras built into their phones or laptops. But many Wal-Mart customers never get to those kinds of stores.

Wal-Mart is cheaper on Skype-certified phones, though – \$30 or so – and it sells deluxe earphone-mike combos for \$15 to use with your computer. I saw a dozen manufacturers' names on the equipment at my own local Wal-Mart, in a community with a large working-class immigrant population. I also saw solid Internet-ready PCs for as little as \$199. That's the price of entry for international calls as low as 2.1 cents a minute (charges can climb to five times that, depending on the receiving country's taxes and fees).

The population around this Wal-Mart depends on cheap DSL or not-so-cheap DOCSIS for broadband, but the FiOS build is underway there. Just in time.

So there's a new market segment making video calls? Not too many years ago (like, five) VoIP was a curiosity that few Wal-Mart shoppers outside of college towns would have known existed. Now the "V" in VoIP stands for video as well as voice – and VoIP stands for more bandwidth needed. – SSR

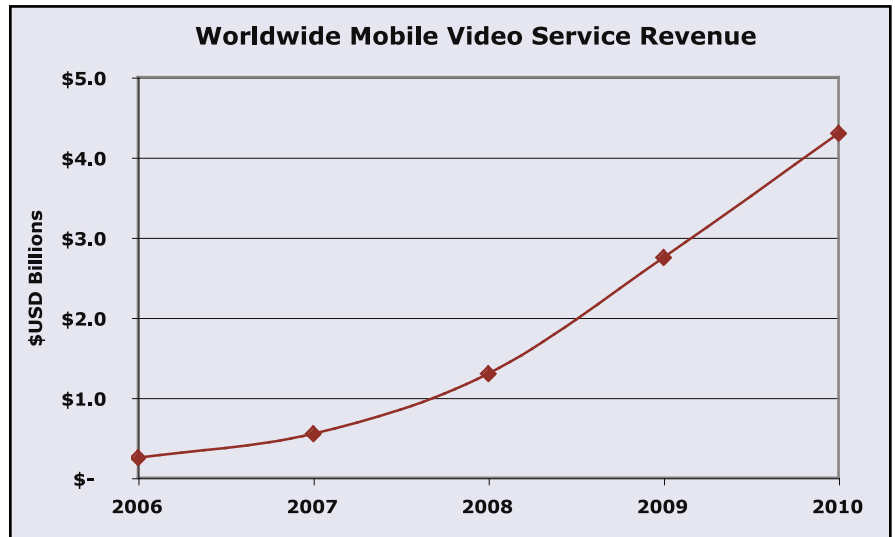
46 Million Mobile Video Subscribers by 2010

Service provider revenue from mobile video services jumped 317 percent to almost \$200 million worldwide in 2006, and is expected to triple in 2007, says market research firm Infonetics Research (www.infonetics.com). The number of worldwide mobile video subscribers also increased more than 300 percent in 2006, and will soar to over 46 million by 2010, Infonetics says.

Mobile video is set to grow both because handsets are becoming more powerful and efficient, and because analog broadcast is soon to be phased out. Jeff Heynen, directing analyst for broadband and IPTV at Infonetics, says he expects to see a spike in mobile video service revenue in 2008 due to the Summer Olympics in Beijing, which is a deadline for many operators to get their mobile video services up and running.

Report highlights include:

- The number of mobile video handsets sold worldwide nearly doubled from 2005 to 2006 (including video-capable handsets not necessarily tied to a specific mobile video service).



Worldwide mobile service revenue projections. Source: Infonetics.

- Asia Pacific will lead in mobile video subscribers through at least 2010, with 57 percent of the world total in 2006, followed by EMEA at 31 percent and North America at 10 percent.
- SK Telecom in Korea and NTT DoCoMo in Japan offer their mobile video services essentially free, a major

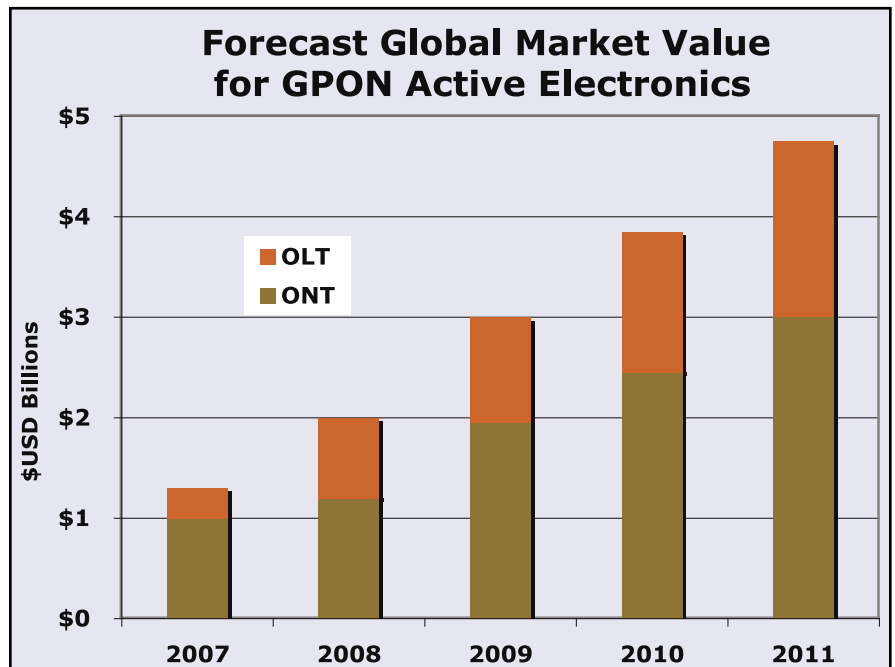
reason Asia Pacific's share of mobile video service revenue is about half that of EMEA, despite having almost twice as many subscribers.

- Average revenue per user for mobile video service will increase significantly from 2006 to 2010, and will triple in Asia Pacific, where the base is low.

GPON Equipment Market Should Exceed \$1 Billion This Year

The worldwide market for GPON optical line terminals (OLTs) and optical network terminals (ONTs) will exceed \$1 billion this year and could be worth \$4.7 billion a year by 2011, according to a new report from Light Reading Insider (www.lightreading.com/insider). This projection is based on assumptions that ONT prices will fall below \$200 and that the cost of the OLT will fall below \$100 per subscriber. The number of GPON ONTs deployed is still low, but is expected to reach millions over the next five years.

Although early GPON deployments are mainly in North America, Europe



GPON active electronic sales are due to top \$1 billion this year, and increase five-fold over the next five years despite unit price drops. Source: Light Reading Insider.

is poised to emerge as a major GPON market over the next three to five years. Light Reading Insider projects that GPON will be used for about half of all fiber-connected households in Europe by 2011. In the Asia/Pacific region, where early deployments have favored

Ethernet PON, about one third of fiber-connected households will be GPON-based by 2011.

Alcatel-Lucent has taken the early lead in the GPON market, at least in the Tier 1 carrier market. While other vendors have won more contracts,

Alcatel-Lucent has secured major deals with Verizon and France Telecom that promise market-dominating sales volumes in the near future. It also has won GPON projects with a number of smaller carriers, utilities and municipal networks.

IPTV Offers Great Promise, Big Hurdles to Service Providers

Service providers are turning to IPTV to help them increase revenue and to stand out from the crowd – but getting there won't be easy. A new study from Infonetics Research (www.infonetics.com) identifies providers' top three business challenges as competition from cable MSOs; profitability of video services; and cost of video content. The top three technical challenges were interoperability between multiple products; poor quality of in-home wiring; and ensuring viewers' quality of experience. The percent of service provider revenue

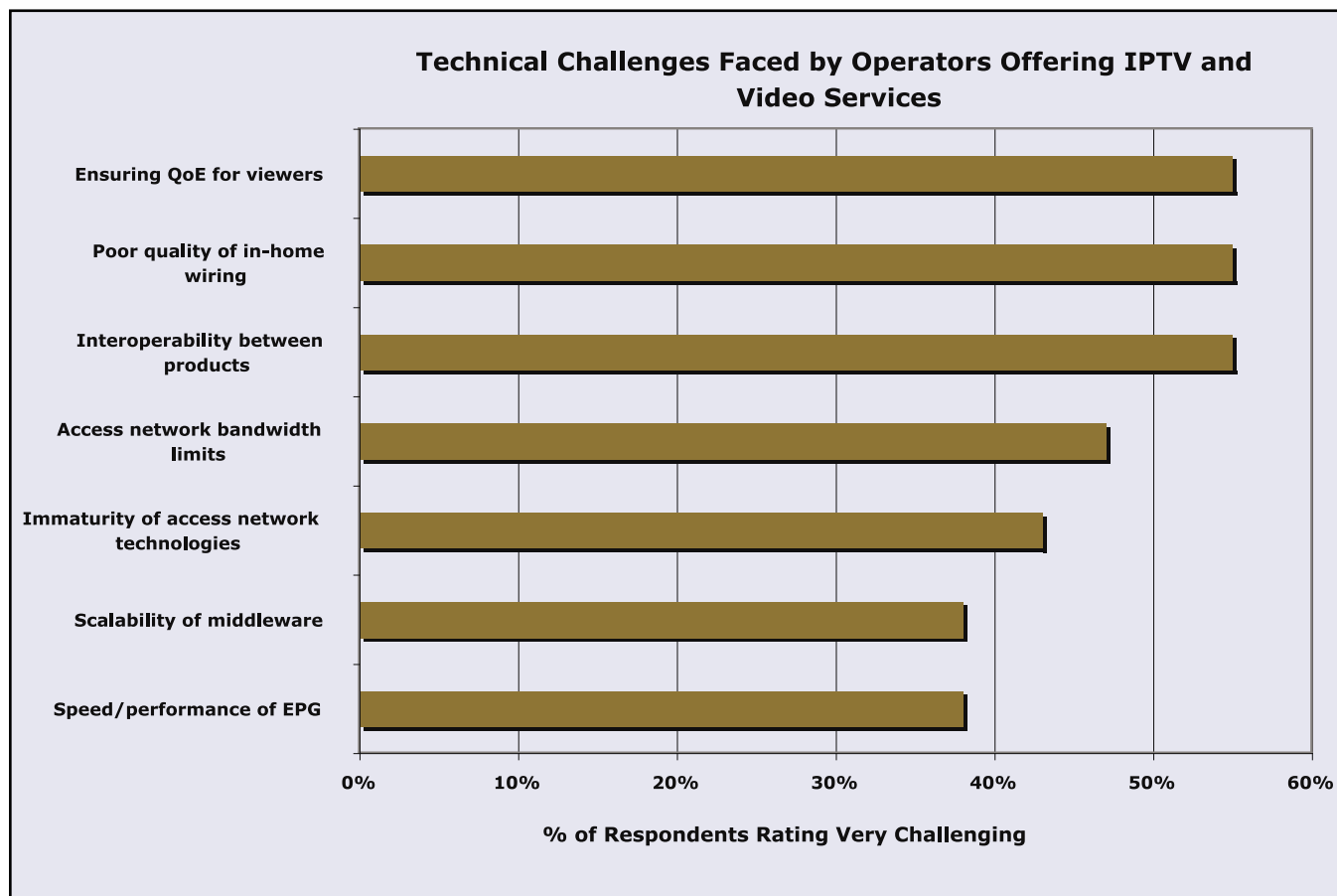
derived from IPTV and video is very small now, but will grow substantially over the next two years as the number of subscribers increases, the study suggests. IPTV providers tend to use low introductory pricing to lure subscribers when they first enter the market. Only when they add incremental services, such as video on demand, online gaming and exclusive content, do they generate significant average revenue per user.

The report also found that:

- Upgrading set-top boxes is the most common strategy for addressing qual-

ity-of-experience challenges.

- Service providers plan to spend an average of 28 percent of their 2007 capex budgets on IPTV and video equipment, software, and services.
- The percent of service providers offering subscription VOD service will grow from 58 percent today to 84 percent in 2008.
- The most commonly offered interactive services in 2008 will be home media (viewing and sharing of pictures and video), electronic program guide and live weather and traffic.



Bandwidth is a major issue, but hardly the only one, for delivering IPTV, service providers say. Source: Infonetics.

Internet Video-to-TV Solutions to Deliver \$1.5 Billion in Service Revenue by 2012

Most consumers are still watching on-line video on their PCs, but ultimately much of this content will be transmitted to the TV. Hardware vendors in the gaming console, media adapter, and set-top box space are developing solutions to deliver video content from the public Internet to the television.

“The biggest challenge for online video providers and consumer platform companies today is bridging to the TV,” says Michael Wolf of ABI Research (www.abiresearch.com). “Over the next few years new solutions from the likes of Apple, Netgear, and Sony will help cross this divide, making à la carte video download and viewing much easier. That doesn’t mean this

transition will be an easy one. Factors such as video quality, pricing of content, and technical glitches will persist for some time.”

In a recent ABI Research survey of online consumers, 12 percent indicated that they have purchased some form of video content delivered over the Internet. Of those, the vast majority (71 percent) watched this video on their PCs, while another 16 percent watched it on a TV using a burned DVD. Another 8 percent watched it using a gaming console as their video playback device. ABI Research says of all the consumer platforms for TV playback, video game consoles will lead in total revenue for public In-

ternet video delivery, because of their close proximity to the TV, large hard drives, and the high penetration of online services among gamers.

Wolf concludes, “ABI Research believes that while Internet video delivery services for TV playback such as gaming consoles are only beginning to see public adoption, these devices, as well as products such as Apple TV, will ultimately create significant pay-content revenue opportunities if consumer platform vendors can provide easy-to-use solutions with good quality and large libraries, while offering attractive pricing options, whether subscription, download-to-own, or rental.”

KT Communication

We Share Your Vision - A Commitment to Quality and Integrity

KT Communication provides digital satellite video programming solutions for C-Band, Bulk, L-Band and Transport.



Our video platform delivers content to independent multi-channel video providers (MVP) that target hard-to-serve and alternative technology markets, including:

- Multi-dwelling and multi-tenant units, such as apartment complexes and duplexes, university residence halls and hospitals, vacation resorts, and real estate investment trusts with multiple units
- Private cable operators
- Wireless cable operators
- Franchise cable operators, particularly operators of small and rural systems



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