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## A Cloudy Future for Set-Top Boxes?

Political columnist Michael Kinsley once noted that a “gaffe” is when a politician inadvertently tells the truth publicly. Speaking before a Light Reading conference in April, Cisco’s Service Provider Technology Group CTO Ken Morse made, if not a gaffe, then certainly an eyebrow raiser when he casually declared the death of the set-top box (STB). “Set-tops are clearly moving to the point where they are either a piece of software that lives in another device or they’re virtualized totally in the cloud,” Morse said.

Needless to say, such a remark likely sent shivers down the spine of the former Scientific Atlanta folks, having seen another product division (Pure Digital, makers of the popular Flip camcorder) recently and unceremoniously purged by Cisco. And, despite having shipped around 3.6 million cable and IPTV set-tops in the first quarter of this year, Cisco has said that its STB business is “challenged.”

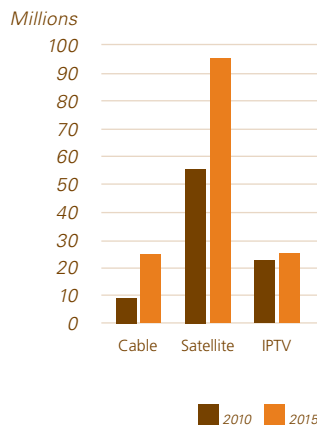
In other words, Morse’s remarks didn’t occur in a vacuum: a growing number of technological developments have been pressing in on the venerable STB, raising legitimate questions about its long-term viability as the gatekeeper between service providers and their TV watching customers.

As Morse noted, other devices are attempting to shoulder some of the STB’s responsibilities. “Connected” TVs with Internet access are a prime culprit. In May, Samsung said it would offer British consumers a Video on Demand application on its connected TVs to stream free 3D content. Service providers themselves have hinted at end-runs around the box. At the Consumer Electronics Show in January, Sony and Time Warner Cable announced a deal that would give Time Warner subscribers with a Sony Internet-connected television the ability to view on-demand content without a STB. Game consoles and media players offering “over the top” video services from companies like Netflix have also encroached on the STB.

But there are plenty of reasons to think the STB still has life left in it. First, something has to translate the incoming video data from a service provider into pixels to display, even if it’s raining down from the “cloud” - that something can be a TV, but TVs are more expensive than STBs and a lot harder for consumers to replace as technology evolves. Second, STBs are a global business and there are many regions still hopping onto the digital TV (and HD TV) bandwagon. In the U.S. it’s fashionable to talk of “cord cutters” but we forget there’s a large segment of the world that’s still eager to wrap their hands around some cord.

*Continued on next page*

**Estimated Worldwide AVC STB Shipments**



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Indeed, the shift from MPEG-2 to MPEG-4 AVC compression to accommodate HD and other advanced TV services should continue to spur STB shipments globally in the years ahead.

All in all, DTC expects service providers around the world will deploy STBs with MPEG-4 AVC in ever larger numbers, even if they experiment at the margins with alternatives.

## Tablets and Smart Phones Power Need for New Technology

Just as car enthusiasts demand—and get—sporting performance on the road without sacrificing economy at the gas pump, mobile phone and tablet users take as their birthright the ability to stream video and audio, browse the web and handle 3D gaming without battery life penalty.

As the red-hot smart phone and tablet markets continue to log impressive sales, chip developers who can deliver the most power-performance bang for the buck stand to dominate the processor chip business for years to come.

That performance and efficiency can be made to play nicely together on a mobile platform is due in large part to advances in processor chips. Many microprocessors have a number of low power modes in which different parts of the processor can be turned off when they are not needed. The approach is somewhat similar to variable displacement in an automobile engine that allows deactivating cylinders for improved fuel economy during light load operation.

By placing the processor in a low power mode during idle time battery life can be extended. In addition, a task oriented algorithm can be applied defining the processor's "to-do" list, assigning some functions a lower priority. For example the oscillator (functions as a clock source for the CPU and on-chip peripheral functions) can either be turned off or switched to a lower frequency and peripheral units (such as touchscreen display controllers, USB ports, etc) can at times be turned off and the CPU stops executing these instructions. In some chips data transfer from peripheral functions to on-chip memory can be accomplished without CPU operation.

Processors based on core licenses from the U.K.- based ARM Holdings, which accounts for more than 4 billion chips for mobile devices each year, run on modes depending on what is being executed and the battery state. ARM's Cortex A9 cores, in direct competition with Intel-architecture Atom processors, are available as either a single core or configurable multicore processors (in general multi-core processors can complete a task faster and with lower power requirements). Dual-core processors are rapidly becoming the standard for high performance mobile devices and quad-core (four cores) is coming in the near future.

As an IP (intellectual-property) developer, ARM depends largely on the market success of its core licensees including Broadcom, Infineon, Nvidia, Qualcomm, Samsung, STMicroelectronics and Texas Instruments. Although they must retain full ARM instruction-set backward compatibility, these chipmakers can also build on that suite with proprietary instructions, as well as make other, fundamental circuit alterations and enhancements.

When Intel three years ago formally introduced its first-generation Atom processor family the company made it clear that it was aiming not just at desktop and notebook PCs—a market Intel dominates— but also at the handheld systems in which ARM has historically dominated.

Later this year Intel plans to release a processor code-named Medfield aimed specifically at smart phones and made using 32nm fabrication technology; going forward it will also release a chip code-named Cloverview targeted at tablet applications. Combined with architectural enhancements, these new products will deliver increased performance but more importantly, dramatically lower power consumption, which is critical because for these kinds of devices speed isn't everything. Intel promises that the chip will be as power efficient as comparable ARM-based products.

Intel's 32nm products will ship in volume over the next six months and 22nm products will ship in volume in the next 24 months. Process nodes of 32nm and below have an advantage over current 45nm chips because the smaller production "node" allows more transistors to be crammed into the same space (or achieves the same performance from smaller chips), which leads to an improved battery life, improved functionality and extremely thin and light devices.

“As the red-hot smart phone and tablet markets continue to log impressive sales, chip developers who can deliver the most power-performance bang for the buck stand to dominate the processor chip business for years to come.”

For its part ARM's roadmap includes a small Cortex-A processor core codenamed Kingfisher due to emerge later in 2011. Kingfisher is aimed at lower end smart phones and feature phones as well as cost-sensitive digital TV applications.

Going forward, then, both ARM and Intel are preparing to throw new haymakers at each other. As boxing announcer Michael Buffer famously says at the beginning of a contest: "Let's get ready to rumble."

## Paid Online Video Content: A Tiny Piece of the Internet Video Pie

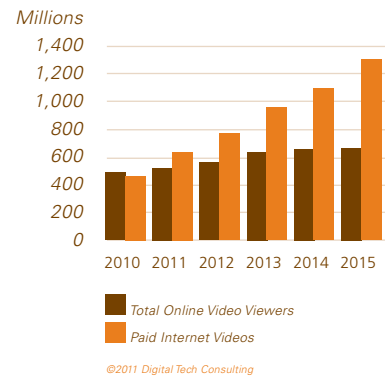
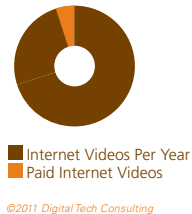
Although pay-for Internet videos will continue to be a tiny slice of video consumption over the Internet, it will continue to grow significantly and deliver a new revenue stream to content providers. This increased consumption, however, won't necessarily come at the expense of traditional TV consumption.

People all over the world are eating up online video by watching it on their PCs, connected TVs, smart phones, STBs and tablet PCs. DTC estimates that over 500 million viewers watched over 1 trillion videos in 2010, but fewer than 470 million of those were paid videos – a tiny fraction of the total.

The number of internet video viewers will continue to increase through DTC's 2015 forecast period, though the growth remains in the single-digit range. The number of paid premium videos that are consumed will also continue to increase, but at a higher double-digit rate. In 2015 we forecast about 650 million viewers will watch about 1.4 trillion internet videos, and 1.3 billion of those will be paid videos. The percentage of paid videos does increase during the forecast period, from .05% in 2010 to .10% in 2015, but it will still remain a tiny piece of the entire internet video pie.

Viewers are consuming more video content year after year. While the total number of video viewers flattens out, the number of videos each viewer consumes is forecasted to continue to grow, and so will the number of purchased online videos. Even with the increase in the amount of content that viewers are forecasted to purchase, internet video consumption will still primarily be of the free (user generated or ad supported) variety. But it's not hard to see how incremental growth for pay Internet TV can add significant revenue to content owners' bottom line, regardless of how much free viewing is going on.

**Total Internet Videos  
vs. Paid Videos | 2010**



## DOMESTIC CHINESE LCD DTV QUARTERLY TRACKING SERVICE

Need help finding reliable information on the Chinese LCD DTV market? The Chinese digital TV market is one of the most important and fastest growing markets in the world. A roadmap for the domestic Chinese TV market and its primary players is an essential ingredient for participation in this dynamic market place. DTC, in a joint project with China-based RedTech Advisors, now offers a LCD DTV quarterly tracking service that delivers difficult-to-obtain reliable data.

This tracking service will include current and cumulative quarterly shipment estimates for LCD DTVs shipped into the Chinese retail market and concise analysis on the market, top brand shipment estimates, chip suppliers, and trends for each quarter. For more information on this domestic Chinese LCD DTV quarterly tracking service, please visit <http://dtcreports.com/documents/chinadtv2.pdf>

# The Video Optical Disc, Devices and Media: Worldwide Shipments Forecasts (2009 - 2015)

## Fifth Edition

January 2011 US | **\$1,750**

This data-intensive report provides detailed worldwide historical data and forecasts of Video Optical Disc devices and media. Both the high-definition (Blu-ray) and standard-definition formats for product categories including PC and peripherals, non-PC video optical disc devices, pre-recorded media, and video gaming systems are detailed in a comprehensive spreadsheet format.

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