



# The broadband home: The converging entertainment experience

By Scott Kipp

New technologies have kept the entertainment industry in a nonstop race to deliver more high-quality entertainment to consumers. From black and white television to high-definition television (HDTV) and hi-fi stereo to Surround Sound, the audio-visual experience continues to improve as we move toward a tele-present world. Entertainment options multiply as viewers migrate from local, over-the-air broadcasts to global, Internet-based content. In this article, the convergence of broadband entertainment delivery technology into a single device, the entertainment server, is discussed.

## Introduction

Consumers relish the possibility of Internet-based content that allows them to enjoy what they want, when they want. The entertainment industry is running scared though, since they do not have control of the Internet. To the entertainment industry, the future looks like piracy and lack of control. Imagine access to movies-on-demand, online gaming, Internet radio, and the Internet all using one broadband connection. The future is broadband entertainment, and consumers will benefit from their newfound freedom and control.

Broadband entertainment and the entertainment server support a future where one can watch any movie ever made, hear any song ever recorded, and play any game ever made. High-technology business, education, personal, and entertainment products are morphing into one life-simplifying device. The entertainment server forms the foundation for Internet-based lifestyles.

## The entertainment server

The entertainment server combines the entertainment benefits of PCs, digital set-top boxes, gaming consoles, and personal video recorders (PVRs) in a single console. Vast improvements in storage, bandwidth, compression, and processing technologies made the entertainment server possible. A result of the natural, digital evolutionary process, the entertainment server takes advantage of rapidly expanding personal computer technologies on the interactive gaming frontier. Audio, video, and gaming are combining into one low-cost computing device.

The entertainment server masters a variety of analog and digital interfaces. From DVDs to video games, the entertainment server stores digital content on disk drives of 100 gigabytes and larger and uses WiFi to spread the content throughout the home. Figure 1 shows a typical example of an entertainment server.

The entertainment server will allow a wide array of inputs and outputs to interface with existing consumer electronics. WiFi will connect the entertainment server to other WiFi devices, and a built-in FM transmitter will connect it to all radios in a home.



Figure 1

The entertainment server will also interface with a broadband service provider to record TV shows from an electronic programing guide (EPG). Video games, Internet access, and an EPG will enable easy enjoyment of online content.

The entertainment server will be the Internet portal, collecting, storing, and distributing content from around the world to every part of the home. It will expand the reach of the ultimate global information resource from the computer to televisions, stereos, and gaming consoles.

## The evolution of the entertainment server

Multimedia personal computers (MPCs) and PVRs represent the first generation of entertainment servers. Developments such as Microsoft's Windows XP Media Center software incorporate PVR functionality, remote control, and broadband interfaces. Powerful MPC devices are harbingers of tomorrow's computers and entertainment servers. A good audio and graphics card can upgrade the PC that has served as the foundation of the Internet to make it Surround Sound- and HDTV-capable.

Second-generation network servers combine devices to offer more functionality. One second-generation example is a set-top box that brings together a PVR and home networking. Sony's PSX, which combines the PlayStation 2 with a 250-Gbyte disk drive and broadband, gives another glimpse of the future. Online video games, time-shifted content, and ease-of-use are the future of home entertainment.

The third-generation entertainment server, a completely self-contained unit, should be widespread by 2006 and cost only \$500. Service providers will lease third-generation servers to consumers who want the entertainment benefits of PCs, digital set-top boxes, gaming consoles, and PVRs in a single console.

## Growing pains on the road to broadband entertainment paradise

No doubt about it, the entertainment industry is being dragged into the digital future kicking and screaming. Lawsuits and counter lawsuits followed by mergers and acquisitions change the entertainment landscape daily. Digital technology has turned the industry upside down and opened up new worlds to the

everyday consumer. The entertainment industry has always feared unknown distribution technology such as the VHS or cassette tape. Distributing content over the Internet poses the largest challenge the industry has ever faced.

The entertainment industry's concerns are not insurmountable. It needs to invest in curb-high security that protects its interests while maximizing profits. Curb-high security keeps the average Joe in line, but will not stop persistent pirates. Curb-high security technologies like the DVD's content scrambling system and digital terrestrial television's broadcast flag are compromises that will enable the broadband entertainment revolution.

The convergence of technology represented by the entertainment server raises even more questions. If consumers can download any movie ever made, or listen to any song ever recorded with the press of a button, how will the entertainment industry maintain control?

The entertainment industry wants to curtail piracy, but it must not infringe on consumers' rights. For example, preventing consumers from distributing content around the Internet should not preclude within-the-home distribution. The lines in the digital sand are being drawn, and the entertainment industry needs to work with every stakeholder in the entertainment ecosystem. Consumers must expect to pay a reasonable price to support the arts. Content creators should institute basic protection and enforcement, but avoid wanton lawsuits. The entertainment industry needs to work with equipment providers, consumers, and distributors so that the broadband entertainment paradise works for everyone.

### **Networked nirvana**

Clearly within our grasp, a broadband paradise can be reached quickly with commitment to everyone's rights. The entertain-

ment server will bring broadband, video, audio, gaming, storage, compression, and processing technologies into one easy-to-use console that connects to your televisions and stereos. Acting as intermediary between content and consumers, it will manipulate multiple, high-speed, digital streams and connect people with unlimited information and entertainment.

The evolving dream of a broadband entertainment paradise exists in niche markets and will continue to morph into a worldwide phenomenon. The future presents more of a business problem than a technical one. When industries and consumers invest in already available technology, the entertainment convergence will become reality.

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