Chapter 8

Internet Television

In concluding this book, we will examine what we can consider to represent an evolving industry — television delivered via the Internet. Although television delivered via the Internet represents IPTV, there are some significant differences between the two that we will discuss in the first section of this chapter. In the second section we will turn our attention to Internet television, examining how we can view television broadcasts on our PC from stations located around the world.

8.1 Internet Television vs. IPTV

When we talk about Internet television and IPTV we tend to treat them as synonymous terms because Internet television represents a stream of IP datagrams that delivers MPEG frames generated by a television station. Although the two terms can be treated as synonyms, in reality they should be used to describe two different technologies. Thus, let’s focus on the true meaning of each technology to obtain an appreciation for how they actually differ from one another.

Internet Television

Internet television refers to the broadcast of news, weather, and TV shows from television stations that add an Internet interface to their over-the-air broadcasts. The Internet interface either takes selected station videotapes and converts them into a sequence of IP datagrams transporting, most
commonly, MPEG-2 frames, or provides a “dawn-to-dusk” broadcast via the Internet of the station’s over-the-air transmission.

Viewing of station broadcasts on the Internet is accomplished via a media player. Typically, an Internet television station, which in effect represents a conventional television station that also broadcasts video via an Internet connection, limits its support to one type of media player, such as Microsoft’s Windows Media Player, Apple’s QuickTime Media Player, or Real Networks’ RealPlayer.

The media player supported provides the interface required to view the stream of IP datagrams on a desktop or laptop computer. Because media players support buffering of IP datagrams, a broadband connection to the Internet, although desirable, is not mandatory for viewing video. Now that we have a general appreciation for Internet television, let’s turn our attention to IPTV.

**IPTV**

Although IPTV can be viewed as Internet television, the term’s intended usage is to describe the transmission of video, including movies, television, and concerts, at a high speed that enables subscribers with an applicable set-top box to view events on a television without buffering. Probably one of the most mentioned IPTV projects is Project Lightspeed initiated by SBC Communications (which acquired AT&T and assumed its name during 2006). Project Lightspeed, which was described earlier in this book, represents a private IP network that will deliver television, video on demand (VOD), and high-speed Internet access to millions of homes. Video will be decoded by a set-top box and delivered either directly to a connected television or via a home network to a remote television. Thus, the set-top box is an integral hardware component associated with IPTV whereas the media player represents an integral software component associated with Internet television viewing. Now that we have an appreciation for the similarities and differences of Internet television and IPTV, we will conclude this chapter by examining the evolving industry represented by Internet television.

### 8.2 Internet Television

From a handful of television stations viewable via the Internet a few years ago, this industry has exhibited explosive growth to the point where hundreds of stations were available for viewing during 2006. In this section we will look at a few individual Internet television sites as well as a Web site for connecting to and viewing tens of television stations located around the globe.
**Evolution**


The success of Channel 4000 became a model for expansion into additional markets. This expansion caught the attention of such media companies as the Hearst Corporation, the Washington Post, and the McGraw-Hill Companies, which became partners of Internet Broadcasting. By 2000, Internet Broadcasting produced more than 70 television Web sites that cumulatively received more than 12 million unique visitors monthly.

Although Internet Broadcasting has achieved significant success, including becoming number one in TV news in 18 of the top 25 markets in the United States, its Web sites use a mixture of video, text, and images to present the news. For example, consider NBC10.com, which is the Web site operated by Internet Broadcasting in Philadelphia, Pennsylvania. Figure 8.1 illustrates the home page of NBC10 from the morning of
April 18, 2006. A user can elect to watch a video of the top story, read the story, or view images. In addition, under the “News” column on the left portion of the Web page visitors can select the “Video” entry, which will result in the display of a series of videos by predefined category. Currently, NBC10 limits its support of video to Windows Media Player.

**Webcasting**

At approximately the same time Internet Broadcasting was placing television stations on the Web, other organizations began to realize the potential of broadcasting movies and television shows. As other companies developed Web sites to broadcast video, the term “Webcasting” evolved. This term was initially used to reference the broadcasting of television programs, such as soap operas, news, and comedy shows, over the Internet. Later, the term was expanded to reference the electronic transmission of audio and video data over the Internet in real-time in the form of streaming audio and video. Thus, this newly expanded definition included music videos, movies, and other forms of audio-visual entertainment.

**Advantages**

A conventional television station is limited by the FCC as to its broadcast power. Thus, the conventional television station can be considered to be limited to a specific geographic market. This limitation affects advertising, which is the manner by which television stations obtain the majority of funds for their operation.

The development of satellites allowed television stations to break their former geographic barrier, because distant cable companies could negotiate deals that enabled television stations located in one area of the country to be carriers in a cable territory located in another portion of the country. Among the first television stations to break the geographic barrier was WTBS in Atlanta, which became known as a “super station” due to the large number of cable companies that carry its programming.

In an Internet environment it becomes possible for television stations to become “global super stations” because any user connected to the Internet via an applicable high-speed connection becomes capable of viewing the features of the site, including different types of video. Thus, it also becomes possible for television stations to expand their advertising base to national and international companies.
Legal Issues

Although the transmission of television Webcasting may appear to be simple, some legal issues must be considered. Those legal issues are associated with copyrighted material. Currently, most programming has licensing and distribution agreements that may be applicable to a geographic area or a country. When a television station offers such programming to Internet users, a key question is whether the station is now violating its licensing and distribution agreement. Another question that warrants consideration occurs when a foreign television station obtains foreign rights to programming produced in the United States and allows Internet users in the United States to view such programming. When this occurs, is the foreign television Webcaster accountable for copyright infringement under U.S. law? Although some initial U.S. rulings indicate that copyright infringement occurs when U.S. citizens located in the United States view copyrighted television programming originated in a foreign jurisdiction, the appeals process may require several years until this issue is fully resolved. Now that we have an appreciation for the evolution of Internet television and some of its legal issues, let’s turn our attention to television portals.

Internet Television Portals

One of the more recent developments in the wonderful world of Internet television is the establishment of portals that provide users with access to hundreds of Internet television stations located around the globe. One such portal is BeelineTV.com, whose home page is shown in Figure 8.2.

Looking at Figure 8.2, you will note a number to the left of each television station entry. That number identifies the Internet connection (in kilobits per second) required to view streaming video from the station. To the right of the station entry you will see the word “Real,” “Q time,” or “Media,” which identifies the type of media player required for viewing the station’s streaming media. Here, “Real” identifies Real Networks’ RealPlayer, “Q time” identifies Apple Computer’s QuickTime Media Player, and “Media” identifies Microsoft’s Windows Media Player.

Through the BeelineTV.com Web site you can view television stations located in more than 20 countries. If you scroll down the site’s home page, you encounter more than 35 stations listed under the “English TV” category, including England’s BBC News, Canada’s CBC, and from the United States, AFTV Movie Classics and NASA TV.

To view certain stations using Windows Media Player, you will need to run an ActiveX control. The BeelineTV.com Web site will prompt you with an applicable message that, when accepted, will result in Windows Media
Understanding IPTV

Player opening in a separate window. Figure 8.3 illustrates the window that opened after this author selected the AFTV sci-fi/horror station. Note that from the new window in which the programming is displayed you have the option of viewing the channel schedule and doubling the screen size. Depending on the media player’s codec, it may or may not be a good idea to increase the screen size or change the view to full-screen mode. If your codec supports MPEG-2 and the station transmits streaming video in a low-resolution format, it will look awkward when switching to a larger screen size. However, if your media player supports MPEG-4, there is an H.264 movie station you can access to view movies on a full-screen basis with very good clarity. As more users begin to view video over the Internet, we can reasonably expect more stations to offer MPEG-4 streaming video and media players to eventually support the technology by default.

Other Portals

Although BeelineTV.com and other portals provide access to a large amount of free content, broadband video content from major news
stations and other stations can be viewed only via a subscription service. Thus, some portals now charge a monthly or annual fee to view hundreds of stations, including subscription-only stations. As the industry matures it will be interesting to observe the difference in the growth of advertiser-supported Internet television versus subscription-based Internet television.

**Individual Internet Stations**

In addition to the use of a portal, you can directly access various Internet television sites that may or may not be available for access via a portal. For example, the National Aeronautics and Space Administration (NASA) Web site provides a link to NASA TV, which enables users to view press briefings and various scientific-related clips without cost. A second example of Internet television viewing is Israel National TV (URL: www.israelnationaltv.com). Figure 8.4 illustrates the home page of this
Figure 8.4 The home page of IsraelNationalTV.com.

Web site. Note that you can choose to view news, interviews, and other types of video as well as purchase programming. This site envelopes Windows Media Player with a series of selections and text-based news, which illustrates how stations can tailor a media player to satisfy their operational requirements.

8.3 Summary

Today we are at the start of a revolution concerning the manner by which we access and view television stations connected to the Internet. Although current Internet connection speeds and media player capabilities make most Internet television viewing feel similar to viewing a modern television show on a TV set produced during the 1960s, evolving technology will change this situation for the better. As more capable codecs are added to media players, higher speed Internet access becomes more economical and available, and Internet television stations convert to H.264-compatible streaming media, we can reasonably expect its use to significantly increase. As this occurs, Internet television will join the ranks of other types of entertainment that on a daily basis compete for our attention.