Hands-On Guide To

Windows Media

The *Hands-On Guide to Windows Media* covers Microsoft® Windows Media® Player 10 and Windows Media 9 Series. This book gets you up-and-running quickly with technology for online audio and video delivery. Enterprises, government, and not-for-profits are making online audio and video a key part of a successful communications strategy, and The *Hands-On Guide to Windows Media* is an easy-to-use, comprehensive, step-by-step streaming media guide for these professionals. Video production, audio production, and networking industries—especially those implementing Windows Media applications in public and corporate environments will benefit from the valuable information from an industry expert.

Written By **Joe Follansbee**

Hands-On Guide Series for Streaming and Digital Media Professionals

Series Editor : Dan Rayburn

Focal Press

HANDS-ON GUIDE SERIES®

Hands-On Guide to Windows Media

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HANDS-ON GUIDE SERIES®

Hands-On Guide to Windows Media

Focal Press Hands-On Guide Series

The Hands-On Guide series serves as the ultimate resource in streaming and digital media-based subjects for industry professionals. The books cover solutions for enterprise, media and entertainment, and educational institutions. A compendium of everything you need to know for streaming and digital media subjects, this series is known in the industry as a must-have tool of the trade.

Books in the series cover streaming media-based technologies, applications and solutions as well as how they are applied to specific industry verticals. Because these books are not part of a vendor-based press they offer objective insight into the technology weaknesses and strengths, as well as solutions to problems you face in the real-world.

Competitive books in this category have sometimes been criticized for being either technically overwhelming or too general an overview to actually impart information. The Hands-On Guide series combats these problems by ensuring both ease-of-use and specific focus on streaming and digital media-based topics broken into separate books.

Developed in collaboration with the series editor, Dan Rayburn, these books are written by authorities in their field, those who have actually been in the trenches and done the work first-hand.

All Hands-On Guide books share the following qualities:

- Easy-to-follow practical application information
- Step-by-step instructions that readers can use in real-world situations
- Unique author tips from "in-the-trenches" experience
- Compact at 250–300 pages in length

The Hands-On Guides series is the essential reference for Streaming and Digital Media professionals!

Series Editor: Dan Rayburn (www.danrayburn.com)

Executive Vice President for StreamingMedia.com, a diversified news media company with a mission to serve and educate the streaming media industry and corporations adopting Internet based audio and video technology. Recognized as the "voice for the streaming media industry" and as one of the Internet industry's foremost authorities, speakers, teachers, and writers on Streaming and Digital Media Technologies.

Titles in the series:

- *Hands-On Guide to Windows Media*
- *Hands-On Guide to Webcasting*
- *Hands-On Guide to Video Blogging & Podcasting*
- *Hands-On Guide to Flash Communication Server*

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Writing a book is really a team effort. It's just that the author gets all the glory. Some of the glory should go to others. My sincerest thanks go to Marc Melkonian, my technical editor, who whacked me upside the head when necessary. My friends at Online Video Service, including Tim Treanor and Matt Hickey, who provided priceless support. I would also like to thank Joanne Tracy, Angelina Ward, editor Howard Jones, Gina Marzilli, Becky Golden-Harrell, and the rest of the staff at Elsevier/Focal Press. Steve Mack first suggested I contact Focal Press about writing a book on streaming media. Dan Rayburn also offered his influential support. And I would like to express my admiration for my former colleagues at RealNetworks. They are among the few who understand Microsoft.

About the Author

Joe Follansbee is a freelance writer who got sucked into the whole Internet technology thing in 1996, when RealNetworks (the Progressive Networks) hired him out of public radio. He bailed out of the software business in 2001, although he kept his hand in with some web development and streaming media work. He went back to his first love, writing, in 2003 and published *Get Streaming! Quick Steps to Audio and Video Online* (Focal Press) in 2004. *The Hands-On Guide to Windows Media* is his second book. He's written a third book, as yet unpublished, which is a history of the 1897 three-masted schooner *Wawona*, listed on the National Register of Historic Places, and he is working on a fourth book about the tragic sinking in 1906 of a passenger vessel in Puget Sound. He also contributes to a number of magazines and newspapers in the Seattle area. He's active in local historic preservation. He lives in Seattle with his wife and two daughters.

About the Series Editor

Dan Rayburn is recognized as the "voice for the streaming media industry" and as one of the Internet industry's foremost authorities, speakers, and writers on Streaming and Digital Media Technologies for the past ten years. As a passionate leader and spokesperson in the field of streaming and digital media, Mr. Rayburn is noted for his expertise and insight pertaining to digital media business models, industry foresight, hardware and software products, delivery methods and cutting edge technology solutions globally.

He is Executive Vice President for StreamingMedia.com, a diversified news media company with a mission to serve and educate the streaming media industry and corporations adopting Internet based audio and video technology. Its website (*www.StreamingMedia.com*), print magazine, research reports and tradeshows (Streaming Media East and West) are considered the premier destinations both in person and online for professionals seeking industry news, articles, white papers, directories and tutorials.

Prior to StreamingMedia.com, he founded a streaming media services division for the Globix Corporation, a publicly traded NASDAQ company, which became one of the largest global streaming media service providers specializing in on-site event production for webcasts around the world. Prior to Globix, he co-founded one of the industry's first streaming media webcasting production companies, Live On Line, successfully acquired by Digital Island for $70 million dollars.

An established writer, Mr. Rayburn's articles on streaming media trends and technologies have been translated into four languages and are regularly published in major trade magazines and web portals around the world. He is Series Editor for a new series of Streaming Media related books for Focal Press entitled "The Dan Rayburn Hands On Guide" Series. He is co-author of the first business focused book on the industry, *The Business of Streaming & Digital Media* and his second highly anticipated book co-authored with Steve Mack, *Hands-On Guide to Webcasting* is due out in November of 2005.

Regularly consulted by the media for insight into business trends and technology, Mr. Rayburn has been featured in over one hundred print and on-line articles that have appeared in The New York Times, The Seattle Times, Crain's B2B Weekly, Broadcasting & Cable, Electronic Media, Mediapost.com, POST Magazine, ProAV Magazine, INS Asia, Internet.com, Radio Ink, EContent Magazine, Nikke Electronics and Wired.com among others. He has also appeared on many TV programs including those on CNN and CBS.

Mr. Rayburn also consults for corporations who are implementing digital media services and products in the broadcast, wireless, IPTV, security and cable industries. Over the past ten years he has helped develop, consult, and implement streaming media solutions for prestigious companies in the enterprise, entertainment and government sectors including A&E, ABC, Apple, Atlantic Records, American Express, BMG, BP, CBS, Cisco, Elektra, Excite.com, HBO, House Of Blues, ifilm, Indy 500, Intel, ITN, KPMG, Microsoft, MTV, NYTimes.com, Pepsi, Price Waterhouse Coopers, Qualcomm, RealNetworks, Sony Music, Twentieth Century Fox, United Nations, Viacom, VH1 and Warner Brothers among others.

For the past ten years, Mr. Rayburn has traveled internationally as a featured industry expert and has been sought out to keynote and speak on the current and future direction of streaming media technology, trends and business cases. A current technology advisor to many universities in the US, he has also taught Internet Broadcasting classes at New York University (NYU) and regularly lectures at numerous academic institutions. He is currently developing a series of distance learning classes with the Seattle Community Colleges, which will focus on teaching people the business and legal issues surrounding the implementation of streaming and digital media.

Mr. Rayburn holds board positions with various technology corporations in the US and Europe and works with many non-profit organizations enabling them to utilize streaming media for their projects including The Museum of the Moving Image, The International Agency for Economic Development and the X PRIZE Foundation.

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Introduction

Purpose of the Book

The *Hands-On Guide to Windows Media* is one of a series of books designed to help you use and understand one of the most important sets of technologies on the Internet: *streaming media*, specifically Microsoft's Windows Media technologies. Windows Media is Microsoft's implementation of streaming media, the process of sending audio and video predictably over a computer network in real time. It answers the question, "How do I send audio and video over the Internet without clogging up my company's network and frustrating users who depend on it?"

More and more people are demanding audio and video experiences delivered over the Internet, such as live radio or video. Many enterprises, government agencies, and other large organizations are turning to streaming media in general and Windows Media Series in particular to improve communications with internal and external audiences. The book's goal is to get you up to speed on Windows Media as quickly and painlessly as possibly, while helping you meet demands for Internet audio and video. Along the way, you'll participate in the global revolution in digital media delivery.

Scope of the Book

This book focuses on easy and effective ways to use Microsoft Windows Media technology, which is just one set of tools for sending audio and video over the Internet and corporate intranets. You'll find step-by-step instructions for using all of the basic Windows Media tools, such as the Windows Media Player, and some of the more advanced tools, including the Windows Media Server. The book will also discuss how to prepare your audio and video recordings for streaming, and how to make good choices within the Windows Media toolset, such as codecs. Finally, this book will examine some of the more advanced applications of Windows Media, such as its implementation in the world of high-definition television.

The book won't compare Windows Media with solutions developed by other vendors, such as RealNetworks or Apple Computer, although we will mention these solutions occasionally

to place Windows Media in context of its competitors. The book also won't discuss in detail deep-level programming within the Windows Media environment, such as plug-ins to the Windows Media Server. And the book won't offer any magic ways to make money overnight with Windows Media, although many companies are competing to provide products and services based on streaming media technology.

Who Should Read This Book

You should read this book if you do any kind of technical work with audio and video. If you've paid the least bit of attention to the debates over digital music distribution or the latest up-and-coming toys, such as portable media players, you know that the Internet is the way of the future for media distribution. Streaming media is one of the most popular media distribution methods, and you'll be forearmed with knowledge once the time comes for you to send your audio and video into the "great cloud."

If you have one of the following job titles, read this book.

- Audio Engineer
- Video Engineer
- Media Producer
- Web Designer
- Web Programmer
- Web Producer
- Teacher/Professor
  - Media Studies
  - Media Production
  - Communications
  - Computer Science

Required Skill Level

This book was written with the intermediate computer user in mind. That means you don't have to be a programming whiz or a network engineer to understand and use its concepts right away. But the book makes a few assumptions about your computer knowledge and experience:

- Minimum one year of experience with a Windows personal computer.
- Familiarity with basic Internet tools, for example, web browsers such as Microsoft Internet Explorer and Netscape Navigator, and FTP programs.
- Familiarity with basic computer terminology, for example, CPU, RAM, bandwidth, hard drive, sound card, and so on.

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If you're not sure whether you fit into these assumptions, you should spend some time with a good basic computer skills book. Even if you do fit, it's a good idea to set aside some time to simply goof around with the technologies you're about to discover. Children learn by playing, so why shouldn't adults?

Whatever your learning style, by the time you're finished with *Hands-On Guide to Windows Media Series*, you'll have the knowledge to create streaming media for the Internet with Windows Media tools on your own. But the best media productions flower within a group of technicians and artists, so you should find some like-minded colleagues and build a streaming media production team, or at least make sure that other folks in your department know what you're up to. Collaboration will make everything go much more smoothly.

Why Streaming Media?

The proliferation of portable media players such as Apple Computer's iPod, Creative Labs' NOMAD Jukebox, and the Rio Cali have pretty much sealed the deal on Internet distribution of digital media. Some have even predicted the death of the compact disc, arguing that consumers will find the process of purchasing music over the Net, customizing a playlist, and loading it into a hardware device more convenient and satisfying than buying a prepackaged album of songs.

But the world of media distribution goes far beyond the work of pop artists. Nearly every form of media content, from movie trailers to training videos to pep talks by company presidents, is moving onto the Net. Today's hardware devices can't handle the sheer amount of data contained in some kinds of media, especially video. Sure, given the current pace of technology, somebody will build a handheld, portable hardware device that can store all the classic episodes of *Outer Limits*. But for the foreseeable future, putting this type of content on a server and delivering it via streaming media technology is the best option.

Streaming media is a particularly good choice for large enterprises keen to control costs while improving their audio and video communications to the public and internal audiences, such as employees. Here are some of the business benefits of streaming media:

- **Cost-effectiveness**: When you produce a video and distribute it via VHS tape or DVD, you should expect to spend about $10 a copy as a rule of thumb. Duplicating and shipping hundreds of tapes or DVDs all over the world, if you work in a global company, can cost tens of thousands of dollars. By placing the video on a streaming media server and asking people to view it by logging into a website, you've just saved your company a big chunk of money.
- **Faster time-to-market**: Days or weeks may pass before your carefully produced training video might arrive at your office in Ulaanbaatar, Outer Mongolia. By then, the information is out of date. However, if you put the video on a streaming media server immediately after it's produced, and send an e-mail to all your company offices asking your colleagues to view it, you've just saved your company a big chunk of time. And as they say, time is money.

- Uses network resources more efficiently: Some people prefer to let users download audio and video programs, arguing that multimegabyte files offer higher quality. That's true, if you're willing to inflict the World Wide Wait on people (such as bosses) who expect instant gratification. You also risk the wrath of your company's networking gurus, who will complain loudly that your video is clogging the infrastructure and making their lives miserable. Streaming media offers a much more measured and disciplined way to use networking resources, especially precious bandwidth, so that everyone stays reasonably happy.

Streaming's Great Strength: Going Live

Finally, streaming media offers something found in no other Internet-based digital media technology—live broadcasting—or in the industry's word, *webcasting*. Digital media such as music or video differs in one important way from other types of media, such as text or photographs. A single media experience changes dynamically over time. In a symphony, one note follows another in logical manner; in a movie, image replaces image in an orderly progression.

Furthermore, a user often experiences time-based media remotely as it is created. This phenomenon first appeared in the nineteenth century, when telegraph operators could hear someone sending a message in Morse code a thousand miles away. The phenomenon gained serious momentum with the invention of radio, which was almost always produced live in the early days of the industry in the 1920s and 1930s. Television took it to a new level in the 1940s and 1950s, and today, streaming media allows an individual to send live pictures of their event to a global audience almost instantaneously at very low cost. No portable media player can match the power of watching someone speak to you in real time from halfway around the planet.

The Growth of Streaming Media

The origins of streaming media go back to 1992 and the development of the *Real-Time Transport Protocol* and an audiocast of the 23rd Internet Engineering Task Force (IETF), an Internet standards body. But the streaming media industry was born in 1995, when Progressive Networks (now RealNetworks) launched RealAudio 1.0, the first commercial webcasting system. Another company, Xing Technologies, launched a streaming system based on MPEG, an open audio standard. Microsoft followed in 1996 with Netshow, later renamed Windows Media Series. Apple Computer was late to the party with QuickTime streaming in 1998. A host of other companies came up with their own systems, but most died with the Internet bust or were purchased by the leaders. RealNetworks bought Xing Technologies in 1999.

Since those early days, streaming media has exploded. What started as a novelty in the mid-1990s has now grown into a multimillion-dollar industry. The most important factor in the growth is the proliferation of high-bandwidth connections, usually via a digital subscriber line (DSL) or cable modems. A good quality streaming media experience requires lots of

bandwidth. In January 2001, 7% of Americans had residential broadband service, according to a report by Arbitron, the media ratings company. Just three years later, nearly one-quarter of Americans subscribed to broadband service. Arbitron added that three-quarters of people with a broadband connection at home have watched Internet video. The growth shows no sign of stopping.

Most of the attention has focused on the consumer side of streaming, such as live radio broadcasts over the Internet, music samples, and movie trailers. In fact, marketers have identified a distinct group of people who spend a lot of time listening to online audio and watching online video. They're called *streamies*, and they have important demographic characteristics. For example, nearly half of streaming media users are between the ages of 25 and 45, and they tend to have a lot of disposable income.

People have paid less attention to the business market for streaming, which is just as important as all large organizations discover the benefits of streaming. Wainhouse Research, which tracks streaming media and similar technologies, says the market will reach nearly $1 billion by 2007.

Why Windows Media Series?

The explosive growth of streaming media in the 1990s and the shakeout in all Internet technology in the early years of this decade left four major streaming technology vendors standing: Apple Computer, RealNetworks, Macromedia (with its Flash MX technology), and Microsoft. Two companies, RealNetworks and Microsoft, dominate perhaps 90% of the space, although no one knows exactly how much each of them owns, in part because people sometimes use both vendors' technology. And when you compare each company's technology feature to feature, you see few important differences.

But if you look carefully at their marketing strategies, it's clear that RealNetworks tends toward the consumer end of the spectrum. Part of its business model relies on consumer subscriptions to its media services, and the look and feel of its flagship software, RealPlayer, definitely appeals to a younger, hipper audience. RealNetworks sells server software as well, but it's pricey.

Microsoft, on the other hand, has leveraged its ability to tie its media player and media server software to its operating systems to make strong inroads into the business market. In other words, every time an enterprise or other large organization buys dozens or hundreds of computers, or upgrades to a new version of Windows, Windows Media Series is automatically installed, making the system the default choice for that group of people.

ALERT

Microsoft's strategy of bundling Windows Media Series players with its Windows operating system is controversial. The practice has raised eyebrows at the US Justice Department, and the European Union has demanded that Microsoft stop the bundling. But as a practical matter, Windows Media Player has become the default streaming media player on most new computers.

The Windows Media Choice

Microsoft's strategy has paid off. Because Windows Media Player is already installed, most people don't see the need to download and install a competing player. And in many large enterprises, information technology (IT) managers won't allow users to download players from RealNetworks or other Microsoft competitors, in part to avoid the security risks that come with downloading bits out of their control.

Furthermore, Microsoft bundles its Windows Media Series server software "free" with its enterprise server products, and all it takes is a few clicks of the mouse to install the media server. In the case of RealNetworks, organizations have to spend thousands of extra dollars to use RealNetworks' technology. To summarize, for many businesses, the shortest route from no streaming to a full-fledged system is Microsoft.

What does this mean to you? You may have chosen to learn more about Windows Media Series because you believe that it's the best product among several competitors. Or you have chosen to learn about Windows Media Series because it's the easiest and most cost-effective way to get going quickly, because all the tools are at hand and/or installed. Perhaps both reasons apply. In any case, by the time you finish this book, you'll have the knowledge to make the most out of your investment.

Career Opportunities

The peculiarities of streaming media as a distribution method have created an opportunity for forward-looking technologists to specialize. Over the years, a small, but growing cadre of people are spending most, if not all, of their time designing networks optimized for streaming, setting up live webcasts from remote locations, mapping processes for quick and efficient conversion of film and video archives to streaming, and writing business models that build on streaming media's advantages. Most of these folks have backgrounds in the major areas of networking, media production, systems design, and general business skills.

Streaming media training is still in its infancy; some individuals offer training, but as of this writing, Microsoft does not offer certifications in Windows Media specifically, although it covers some of the subject in other areas, such as Internet Information Services (IIS).

Inside the Industry

Making Money with Streaming Media

Many of you have an entrepreneurial bent, or you like to work in the freelance market, and so it's worth mentioning some of the services or skills you could offer to a prospective client after studying this book and applying your knowledge.

Live Webcasting: More and more organizations want to send a speech by a CEO or other important person over the Internet, but they don't want to invest in a full-fledged streaming media system. Once you read Chapters 9 and 10, which cover live webcasting, you'll have the knowledge to offer your services as a live Windows Media webcasting specialist.

Digital Compression: Some people specialize in the highly technical work of digital compression, which is a critical component of successful streaming media. After reading Chapters 5 and 6, which cover streaming compression, and consulting a good audio and video compression guide, such as Cliff Wootton's, *A Practical Guide to Video and Audio Compression* (Focal Press), you'll have highly desired skills in the ongoing digital media revolution.

Hosting Services: Unlike run-of-the-mill website hosting, streaming media hosting requires understanding of specialized media servers and the unique demands of streaming media delivery, particularly in relation to networking and bandwidth. If you enjoy the intricacies of protocols, packets, RAIDs, and NICS, read Chapters 7 and 8 on serving Windows Media streams, get some practical experience, and offer your services as a streaming media networking consultant.

How to Use this Book

This book is designed to get you up and going with Windows Media's streaming technology as quickly and painlessly as possible. It starts with a tutorial chapter that covers the basics and nothing more. From there, it gets into more detail on the four steps of streaming: capture, encode, distribute, and playback. In the final chapters, the book examines some of the more advanced aspects of streaming, such as streaming audio and video to mobile devices.

There are three types of sidebars used in this book: "Author Tip," "Inside the Industry," and "Alert." Each is separated from the text and gives you quick, helpful information that is easy to find.

Author Tip: Gives tips that are directly from the author's experience in the field.

Inside the Industry: Relays information about companies, behind the scenes happenings, quotes from people in the industry, a bit from a case study, statistics, market research, anything to do with the topic's industry that doesn't necessarily come from the author's experience.

Alert: Spells out important information such as technical considerations, troubleshooting, warning of potential pitfalls, and anything else that needs special attention.

Finally, an appendix gives you an in-depth look at using Microsoft Producer, a free tool for streaming PowerPoint presentations. And a glossary gives you a one-stop, all-important grounding in the terminology of streaming media in general and Windows Media in particular.

Conclusion

Streaming media is one of the fastest growing technologies for delivering digital audio and video online, and it's the technology of choice for live webcasting over the Internet. Anyone who has a technical or business connection to media, including the recording industry, television, corporate media production, or media education, should master the basics of streaming and Microsoft's Windows Media technologies. In Chapter 1, you'll learn how to get up and running within a day.

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