



# **Videoconference Streaming Solutions**

Cookbook

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# 1

## INTRODUCTION

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### WHAT'S IN THIS CHAPTER

This chapter provides an introduction to videoconference streaming, including the following:

- [What is Videoconference Streaming?](#)
- [Benefits of Videoconference Streaming](#)
- [Application Ideas](#)
- [Glossary of Terms](#)

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**Note** Currently RADVISION recommends the [Homemade](#) solution for streaming during a video conference. The [Homemade Solution](#) chapter describes the Homemade solution and how to set it up to work with RADVISION network devices.

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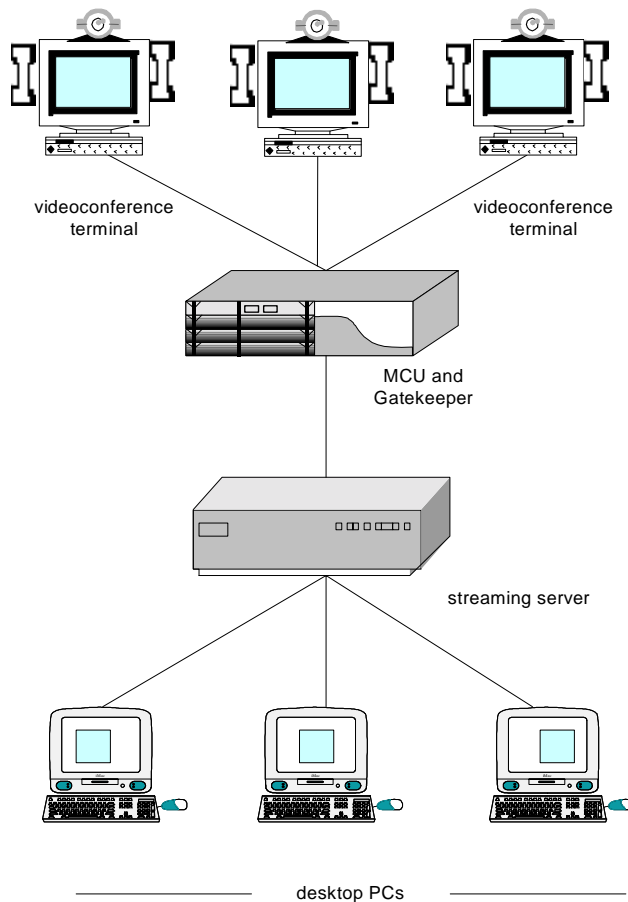
### WHAT IS VIDEOCONFERENCE STREAMING?

Streaming in the context of a videoconference means broadcasting a point-to-point or multipoint videoconference to an audience of listeners and viewers who are not active participants in the conference. The audience can listen to and/or watch the conference on a client (typically a PC) while sitting at their desks.

During the conference, a streaming server located in the videoconference network receives the same video streams as participants and sends these streams to the clients connected to it. The clients require only a media-playing application such as Real RealMedia, Microsoft Windows Media Player or Apple QuickTime.

## What is Videoconference Streaming?

An example of a network with a streaming server is shown in [Figure 1-1](#). Three videoconference terminals, an MCU and a streaming server are registered to a gatekeeper. The terminals and the streaming server participate in a conference managed by the MCU. Three PCs with media-playing software are connected to the streaming server.



**Figure 1-1** A Videoconference with Streaming

## BENEFITS OF VIDEOCONFERENCE STREAMING

Videoconference streaming provides an efficient and economical way of sending live information to a large audience in real time. Members of the audience can view the conference from the PC on their desks without the need to add any special devices such as video cameras, microphones or video capture cards.

In a regular videoconference you require both processing and network resources. The load on resources increases with each additional participant. Streaming is an excellent alternative for when some of the participants do not need to actively participate in a discussion, but simply need to listen in and view what is happening. The load on the network is reduced because the streaming is uni-directional. The processing load on the MCU is reduced as there is no need to process incoming media data from the passive participants.

## APPLICATION IDEAS

Besides enabling a larger audience of passive participants to view an ongoing videoconference, streaming is useful for:

- Company-wide broadcasts where everyone views the broadcast at their desks
- Distance learning
- Telemedicine
- Demonstrating products to a widespread audience
- Sharing a debate or discussion
- Recording for video on demand

## GLOSSARY OF TERMS

The following terms relate to streaming in the context of videoconferencing:

### Real-time streaming

Delivery of a real-time stream of a live videoconference while the conference is in progress.

### Broadcast

Transmission of data to everybody on the network or network segment.

### IP multicast

Simultaneous transmission of data from a server to a group of selected users on a TCP/IP network (internal, intranet or Internet). IP multicast is used for streaming audio and video over the network. The files are transmitted as one data stream over the backbone and split to the target stations by the router only at the end of the path.

### Multi-unicast

Transmission of duplicate data streams, one to each user. In multi-unicast, multiple users request the same data from the same server at the same time.

### Video on Demand streaming

Delivery of a Video on Demand stream to a viewer upon request at any given time. Contrast this to a real-time stream that is delivered when the conference is in progress. The Video on Demand content is stored on a server and then streamed to a user upon request. If the streaming server has the capability to capture and archive a conference, a videoconference can be archived and sent later as a Video on Demand stream.

# 2

## HOMEMADE SOLUTION

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### WHAT'S IN THIS CHAPTER

This chapter provides a description of the Homemade videoconference streaming solution, including the following:

- [About the Homemade Solution](#)
- [How it Works](#)
- [Benefits](#)
- [Limitations](#)
- [Software Requirements](#)
- [Hardware Requirements](#)
- [Prerequisites](#)
- [Implementation Overview](#)
- [Installing Windows Media Software](#)
- [Configuring Windows Media Encoder](#)
- [Configuring Windows Media Administrator](#)
- [Links for More Information](#)

### ABOUT THE HOMEMADE SOLUTION

The Homemade solution enables you to create your own streaming server. This server is then connected to the conference network. One of the participating endpoints sends a video stream of the conference to the streaming server. The streaming server compresses the stream using a codec such as H.263, H.261 or MPEG.

An example of a network with the Homemade solution is shown in [Figure 2-1](#) on page 8. Four videoconference terminals and an MCU are registered to a gatekeeper. One of the terminals is a room system with a video cable connection. A streaming server with a video capture card has a video connection via the video cable to the room system. Three clients with media-playing software are connected to the streaming server.

The following occurs during the conference:

1. The three terminals participate in a conference managed by the MCU.
2. A fourth terminal sends a video stream that it has received from the MCU to the streaming server.
3. The encoder in the streaming server processes the video stream.
4. The streaming server sends three processed video streams, one to each client.
5. The media player at each client plays the video stream to the passive participants.

### HOW IT WORKS

This section describes how the Homemade solution interacts with the RADVISION MCU to provide video conference streaming.

- The MCU manages a video conference between a number of participating videoconferencing endpoints.
- The MCU also sends the H.323 video and audio stream to an additional videoconferencing terminal.

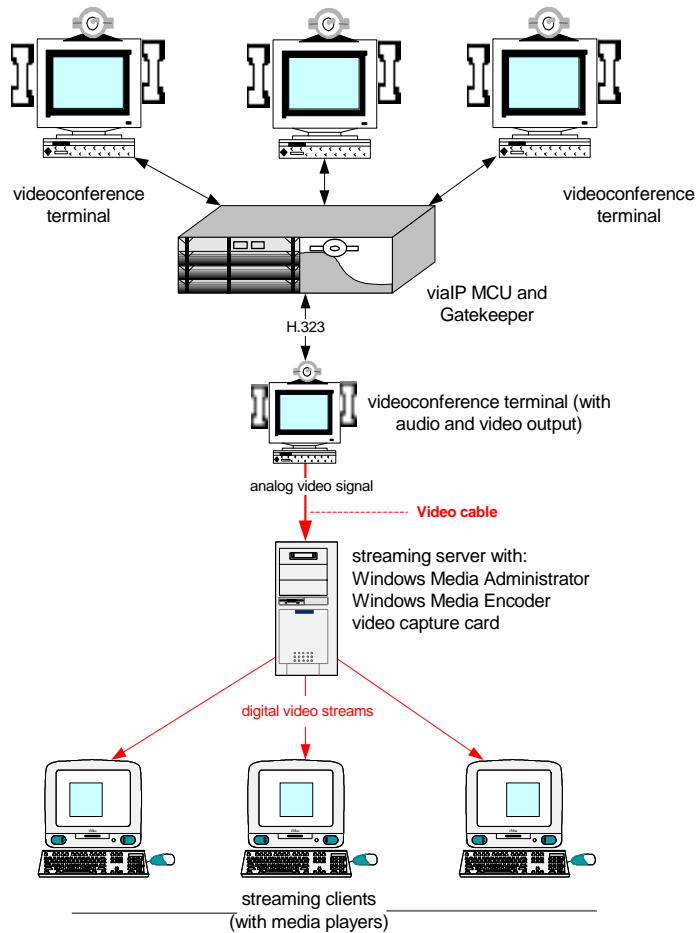
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**Note** The additional terminal must be equipped with outputs for both voice and video.

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- The additional videoconferencing terminal does not participate in the videoconference, but instead receives the H.323 traffic coming from the MCU and sends an analog video stream to the computer. The terminal is connected to the computer via a video cable.
- The computer acts as a video streaming server. Installed on the computer are the following:
  - A video capture card—Hardware which receives analog video signals and converts them into digital video streams.
  - Windows Media Encoder—A software application that operates the video capture card.
  - Windows Media Administrator—A media server software application that can play video streams as real-time broadcasts, or save video on file and supply the video stream on demand.
- When the streaming server receives analog video signals from the videoconferencing terminal, the Windows Media Encoder instructs the video capture card to convert the signals into a digital video stream.
- Using the Windows Media Administrator, the digital video stream can be broadcast across IP networks, saved to a file and supplied to endpoints when requested, or both.
- Streaming clients with media players can receive the broadcast in real time or can download a specific video file from the Windows Media Encoder.
- Clients can access the required material via the Windows Media Encoder URL, or by accessing the URL of a specified publishing point on the Windows Media Administrator. For more information about publishing points, see [Configuring Windows Media Administrator](#) on page 18.

## Benefits



**Figure 2-1** Streaming with the Homemade Solution

## BENEFITS

The solution has the following benefits:

- A full functional streaming solution can be implemented immediately.
- Off-the-shelf equipment can be used.
- Set up cost is low.

## LIMITATIONS

The solution has the following limitations:

- The system may be cumbersome to manage.
- Only one conference can be streamed per streaming server.

## SOFTWARE REQUIREMENTS

- Windows 2000 Server
- Windows Media Administrator
- Windows Media Encoder version 7.01

## HARDWARE REQUIREMENTS

- Pentium III at 500 MHz with 128 MB memory.
- A hard disk large enough for the length of video material you wish to store.
- A video capture card that supports the MPEG-1 and MPEG-2 formats.
- All H.323 endpoints must support voice and video traffic.

## PREREQUISITES

- A media player must be installed on each client.
- The media player and streaming server must be compatible.
- The terminal connected to the streaming server must be connected via a video cable.
- The following must be installed on the streaming server:
  - Windows Media Administrator.
  - Windows Media Encoder version 7.01.
  - A video capture card (RADVISION uses the AVerTV card from AVerMedia).

## IMPLEMENTATION OVERVIEW

The implementation of the Homemade solution involves the following steps, each of which are described below.

- [Installing Windows Media Software](#)
- [Configuring Windows Media Encoder](#)
- [Configuring Windows Media Administrator](#)
- [Configuring Windows Media Administrator](#)

## INSTALLING WINDOWS MEDIA SOFTWARE

This section describes how to install the Windows Media Administrator and the Windows Media Encoder software.

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**Note** You must install Windows Media Administrator on the Windows 2000 Server operating system only.

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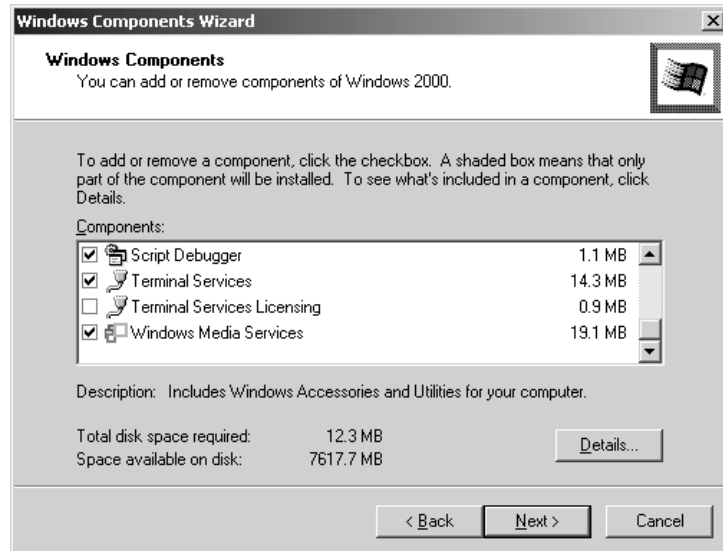
Both Windows Media applications are installed at the same time using the following procedure:



### To install Windows Media Administrator and Windows Media Encoder

1. From the **Start** menu of your computer, select **Settings | Control Panel | Add/Remove Programs**.
2. Click **Add/Remove Windows Components**.

The **Windows Components Wizard** dialog box displays.



**Figure 2-2** Windows Components Wizard Dialog Box

3. Check the **Windows Media Services** checkbox, click **Next** and complete the installation according to the instructions in the wizard.

## CONFIGURING WINDOWS MEDIA ENCODER

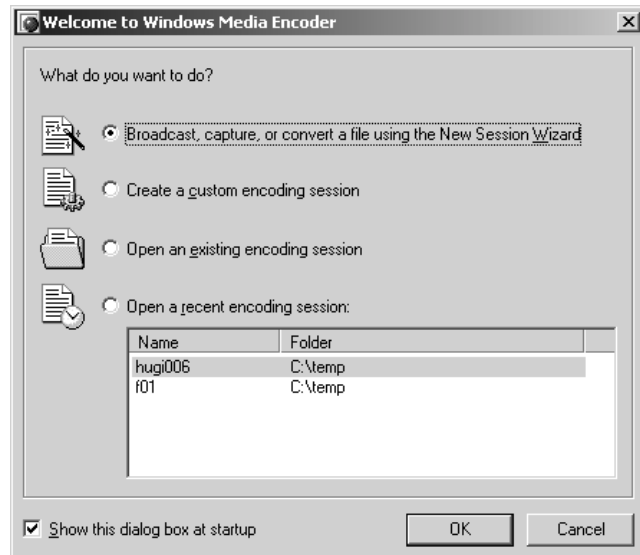
This section describes how to configure the Windows Media Encoder software.



### To configure Windows Media Encoder

1. From the **Start** menu of your computer, select **Programs | Administrative Tools | Windows Media | Windows Media Encoder**.

The **Welcome to Windows Media Encoder** dialog box displays.



**Figure 2-3** Welcome to Windows Media Encoder Dialog Box

2. Select **Broadcast, capture or convert a file using the New Session Wizard** and click **OK**.

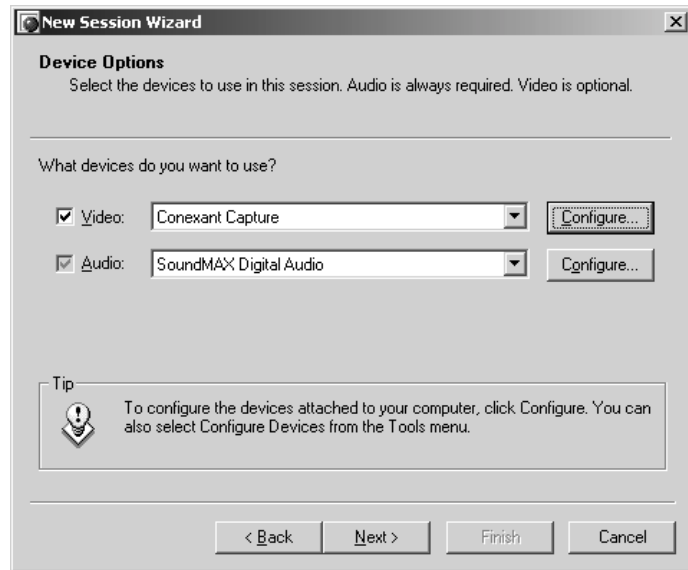
The **New Session Wizard Session Selection** dialog box displays.



**Figure 2-4** *New Session Wizard Session Selection Dialog Box*

3. Select **Broadcast a live event form attached devices or computer screen** and click **Next**.

The **New Session Wizard Device Options** dialog box displays.



**Figure 2-5** *New Session Wizard Device Options Dialog Box*

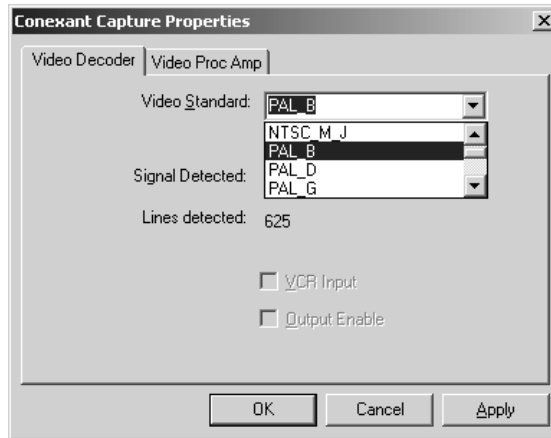
4. Check the **Video** checkbox and select **Conexant Capture** from the drop-down list.

---

**Note** The **Conexant Capture** setting enables the Windows Media Encoder to work with the AVerTV video capture card.

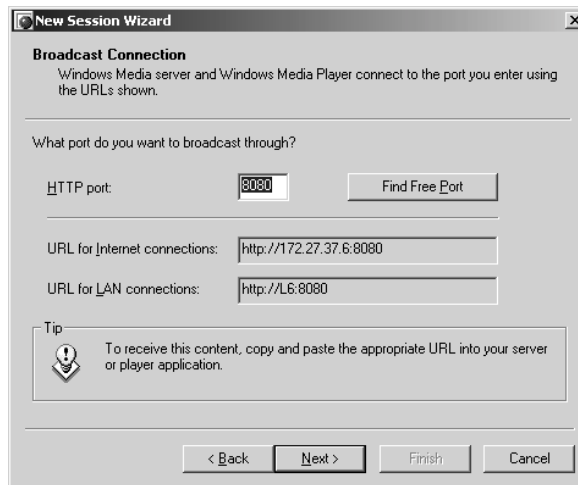
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5. Click **Configure**.  
The **Conexant Capture Properties** dialog box displays.



**Figure 2-6** Conexant Capture Properties Dialog Box

6. In the **Video Decoder** tab, select a PAL setting from the **Video Standard** drop-down list. Click **OK** and then **Next**.  
The **New Session Wizard Broadcast Connection** dialog box displays.



**Figure 2-7** New Session Wizard Broadcast Connection Dialog Box

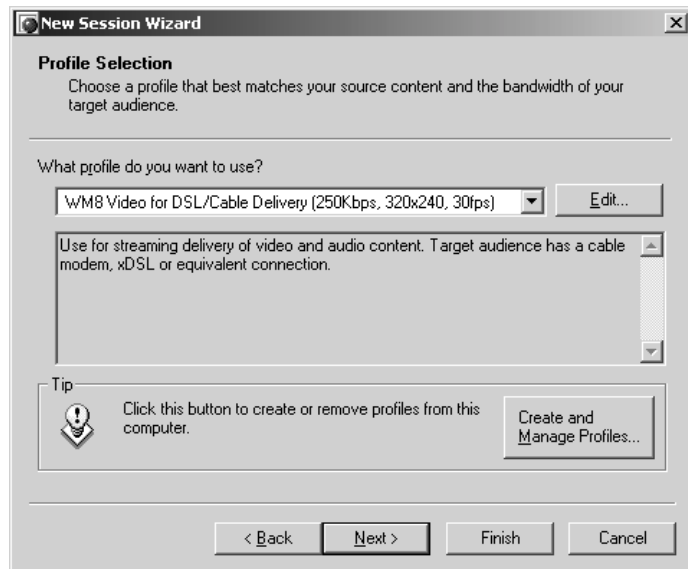
7. Set the HTTP port field to 8080.

The **URL for Internet connections** field displays the external IP address and port of the computer on which the Windows Media software is installed.

The **URL for LAN connections** field displays the internal IP address (or name) and port of the computer on which the Windows Media software is installed.

8. Click **Next**.

The **New Session Wizard Profile selection** dialog box displays.



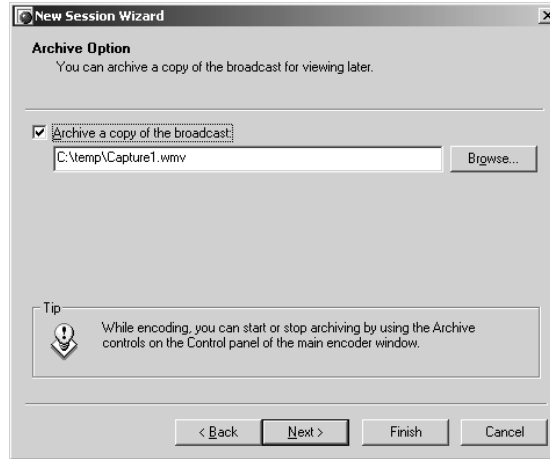
**Figure 2-8** *New Session Wizard Profile Selection Dialog Box*

9. From the **What profile do you want to use?** drop-down list, select **WM8 Video for DSL/Cable Delivery (250Kbps, 320x240, 30fps)**.

This setting tells the video capture card to convert the incoming analog signal to a digital video stream at a bandwidth of 250 Kbps, with resolution of 320x240 dpi, and at a refresh rate of 30 frames per second.

10. Click **Next**.

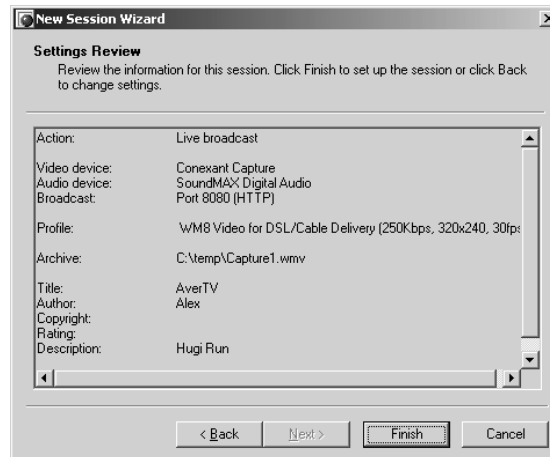
The **New Session Wizard Archive Option** dialog box displays.



**Figure 2-9** New Session Wizard Archive Option Dialog Box

11. Click **Browse** and navigate to the location at which you want to save a copy of the broadcast, then click **Next**.

The **New Session Wizard Settings Review** screen displays.



**Figure 2-10** New Session Wizard Settings Review Screen

12. Check that all the settings displayed are configured as you require, and click **Finish** to complete the configuration. The Windows Media Encoder interface displays.

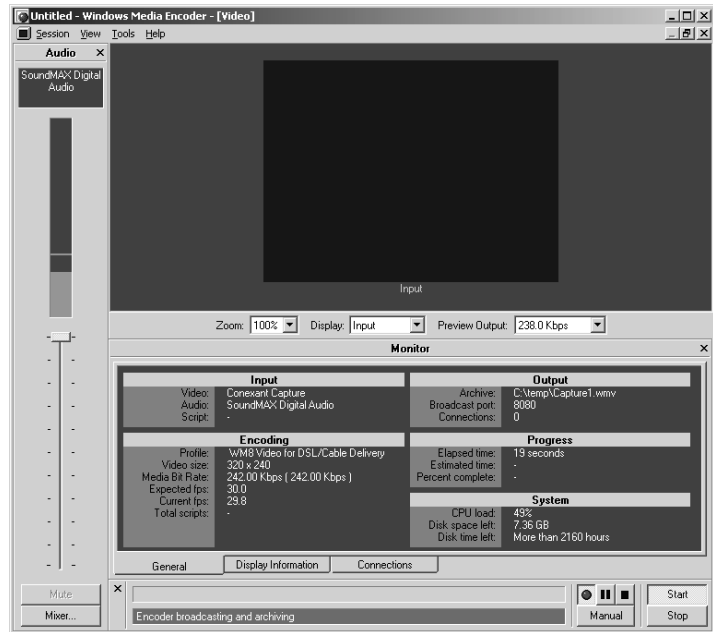


Figure 2-11 Windows Media Encoder Interface

### CONFIGURING WINDOWS MEDIA ADMINISTRATOR

### CONFIGURING A BROADCAST IN THE MEDIA ADMINISTRATOR

This section describes how to configure the Windows Media Administrator software to play video streams as real-time broadcasts, and to supply a video stream on demand.

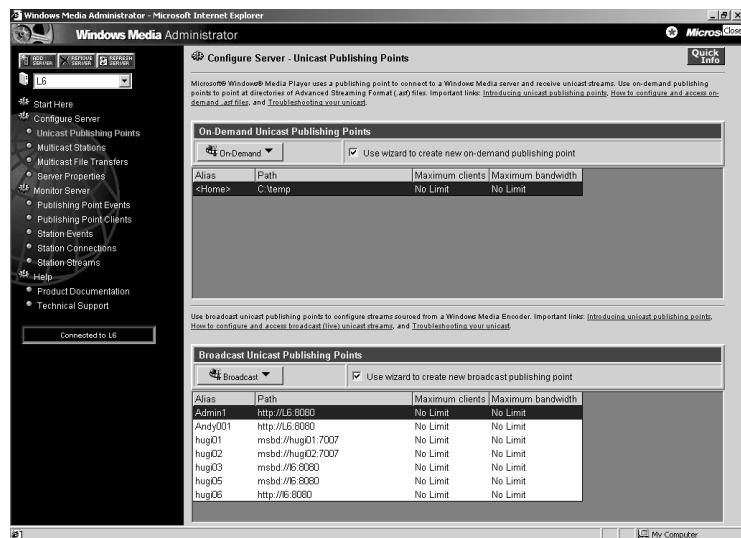
This section describes the procedure for configuring the Windows Media Administrator to broadcast a video stream.



#### To configure Windows Media Administrator to broadcast

1. From the **Start** menu of your computer, select **Programs | Administrative Tools | Windows Media | Windows Media Administrator**.

The Windows Media Administrator configuration interface displays.



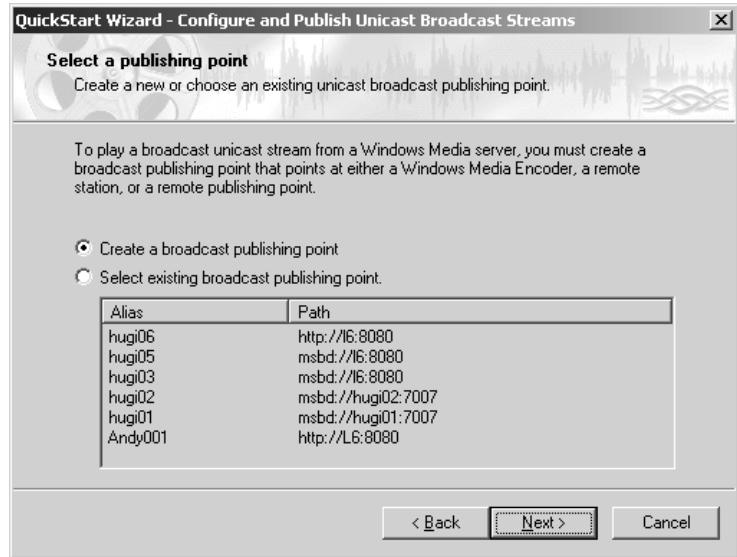
**Figure 2-12** Windows Media Administrator Configuration Interface

2. In the left-hand sidebar, select **Unicast Publishing Points**.
3. In the **Broadcast Unicast Publishing Points** section, click the **Broadcast** button and select **New** from the drop-down list.

The **QuickStart Wizard** displays.

4. Click **Next**.

The **QuickStart Wizard Select a publishing point** dialog box displays.



**Figure 2-13** QuickStart Wizard Select a Publishing Point Dialog Box

5. Select **Create a broadcast publishing point** and click **Next**.  
The **QuickStart Wizard Specify source** dialog box displays.



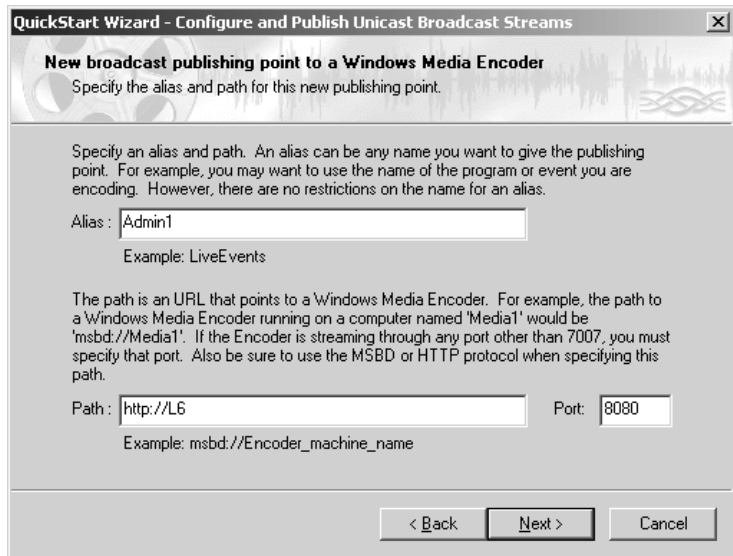
**Figure 2-14** QuickStart Wizard Specify Source Dialog Box

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**Note** To modify an existing broadcast publishing point, select the **Select existing broadcast publishing point** option in the **QuickStart Wizard Select a publishing point** dialog box. For more information, see [Modifying Broadcast Publishing Points](#) on page 24.

---

6. Select **Windows Media Encoder** and click **Next**.  
The **QuickStart Wizard New broadcast publishing point to a Windows Media Encoder** dialog box displays.



**Figure 2-15** QuickStart Wizard New Broadcast Publishing Point to a Windows Media Encoder Dialog Box

7. In the **Alias** field, type an alias for the new broadcasting point.
8. In the **Path** field, type the path to the Windows Media Encoder installed on your computer using the internal URL displayed in the **URL for LAN connections** field in [Figure 2-7](#) on page 14.
9. In the **Port** field, type the port through which the Windows Media Encoder sends the video stream. Then click **Next**.

The **QuickStart Wizard Select publishing method** dialog box displays.



**Figure 2-16** QuickStart Wizard Select Publishing Method Dialog Box

10. Select the **MMS** protocol option and check **Create an .asx file that points to the ASX stream**. Then click **Next**.

The **QuickStart Wizard Ready to publish** dialog box displays.



**Figure 2-17** QuickStart Wizard Ready to Publish Dialog Box

11. Click **Finish**.  
The **Save .asx file** dialog box displays.
12. Type the name you wish to give to the file and navigate to the location at which you wish to save the file, then click **Save**.  
The **QuickStart Wizard Publishing complete** dialog box displays.
13. Click **Close** to complete the configuration and to return to the Windows Media Administrator interface.

### MODIFYING BROADCAST PUBLISHING POINTS

This section describes the procedure for modifying an existing entry in the **Broadcast Unicast Publishing Points** section of the Windows Media Administrator.



#### To modify an existing publishing point

1. Double click an entry in the **Broadcast Unicast Publishing Points** section.

The **Specify an alias and path for a new broadcast publishing point** dialog box displays.

**Configure Server - Edit Broadcast Publishing Point**

**Specify an alias and path for a new broadcast publishing point.**

An alias can be any name you want to give this publishing point. For a Windows Media Encoder, you could choose the name of an event. The path you specify is always to a remote broadcast stream whether it comes from a Windows Media Encoder, remote station server, or remote Unicast server. For example, the path to a Windows Media Encoder running on a machine named 'Media1' would be 'msbd://Media1'. Be sure to include a port designation if the real-time encoder is streaming through anything other than port 7007.

Alias:

Path type:

URL:

Example: msbd://server or http://server

Port:

Maximum clients:  clients

Maximum bandwidth:  Kbits/sec

**Figure 2-18** Specify an Alias and Path for a New Broadcast Publishing Point Dialog Box

2. Modify any of the settings as required and click **OK**.

---

**Note** The Windows Media Administrator allows you to build an hierarchy of directories.

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3. The Windows Media Administrator interface displays. The modified entry appears in the **Broadcast Unicast Publishing Points** section.

**CONFIGURING AN ON-DEMAND STREAM IN THE MEDIA ADMINISTRATOR**

This section describes the procedure for configuring the Windows Media Administrator to supply a video stream on demand.



**To configure Windows Media Administrator to supply video on demand**

1. From the **Start** menu of your computer, select **Programs | Administrative Tools| Windows Media | Windows Media Administrator**.

The Windows Media Administrator configuration interface displays (Figure 2-12 on page 18).

2. In the left-hand sidebar, select **Unicast Publishing Points**.
3. In the **On-Demand Unicast Publishing Points** section, click the **On-Demand** button and select **New** from the drop-down list.

The **QuickStart Wizard** displays.

4. Click **Next**.

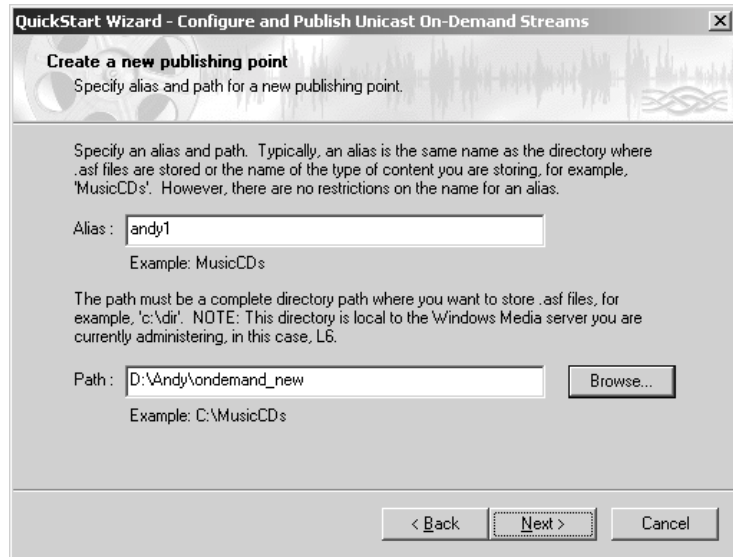
The **QuickStart Wizard Select a publishing point** dialog box displays.



**Figure 2-19** QuickStart Wizard Select a Publishing Point Dialog Box

5. Select **Create a publishing point** and click **Next**.

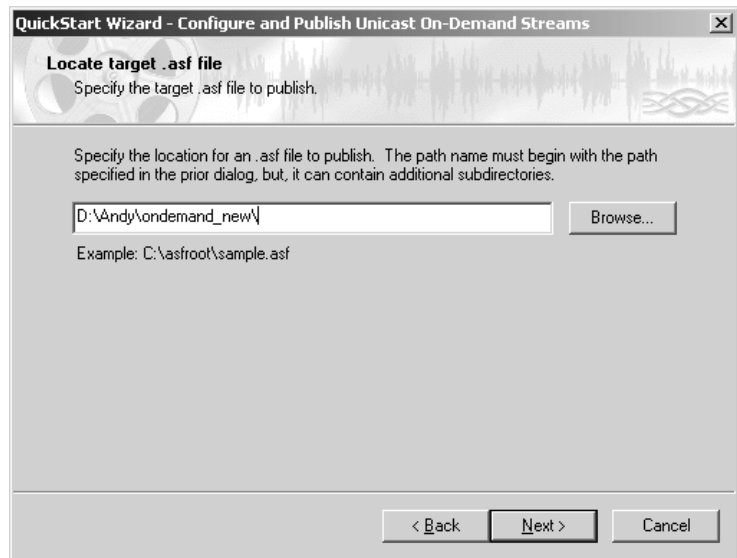
The **QuickStart Wizard Create a new publishing point** dialog box displays.



**Figure 2-20** QuickStart Wizard Create a New Publishing Point Dialog Box

6. In the **Alias** field, type an alias for the new broadcasting point.
7. Click **Browse** and navigate to the location at which you want to save the video file, then click **Next**.

The **QuickStart Wizard Locate target .asf file** dialog box displays.



**Figure 2-21** QuickStart Wizard Locate Target .asf File Dialog Box

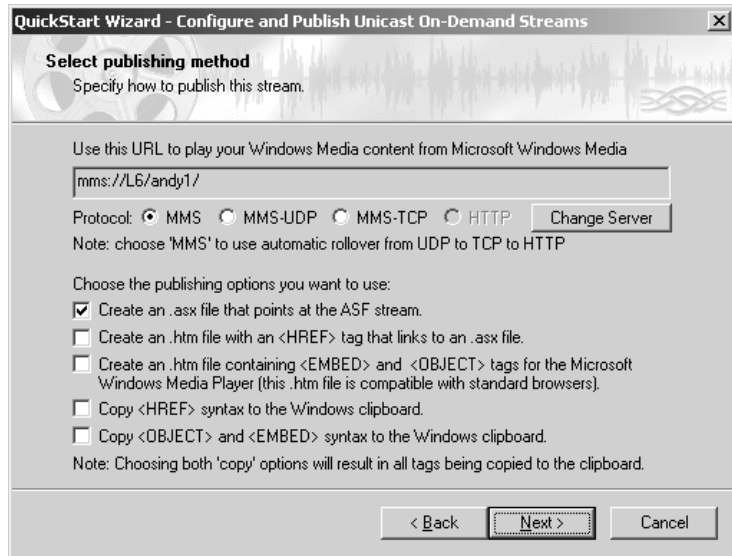
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**Note** To modify an existing on-demand publishing point, select the **Select existing publishing point** option in the **QuickStart Wizard Select a publishing point** dialog box. For more information, see [Modifying On-demand Publishing Points](#) on page 30.

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8. Click **Browse** and navigate to the location from which you want to publish the video file, then click **Next**.

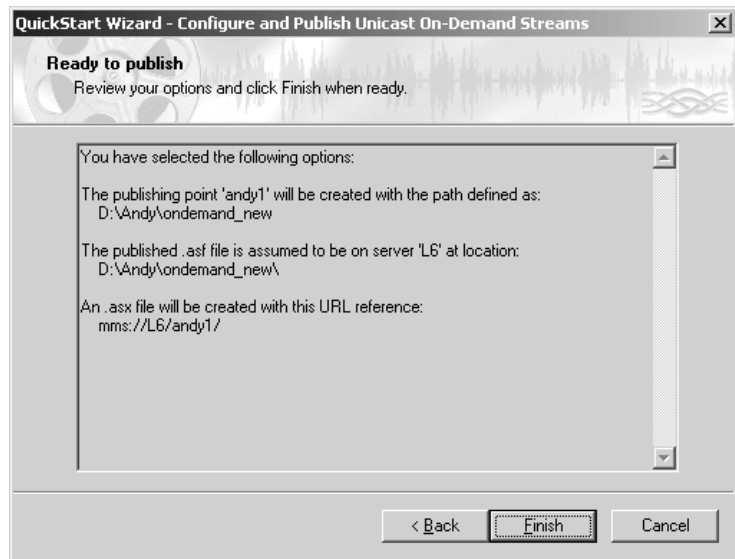
The **QuickStart Wizard Select publishing method** dialog box displays.



**Figure 2-22** QuickStart Wizard Select Publishing Method Dialog Box

9. Select the **MMS** protocol option and check **Create an .asx file that points to the ASX stream**. Then click **Next**.

The **QuickStart Wizard Ready to publish** dialog box displays.



**Figure 2-23** QuickStart Wizard Ready to Publish Dialog Box

10. Click **Finish**.  
The **Save .asx file** dialog box displays.
11. Type the name you wish to give to the file and navigate to the location at which you wish to save the file, then click **Save**.  
The **QuickStart Wizard Publishing complete** dialog box displays.
12. Click **Close** to complete the configuration and to return to the Windows Media Administrator interface.

### MODIFYING ON-DEMAND PUBLISHING POINTS

This section describes the procedure for modifying an existing entry in the **On-Demand Unicast Publishing Points** section of the Windows Media Administrator.



#### To modify an existing publishing point

1. Double click an entry in the **On-Demand Unicast Publishing Points** section.

The **Specify an alias and path below** dialog box displays.

**Specify an alias and path below.**

Typically, an alias is the same name as the directory where ASF files are stored or the name of the type of content you are storing (i.e., 'MusicCDs'). However, there are no restrictions on the name for an alias. The Path must be a directory (ie: 'c:\') that is local to the server you are administering, in this case LB. By specifying this new publishing point as *Home* you will be deleting the current *Home* path.

Type:  Alias  Home

Directory path:

Maximum clients:  clients

Maximum bandwidth:  Kbits/sec

**Figure 2-24** Specify an Alias and Path Below Dialog Box

2. In the **Type** option, select **Home**.
3. In the **Directory path** field, click **Browse** and navigate to the directory containing the required video file. The directory must

be on the same computer as the Windows Media Administrator. Then click **OK**.

---

**Note** The Windows Media Administrator allows you to build an hierarchy of directories.

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The Windows Media Administrator configuration interface displays. The new entry appears in the **On-Demand Unicast Publishing Points** section.

## CONNECTING AN ENDPOINT TO A VIDEO STREAM



This section describes how you configure a streaming client to Windows Media Encoder in order to access a broadcast or an on-demand video stream.

### To connect to the broadcast stream

1. From the **Start** menu of the streaming client, select **Programs | Accessories | Entertainment | Windows Media Player**.  
The Windows Media Player displays.
2. From the **File** menu, select **Open**.  
The **Open** dialog box displays.
3. Type the name of the required media server followed by the name of the required video file. For example,  
mms://L6/andy1

## LINKS FOR MORE INFORMATION

For more information about the Windows Media Administrator, see [http://msdn.microsoft.com/archive/default.asp?url=/ARCHIVE/en-us/dnarwmt/html/tvlive\\_server.asp](http://msdn.microsoft.com/archive/default.asp?url=/ARCHIVE/en-us/dnarwmt/html/tvlive_server.asp).

For more information about the Windows Media Encoder, see <http://www.microsoft.com/technet/treeview/default.asp?url=/TechNet/prodtechnol/netshow/evaluate/wencoder.asp>.

For more information about videoconference streaming solutions, see [www.starbak.com](http://www.starbak.com).

