



Live Streaming with Windows Media™

A STEP-BY-STEP

TUTORIAL ON

HOW TO STREAM

WITH MICROSOFT

WINDOWS MEDIA

BROUGHT TO YOU BY

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Contents

Part 1 Live Encoding	Page 1
Choosing an Encoding Station	Page 1
Hardware Requirements	Page 1
Recommended Items	Page 1
Internet Connection	Page 2
Basic Steps for Encoding a Live Stream	Page 2
Part 2 The Streaming Server	Page 3
Types of Servers	Page 3
The VitalStream Network	Page 3
Steps to Connect a Live Encoding Station to a Streaming Media Server	Page 4
Create User Accounts for Streaming Administration	Page 4
Starting the Windows Media Administrator	Page 4
Configuring a Live Encoding Point	Page 5
Configuring an On-Demand Unicast Publishing Point	Page 6
Part 3 The Web Server	Page 7
Creating a Direct Link	Page 7
Creating an Embedded Player	Page 7
Conclusion	Page 8

Live streaming consists of three basic components, the encoding station, the streaming media server and the web server. VitalStream offers each of these components along with the personal service and technology to achieve any level of audio or video streaming over the Internet. The following technical document outlines the basics of streaming live and encoded streaming video using Windows Media Technologies.

Part 1 Live Encoding

Choosing an Encoding Station

The encoding station takes the media and compresses it for the web. If the stream consists of only audio, a simple laptop can be used. If multiple bit rates are needed, a high powered workstation should be used. [Windows 2000 Professional](#), [Windows Media Server Administrator 4.1](#) and [Windows Media Encoder version 7](#) are the only software packages required. A separate audio and video-encoding card are required for each stream format.

Our recommendations for the encoding station are as follows:

Hardware Requirements:

- ✓ Intel Pentium III or Higher Workstation
- ✓ 128 MB of RAM
- ✓ 9 GB of storage on a 7200 RPM or faster hard drive
- ✓ 1 SoundBlaster compatible soundcard for each audio stream
- ✓ 1 Osprey 100 encoding card (Under \$200) for each video stream. If your source is digital you will need the Osprey 500, which will cost substantially more. Available at www.viewcast.com

www.promax.com has systems for this purpose that can be pre-configured and delivered. Read [Microsoft's official hardware requirements](#).

Recommended Items:

- ✓ Various cables for audio and video. [Guitar Center](#) sales associates are knowledgeable and carry professional grade cables. You will need to spend about \$200 on a basic set of cables and connectors. You should have specifications of all the various inputs and outputs before talking to the sales associate.
- ✓ Video Input monitor PVM14N6U - 14" (13"V) Trinitron Color Monitor (the [Sony](#) site has list of local distributors)
- ✓ Audio Mixer - We recommend [Folio Notepad Mixer](#) (Can be purchased at Guitar Center)
- ✓ Box with wheels to transport equipment. (Available at Starcase.com)

Internet Connection:

- ✓ For a single stream, an ISDN line will be sufficient.
- ✓ For multiple bit rate streams, a T1 line is recommended.
- ✓ DSL and Cable will work, but home version of the products can cause latency.
- ✓ Audio can be encoded over a 56K modem (but is not recommended).

Note: For live events, VitalStream's Resellers can provide you with professional solutions for connecting your encoding station to the Internet such as microwave broadcasting or line-of-sight laser solutions.

Basic Steps for Encoding a Live Stream

- 1 Download and install [Windows Media Encoder Version 7](#)
- 2 Start a new session by selecting broadcast, capture, or convert. Click Next.
- 3 Select broadcast a live event. Click Next.
- 4 Select your attached hardware from the menu. Additional adjustments are available once the encoder is started. Click Next.
- 5 Select a free port or use the port selected by default. The port you select and your Internet address will be used later by the server. You will supply the URL for the Internet and LAN to connect your streaming server to your encoding station.
- 6 Select a default encoding profile from the drop down menu. If you are an advanced user, you may elect to create your own profile. Click Next.
- 7 If you want to archive a copy of the broadcast for later on-demand viewing, select a local file to store the presentation. This archived file can be uploaded to the server for video on-demand and encore presentations.
- 8 The information or metadata you enter on this screen populates the Windows Media Clients and provides information for end users. Click Next.
- 9 Review your settings. Click Finished.
- 10 After the encoder station appears you can press start to begin broadcasting the clip. When the status bar turns green, the encoder is streaming. Your next task will be to configure the streaming server for Internet users to view the content.

Part 2 The Streaming Server

The role of the streaming server is to take pre-encoded clips or a live feed from the encoding station and stream them to web users. While it is important to have a good streaming server, the quality of the network where you place your server is also important. VitalStream is equipped to provide both the servers and the network specifically engineered to power streaming media.

Types of Servers

VitalStream supplies both the servers and the network on a managed or shared basis. It is highly recommended for professionals who will be doing live encoding from several venues to have at least one [managed server](#). Shared or [Virtual Hosting](#) is less expensive but has restrictions such as not being able to administer the machine remotely.

The VitalStream Network

The [VitalStream Network](#) is specifically engineered to meet the high bandwidth demands of streaming media. VitalStream's [NetCluster Technology](#) gives our network the performance, diversity, and redundancy necessary to stream media worldwide.

We do not recommend using your encoding station as your streaming server because if you have more than a few audience members at one time, the performance will be unacceptably slow. Instead, we recommend having a dedicated streaming server. This allows the encoding station to send the signal once to the streaming server which can then forward the signal on to thousands of Internet users at one time. If you host your streaming server with VitalStream, the thousands of users connect to the fault-tolerant VitalStream Network while leaving the encoding station unaffected. This has several benefits.

Performance

Clustering multiple machines and other network components offers the scalability and capacity to handle unexpected spikes in bandwidth without compromising performance.

Diversity

If one area of our network is congested, your data will be immediately routed around the bottleneck through another route.

Redundancy

Every operation is mirrored on two or more duplicate systems. If one fails, the others instantly take over.

Modular

We can add or remove elements to the network at any time. For example, we can easily upgrade a hard drive or add memory while everything else remains in operation.

Cost Savings

When you host a managed server on the VitalStream network, our expert technicians will maintain the network, server hardware, and software for a fraction of the cost for doing it yourself. Essentially, you can outsource your IT department to VitalStream for pennies on the dollar.

Steps to Connect a Live Encoding Station to a Streaming Media Server

To get started, you will need your encoding station connected to the Internet with Windows Media Administrator running.

Create User Accounts for Streaming Administration

Creating the users only needs to be done once and should be done by a person who understands Windows administration and security. You need to create a user on the encoding station and mirror that user on the Windows Media Server.

- 1 Start > Settings > Control Panels > Administrative Tools > Computer Management
- 2 Click on local users and groups
- 3 In the users folder from the action menu select new user.
- 4 This user should be a local administrator of the encoding station. Write down the user name and password and store this information in a safe place. Use [PCAnywhere](#) (available online with a 30 day free trial) to remotely log on to your managed server and create this user on the streaming media server using steps 1 to 3.

Starting the Windows Media Administrator

Once installed with a proper security account the Windows Media Administrator (part of the [Windows Media Services](#) package) lets you connect to the Windows Streaming Media Server for remote configuration. This program enables you to create new broadcast publishing points for live and on-demand publishing points for encoded streaming.

- 1 Download and install the [Windows Media Administrator](#) to your encoding station. You do not need to install the server software just the administrator.
- 2 To launch the program, go to Start > Programs > Windows Media > Windows Media Administrator
- 3 Click add server button in the upper left hand corner

- 4 Enter in the IP address or domain of your Windows Media Server and press OK. This step may take several minutes depending on your connection speed.
- 5 Once connected the complete streaming server settings will be returned to the encoding station and the streaming server is ready for configuration.

Configuring a Live Encoding Point

A live publishing point works in tandem with the encoding station, replicating the encoding station's work across the Internet to the web users. You will need two values from your encoding station to communicate to the web server. The http port and the URL or IP address of your encoding station. To find these values see the setting up the encoding station segment.

- 1 Select Configure Server > Unicast Publishing Points >
- 2 In the Broadcast Unicast Publishing Points lower window, from the On-Demand drop down menu, select New...
- 3 From the wizard select next and create new broadcast publishing point then next
- 4 Select windows media encoder as the source then next
- 5 The Alias screen is the most complex step and you will need two pieces of information to be successful. The URL or IP address of your encoder and the http port on which the stream is being broadcast.
- 6 Finish this information on the screen. An example of the path is http://64.7.193.21 on port 8080. The alias will be a friendly name to access the stream after it is configured. Do not use the default msbd protocol it will not work with newer versions of the encoder.
- 7 The next screen contains information that is used by the web server to stream your content to the Internet users. These are not required and you can uncheck all the boxes. The information that is useful is the top line.
- 8 An example is mms://64.7.206.38/livestream. MMS is the protocol Windows Media players use to stream. The IP address is the Windows Media Server's location on the Internet and livestream is the alias to the particular stream. See the template example under the web server section to find out where to place this in your html page.
- 9 Press Next and finish.

It is our experience that several issues such as local firewalls, mis-configured media players, bad html pages, and a host of other issues might prevent this from working on your first try. This is why VitalStream offers live technical support 24x7x365. At some point you are going to need support. Usually 15 minutes before your biggest client's live broadcast. This is the number one reason organizations choose VitalStream, we are always here to assist.

Configuring an On-Demand Unicast Publishing Point

This type of publishing point does not require an encoding station to be running. This type of publishing point is used for completed Windows Media files. After completing a live event you can archive the file locally for future play back. Here are the steps to watch a video on-demand.

- 1 First upload your completed windows media movie to the streaming media server. On the virtual accounts we provide a folder called media->open. Place your files there. On a managed server you will see a folder called asfroot in the root directory. You can use PCanywhere's file transfer or your FTP program to place the file in that directory. Your account set up instructions will have detailed information on how to transfer files to your managed servers.
- 2 Start the windows media administrator and select configuration->Unicast Publishing Points
- 3 Next create an on-demand publishing point
- 4 Select an alias for the clip you wish to stream and the local path on the Windows Media Server where it resides. An example is C:\asfroot\
- 5 Next provide a fully qualified path to a specific file. An example is C:\asfroot\sample.asf
- 6 A shortcut is to place all of your files that you want to be referenced by the alias on the server at the same time. Then you can use this single publishing point to reference all your files. For example mms://64.7.206.38/encoded/sample1.asf points to the first file mms://64.7.206.38/encoded/sample2.asf points to the second file. As long as all the files are in the same folder they can share an alias.
- 7 The next screen contains information that is used by the web server to stream your content to Internet users. These are not required and you can uncheck all the boxes. The information that is useful is the top line.

An example is mms://64.7.206.38/encoded/sample.asf. MMS is the protocol Windows Media players use to stream. The IP address is the Windows Media Server's location on the Internet, encoded is the alias to the particular stream location and sample.asf is a specific file. See the template example under the web server section to find out where to place this in your html page.

This is the very basic function of streaming media and many of the complications have been overlooked. Advanced functions that traditionally require low-level programming can be easily achieved with the [VitalStream MediaConsole](#).

Part ③ The Web Server

The web server stores the elements to connect Internet users to the streaming content. Streaming presentations can be enhanced with slides, graphics, corporate branding, animation and live data. These interactive elements make streaming media more compelling. VitalStream web servers give the content administrator the ability to coordinate all the elements that make a successful streaming media experience possible. VitalStream supplies the MediaConsole, a web-based application, to make server set up and administration simple and allows the administrator to publish web pages with their favorite content tools.

Once the streaming server and encoding station are configured an interface for your content can be built. There are two basic options to build interfaces, a direct link that launched the users Windows Media Player or embedding the content in a web page. There are advantages for both. Having a linked player launches a familiar interface with all the video and audio adjustments. New versions of the player can be customized with branded skins. Read the book [Microsoft's Windows Media Player 7 Handbook](#) by Seth McEvoy for detailed instructions. The embedded player simplifies the video playback by incorporating the content into existing web pages. It will require knowledge of advanced html authoring and certain features are not compatible with all web browsers on all operating systems. Here are examples of [embedded players](#).

Creating a Direct Link

Use you favorite html authoring tool like [Microsoft FrontPage](#) or [Macromedia Dreamweaver](#), in the link properties tab, add a hyperlink to your movie file name `mms://64.7.206.38/encoded/sample2.asf` or your live broadcast publishing point `mms://64.7.206.38/livestream`.

Creating an Embedded Player

Here is an example html code that embeds a Windows Media Player. Insert this file in your web page between the body tags and upload the page to your web server.

```
!- Set the video window size for content to play in
<object id="MediaPlayer" width="320" height="240"
classid="clsid:22D6F312-B0F6-11D0-94AB-0080C74C7E95"
codebase=http://activex.microsoft.com/activex/controls/mpplayer/en/nsmp
2inf.cab#Version=5,1,52,701
standby="Loading Microsoft(r) Windows(r) Media Player components..."
type="application/x-oleobject">
```

!-Parameters that change the appearance for IE users see windowsmedia.com for complete list

```
<param name="AutoStart" value="True">
<param name="AnimationAtStart" value="0">
!-Important insert your file path to your stream here
<param name="Filename"
value="mms://64.7.192.173/vitalstream.com/open/comm13.wmv">
<param name="ShowControls" value="0">
<param name="ShowAudioControls" value="-1">
<param name="ShowDisplay" value="0">
<param name="ShowGotoBar" value="0">
<param name="ShowPositionControls" value="True">
<param name="ShowStatusBar" value="-1">
<param name="TransparentAtStart" value="-1">
!- Parameters for Netscape users
<embed autostart="-1" type="video/x-ms-asf-plugin"
!-Important insert your file path to your stream here Netscape users
filename="mms://64.7.192.173/vitalstream.com/open/comm13.wmv"
pluginspage="http://www.microsoft.com/windows/mediaplayer/download/
default.asp" controltype=-1
width=320 height=240 invokeurls=-1 animationatstart=0
transparentatstart=-1 showstatusbar=-1 showpositioncontrol=-1
showtracker=0>
!-End of File
</embed>
</object>
```

Conclusion

For any of your streaming needs please see our [website](#) or call us at (800) 254-7554. VitalStream also supports many of the other popular video streaming formats like QuickTime and RealNetworks. For other technical articles or helpful advice please contact your account manager.