



# Streaming Media in Blackboard

A Blackboard Tip Sheet

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## Introduction

A question Blackboard Learning Services frequent hears is "Can Blackboard do streaming media?"

The short answer is "Blackboard can do HTTP streaming, but not RTSP streaming."

That might not make sense without some background, though. So let's talk about streaming media.

## Streaming vs. Non-Streaming

What is streaming media? Typically when you download a file from the World Wide Web, you must wait for the entire file to finish downloading before you can open and view it. That's usually not too much of an issue when you're working with word processing documents, for example, because a word processing file usually isn't excessively large. On the other hand, media files -- digital video and audio -- can be tremendous and can take an extremely long time to download. This is non-streaming media: wait for it all to download, and then you can play it. It can be very frustrating for large media files.

Streaming media improves the download process by downloading a portion of the media file -- say, the first few seconds of a video -- and then allow the user to view that bit while it's downloading the next couple of seconds. As the process continues, the user watches a little while the next piece is downloading in the background until the user has seen the entire video. Since the user doesn't have to wait for the entire video to download before viewing it, streaming can produce a less frustrating viewing experience.

As long as the software can stream the media (i.e. break it up and send it to the user) faster than the video plays, the user will see a seamless video without having to wait for the entire video file to download. If the playing "catches up" to the streaming, the video will stop and the user will have to wait while the software "buffers" (i.e. downloads) the next bit of video to be played.

Streaming media can be delivered in different formats. Some of the most common formats and the companies that support them are:

- RealVideo and RealAudio from Real Networks, Inc
- Quicktime from Apple, and
- Advanced Streaming Format (ASF) from Microsoft.

## Streaming Protocols

There are various protocols that are used to stream the media. (A "protocol" is just the standard of communication.) The most common are Real-Time Streaming Protocol (RTSP) and HyperText Transfer Protocol (HTTP). HTTP is the same protocol used to transmit Web pages.

We'll use the Real Networks products as an example in this document. Streaming RealVideo or RealAudio formatted media via RTSP requires a separate piece of server software from Real Networks called RealServer.

Although it would technically be possible to install the RealServer software on the same piece of hardware as the Blackboard application, Blackboard discourages this configuration. Both Blackboard and RealServer are too resource-intensive to co-exist successfully on the same machine. Instead you would install RealServer on a separate piece of hardware (your "media server") and create a link from your Blackboard course site to the media file's location on the media server. This, by the way, is the same approach you would use to stream media from a media server on *any* Web page, not just from within a Blackboard course Web site.

However, you can stream Real Networks media via HTTP from any Web server, including a Blackboard server. HTTP streaming has a few advantages. HTTP can provide higher data-rates (which translates to higher-quality), but this also means the download rate is slower. Also, the browser caches media streamed via HTTP, so if accessed multiple times the stream doesn't have to re-start each time.

RTSP doesn't cache or store the media on the user's computer at all, so it's much more appropriate for large media files. And if you wanted to stream live video, RTSP is your solution; HTTP streaming doesn't support live feeds.

That's the background. Now let's look at how you would do some of this in Blackboard.

### Linking to media on a streaming server

If you have stored your media on a separate streaming media server, such as an installation of Real Networks' RealServer, then all you have to do is write the HTML to create a link to the media file's location on the media server.

When the user clicks on the link from within your Blackboard course site, the media file will be launched and streamed from the media server.

Don't we  
SCPS  
have a  
streaming  
media  
server?

This is  
my  
question  
I asked  
John!

## Real Networks HTTP streaming within Blackboard

For a good overview of doing HTTP streaming of RealVideo or RealAudio files from almost any Web page, see the Web site of Tom Dolan at Abilene Christian University:

[http://dolan.acu.edu/howto/how\\_to\\_publish\\_realmedia\\_files.htm](http://dolan.acu.edu/howto/how_to_publish_realmedia_files.htm)

With Real Networks technology, an ".rm" file is the source file where the media is stored. Real Networks also provides free software called RealProducer Basic that you can use to create the .rm file from just about any digital video format. You can also purchase a version of the software called RealProducer Plus that provides more powerful and extensive features.

Additionally, you need a ".ram" file, which is just a pointer that indicates where on the Web the .rm file is located.

To stream media via HTTP from a Web server, the basic process is:

1. Store the .rm file on the Web server.
2. Use a text editor to create a file with the .ram extension. This file contains a single line with the full URL of the location of the .rm file on the Web server.
3. Store the .ram file on the Web server.
4. Link to the .ram file.

These instructions work for pages on a regular Web server, but because of the dynamically generated nature of Web pages within a Blackboard Web site, the process needs to be modified.

The challenge is that the .ram file needs to contain a fixed (not relative) link to the .rm file. If you upload any file to Blackboard, it will be assigned a database identification number that the Bb database uses to identify that file, and (more importantly) that database identification number becomes part of the file's URL. So, to do HTTP streaming of Real Networks media files in Blackboard, you can approach it either of the following ways:

Leave the .rm file on a separate Web server and upload the .ram file that references it to Blackboard (using the "Create a Link to File" Special Action). When a user clicks on that link to the .ram file, the .ram file will reference the .rm file on the other Web server, and HTTP stream it from there.

Alternately, you can do it entirely within Blackboard:

1. Upload the .rm file to Blackboard (using the "Create a Link to File" Special Action on Blackboard's content-editing form).
2. Go to the student view of the course.

Send this

3. *Right-click* on the link to the .rm file and choose "Copy Shortcut" (or, in Netscape, choose "Save Link Location").
4. Open a text editor and paste the copied link location into the text file. Save this file with a .ram extension (instead of .txt).
5. Upload the .ram file to Blackboard (using the "Create a Link to File" Special Action).
6. Set the visibility option on the document with the .rm attachment to "No."

Now when a user clicks on the link to the .ram file, the .rm file will be streamed via HTTP from the Blackboard Web server.

Note: one thing to be aware of is that when you export or copy a course, the CourseID and database identification number will change and the URL in the .ram file will no longer be pointing to the correct .rm file. After copying or exporting the course, you will need to delete the .ram file, make the .rm file visible again, then repeat through steps 2 through 6.

For more educational materials about Blackboard products visit the  
[Training Center](http://trainingcenter.blackboard.com)  
(<http://trainingcenter.blackboard.com>)



## Using Multimedia in Blackboard 6.3

### What you need to know BEFORE using Multimedia in Blackboard

1. **Multimedia files tend to be very large** -- Keep in mind that some students, especially upperclassmen and graduate students, may be coming to Blackboard from a slow connection off-campus. If you include large multimedia files in your Blackboard course, these students may not be able to access them. Typical raw, digital video data occupies 27 Megabytes of hard drive space PER SECOND! CD quality, stereo audio occupies about 10 Megabytes of hard drive space per minute. Compressed versions of these files can be much smaller (typical 3 minute song in MP3 format is around 4 MB) but you can lose quality. We currently do not have a file size limit on files uploaded to BB but that may change in the years to come.
2. **Copyright is a Concern** -- Be sure that if you are using multimedia files that are protected by copyright, that you abide by the fair use and TEACH act restrictions and that you secure your content in Blackboard so that no one except for students enrolled in your course can access them. See our handouts on copyright in Blackboard and securing Blackboard content for more information.
3. **The difference between Streaming Media and Downloading Media**
  1. Streaming media is a particular type of file that, when opened, begins to play as soon as a small bit of it has been downloaded into the computer's memory. The most widely used type of streaming media is Real (.ram, .rm), but other servers do exist. Streaming media files are usually much smaller than other multimedia files.
  2. In contrast, other multimedia file types must be fully downloaded into memory before they can begin playing. These formats include mp3, wav, mpeg, avi etc. In order for streaming media to work, it must reside on a streaming media server.
  3. **Blackboard IS NOT a streaming media server.** Therefore, if you want to use streaming files in Blackboard, you'll have to link to them, rather than upload them. WFU does have a Real server and a MediaHawk server that you can use to stream your multimedia files. Contact your ITG for more information.

### Preferred Formats for Use in Blackboard

- **Image:** JPG or GIF with a resolution of 75dpi is fine as long as printing will not be needed. If printing will be needed, 150 dpi is fine and should keep the image files fairly small.
- **Audio:** For short clips (less than one minute or 3MB) use MP3 format and you can post in Blackboard. For anything over one minute or 3MB use Real Media format (.ram) and post the files on the WFU Real Server.
- **Video:** .mov (QuickTime) or .mpeg. **Very** short/small clips can be posted in Blackboard. Anything longer you will want to link to them on our Real or MediaHawk streaming server.

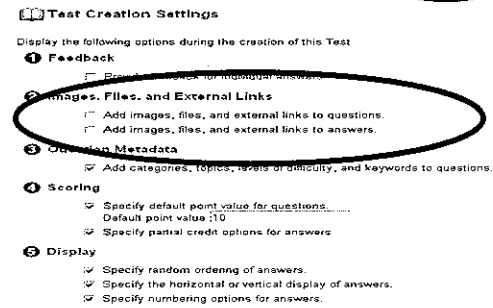
ITG-

### Adding Images/Audio/Video to an item in a content area:

1. Go to the content area and select **Add Item**.
2. Fill out the form and under Content Attachments click **Browse** to attach the item just as you would a document.
3. For images, under **Special Action** you can select **Display media file within the page**.

### Adding Images to a quiz question or response:

1. While in Test Canvas, click **Creation Settings**
2. On the Creation Settings screen, select **Add Images files and URL to questions and/or Add images and files to answers.**
3. Now when you add a question or an answer you will see the option of adding an image to them.



### The following file types are recognized by the *Blackboard Learning System*.

EXTENSION	FILE TYPE	PROGRAMS ASSOCIATED WITH THE FILE TYPE
.aam	Multimedia	Macromedia® Authorware® plug-in Note that the .aam file is the starting point for a series of files that must be enclosed in a .ZIP file.
.aiff	Audio	Audio program
.asf	Multimedia	Microsoft® .NET™ Show
.au	Audio	Real Audio Player™
.avi	Video	Video player (not Macintosh® compatible)
.gif	Image	Graphics program or Web browser
.html, .htm	Web page	HTML editor or Web browser
.jpg, .jpeg	Image	Graphics program or Web browser
.jif	Image	Graphics program or Web browser
.mp3	Audio	Audio program
.mpe	Audio/Video	Audio program
.mpg, .mpeg	Image	Graphics program or Web browser
.moov, .movie	Movie	QuickTime® movie
.mov	Video	Movie or media player
.pdf	Text	Adobe® Acrobat® Reader®
.png	Image	Portable Network Graphics
.ppt, .pps	Slide show	Microsoft® PowerPoint® and PowerPoint Player®
.qt	Movie	QuickTime®
.ra	Audio	Real Audio Player™
.ram	Video	Real Audio Movie™
.rm	Audio	Audio program
.rtf	Text	Rich Text Format
.swf	Multimedia	Macromedia® Shockwave® plug-in
.tiff, .tif	Image	Graphics program or Web browser
.txt	Text	Text or HTML editor, word processor
.wav	Audio	Audio program
.wma	Audio	Audio program
.wmf	Graphic	Microsoft® Windows®
.wmv	Media/Audio	Microsoft® Windows®
.wpd	Text	WordPerfect® or other word processor
.xls	Spreadsheet	Microsoft® Excel®
.zip	Text	WinZip®