Creating RealMedia Files for Streaming

This tutorial will address the use of one type of streaming media, known as RealMedia, or separately as RealAudio® or RealVideo®. Before the advent of streaming media, your audience had to wait for your media file to download from the Internet or a network server in order to experience it. With streaming media, your audience can see and hear your media almost instantly.

A streaming clip consists of small packets of information that are sent over a network connection. The user receives these information packets in a "stream" and, using a player, experiences your media piece by piece. Thus, the streaming is almost invisible to the user. The process is similar to viewing a film; each frame of a filmstrip is like each data packet. When they are pieced together by a projector, you see the film as one continuous piece.

Three Basic Steps to creating streaming media: (back to top)

1. Using either RealProducer (Mac) or Helix Producer (Windows), convert sound/video file to RealMedia format (.rm)[1]
   a. input file can be AIF, WAV, MP3, AVI, DV, or one of many other audio or video formats
2. using a text editor, create a metafile (.ram) "pointing to" the RealMedia file
3. upload files to appropriate server(s)

Detailed instructions for completing each of these three steps are provided below.

How is Streaming Media Created?

Helix Producer creates streaming media data packets by a process called "encoding." During encoding, the source media is transformed into streaming media using "codecs" (compression/decompression algorithms). The entire process is summed up in the following steps:

1. Helix Producer receives the source media as a file or live audio/video.
2. Helix Producer uses a codec to compress the media source's data into packets.
3. The data packets are streamed via the Internet or network to the user.
4. At the user's end, the same codecs are used to piece back the media so that he or she can play it.

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[1] These instructions assume that the audio/video information you wish to convert is already in digital format. If it is in some other format (DVD, digital camera, audio CD, etc.), you will need to extract/transfer this data into a digital file. Though both Helix Producer and RealProducer have the capability to input this information directly, I have not found the process to be reliable and highly recommend taking the additional step of converting the data into a compatible digital format before using the RealMedia conversion tools. Useful tools for this initial step are: audio extractors (for audio CDs), iTunes (audio CDs; Mac), iMovie (digital video; Mac), Vegas Video (digital video; PC), etc.

While the steps involved in encoding streaming audio and video are similar for you, for Helix Producer there are some basic differences between the media types.

Encoding audio is much simpler than encoding video. A basic, streaming audio clip is created by using a audio file or live audio source as the input. Helix Producer uses various audio codecs to convert your standard audio into a format that can be streamed.

A more complex task for Helix Producer is converting standard video into streaming media. A RealVideo clip is created by converting a video file or by capturing from a video source, such as a video camera or video cassette player, to your computer via a video capture card. Helix Producer converts different attributes of the video—such as frame rate, type of motion, and size of the image—into a RealVideo clip using a video codec. Plus, if the video includes audio data, that must also be converted using the audio codecs.

Converting to RealMedia Format ([back to top](#))

Using one of the user-friendly tools that are available ([RealProducer](#) for Mac or [Helix Producer](#) for Windows), the process for converting files has become very easy to perform. Basic instructions for using both tools is provided below, though there are many additional options that you may wish to explore as you become more familiar with this process.

RealProducer for Macintosh

Before beginning, if you are working in KDMS – and *only* if you are working in KDMS – you must make sure the temporary files are stored on a drive to which you have adequate permissions granted. Therefore, follow these initial steps before proceeding:
1. Open the Preferences dialog (Options→Preferences…)
2. In the "Temporary Storage Directory" panel, click on the "Browse" button
   a. navigate to "Hard Drive 2" … you may even want to create a new directory named "Temp" on this hard drive
   b. when you have selected the desired folder, click the "Choose" button
3. Click on the "OK" button to accept this change and return to the RealProducer main window

To Convert Files:

1. Begin a New Session (File→Open File…)
   a. a dialog box opens that allows you to select an "Input Source" (the file to be converted)
   b. select the file and click on the "Open" button
2. You will then be returned to RealProducer's main window [nothing has happened yet].
3. Before converting the file, make sure to provide the following information and select the desired parameters for your RealMedia file

      a. Clip Information – this section allows you to enter information about the RealMedia file you are creating; the Title, Author, and Copyright information will appear in the user's RealMedia player window as the sound file plays and Description & Keywords fields assists the various internet search engines in the process of finding this clip so others will be aware of its existence

      b. RealMedia settings – unless your audience consists primarily of users who have very old versions of the RealPlayer, you will always want to select "Multi-rate SureStream" to allow encoding compatible with more than one transmission rate. You can also use the "Audio Format" and "Video Quality" drop-down boxes to select an appropriate preset value for your clip.[2]

      c. Target Audience – select the target audience for which you are creating this media file (recommended: select one slow rate [56 K] and one fast rate [256 DSL]); the faster the transmission rate, the higher the sound quality … and the larger the resulting file will be

            i. this is the single option that distinguishes the "Pro" version of RealProducer ($149) from the free version; the free version only allows selection of two connection types, while the Pro version allows you to select as many as you like

           ii. if you attempt to select more than two streaming rates in the free version, a message will pop up informing you that you must upgrade the product to select more than two

4. To complete the process, click on the "Start" button in the lower left portion of the RealProducer window

      a. a progress bar will appear in the lower right corner of the window, showing you the percentage of the file that has been processed

      b. when complete, a pop-up message will appear, informing you the file has been converted and saved, and providing an opportunity for you to review statistics about the file content

5. Once the file has been compressed, a dialog box will appear so you can provide the path and filename for the new RealMedia file; the filename ***must*** utilize proper naming rules (no spaces, alphanumeric characters only, etc.) and must end with the extension ".rm".

      a. navigate to the appropriate folder, type in a filename, and click on the "Save" button

6. To hear the file, you may now click on the "Play" button which will cause the RealPlayer to start and playback your newly converted sound file.

Helix Producer for Windows

Helix Producer creates streaming media from two kinds of sources: files or devices. Either of these sources can contain audio-only content or video and audio content

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[2] Notice that, if you are converting a digital audio file with no video, the "Video Quality" option is unavailable. Likewise, if you convert a video file with no audio, the "Audio Format" option will be unavailable.

together. You use the Input section of the main window to choose the source for the input.

1. In the Input section of the main window, select "Input File," click on the "Browse" button, and locate the media file that you wish to convert
2. By default, the destination for the file will be in the same folder as the input source file using the same file name, adding the ".rm" extension; the filename *must* utilize proper naming rules (no spaces, alphanumeric characters only, etc.) and must end with the extension ".rm".
    o   to change either the destination folder or the filename, simply double click on the default file name in the "Destination" column of the output section and navigate to the appropriate location and assign the desired filename, then click on "Save" to complete the process
3. Click on the "Clip Information" button in the Output section and type in all relevant information
    o   this section allows you to enter information about the RealMedia file you are creating; the Title, Author, and Copyright information will appear in the user's RealMedia player window as the sound file plays and Description & Keywords fields assists the various internet search engines in the process of finding this clip so others will be aware of its existence
4. Click on the "Audiences" button and select up to three streaming rates
    o   select the target audience for which you are creating this media file (recommended: select one slow rate [56 K] and one fast rate [256 DSL]); the faster the transmission rate, the higher the sound quality … and the larger the resulting file will be
        a. this is the single option that distinguishes the "Pro" version of Helix Producer ($199) from the free version; the free version only allows selection of three connection types, while the Pro version allows you to select as many as you like
        b. if you attempt to select more than three streaming rates in the free version, a message will pop up informing you that you must upgrade the product to select more than three
5. If your clip includes video, you may wish to click on the "Video Filters" button and select the appropriate options for your clip
6. You are now ready to convert the media file. To begin, simply click the "Encode" button.
7. During the encoding process, you will notice that that the meters next to the input and output windows light up as if the file were playing back. Two other changes are worth noting: 1) the "Status" of the destination file changes from "Ready" to "Writing" and the "Status" of the Job (in the list at the bottom of the window) changes to "Encoding…" followed by the percentage of the file that has been converted. Once finished, the status of the destination file will change to "Complete."
8. To play your file, simply click on the "Play" button located at the lower right corner of the destination file list.

Create Metafile (.ram) (**back to top**)

If you are fortunate enough to be in a situation where your company (or you yourself) can afford the $5000+ to purchase the RealServer software and install it on your server, then you can link directly to the RealMedia files (.rm) and they will stream beautifully. Most of us, however, do not have the luxury of taking advantage of this particularly option. There is a workaround that will allow you – as long as you do not anticipate a large audience of simultaneous users – to stream audio without necessitating the purchase and installation of this expensive server software. It does, however, require an extra step … the creation of a "metafile." You must be *very* certain that you understand this process and the steps involved in order to ensure that the links will function as you intend. In the steps below, make sure that you distinguish carefully between the RealMedia file (.rm) and the metafile (.ram):

1. Create a RealMedia file (.rm), as described above
2. Create the metafile (.ram), following the steps below:
    - Open a text editor (SimpleText on the Mac or Notepad in Windows)
    - Type the absolute address[3] to your RealMedia file
        a. this address will be the ONLY text contained in the metafile … it simply "points to" the location of the RealMedia file on the server
    - Save the file with an ".ram" extension
        a. to make the association clear, I usually use exactly the same filename as the RealMedia (.rm) file to which this metafile points … the only difference being that the sound file uses the ".rm" extension and the metafile uses the ".ram" extension
        b. you will probably want to place the .ram file inside of the "sounds" folder for your web site
3. Upload the files to the appropriate locations (see instructions below)

Upload Files to Server (**back to top**)

When you begin to upload the media files to your server(s) it is imperative that you retain the distinction between the two file types discussed above: RealMedia files (.rm) containing the actual sample data and metafiles (.ram) "pointing to" the absolute address of the RealMedia files. Though it can be confusing at first, this is actually an advantage. Consider, for example, the real-world situation imposed upon you by storing files on the PubWeb server. Each user is limited to only 4 MB of space … not very much when you begin to use digital audio files (even highly compressed ones). Well, you could find another server to host[4] your RealMedia files (.rm) … the big ones! Then you could use the PubWeb site for your HTML pages and the metafiles (.ram) that point to the remote server where the larger media files are stored.

Therefore, as you follow the steps below, you may wish to consider the possibility of storing your files in two (or more) different locations. It is also possible, of course, that your RealMedia files (.rm) and the metafiles (.ram) may exist in the same folder on the

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[3] An absolute address includes "http://", the server address, the path to a given file, and the file name. For example, the absolute address to my faculty home page is:
http://faculty-web.at.northwestern.edu/music/lipscomb/indexCurrent.htm.
[4] The term "host" is used in this context to mean "store," as in save, maintain, and backup.

same server. Here are some examples of metafiles pointing to RealMedia files stored on my own PubWeb site:

- "Anarchy in the UK" by the Sex Pistols
    - metafile content:
      http://pubweb.northwestern.edu/~sdl687/sounds/anarchy.rm
- "So What" by Miles Davis
    - metafile content:
      http://pubweb.northwestern.edu/~sdl687/sounds/sowhat.rm
- It is worth noting that, once you acquire the absolute address of *any* sound file, you can link to that sound file using this metafile technique … think of the power this places in your hands, given the number of sound files available on the internet!!
    - go ahead … see how easy is to make a link on *your* site to the sound file on *my* site, by creating a metafile (.ram) containing the information for one of the files referenced above and uploading the RAM file to your site!!

To begin the process of actually uploading the files, simply use Dreamweaver's site maintenance capabilities or your favorite FTP program to transfer both the RealMedia files (.rm) and the metafiles (.ram) to their desired locations.

Important Note: It is imperative to understand that, if you ever need to transfer the RealMedia files (.rm) to a different location, the content of *all* of your metafiles must be changed to reflect the new absolute address of these files. This can be a daunting exercise. However, it is a simple matter from within Dreamweaver … simply use the "Search and Replace" function to search in the HTML code for the text of your old server's URL & the path to your files and replace that text with the absolute address of your new server and the new path to your files. In a few seconds, all of your potentially broken links to these sound files will be updated and fully functional. Of course, you will need to upload these edited files to your server before these changes are reflected in the files accessed by users of your site.