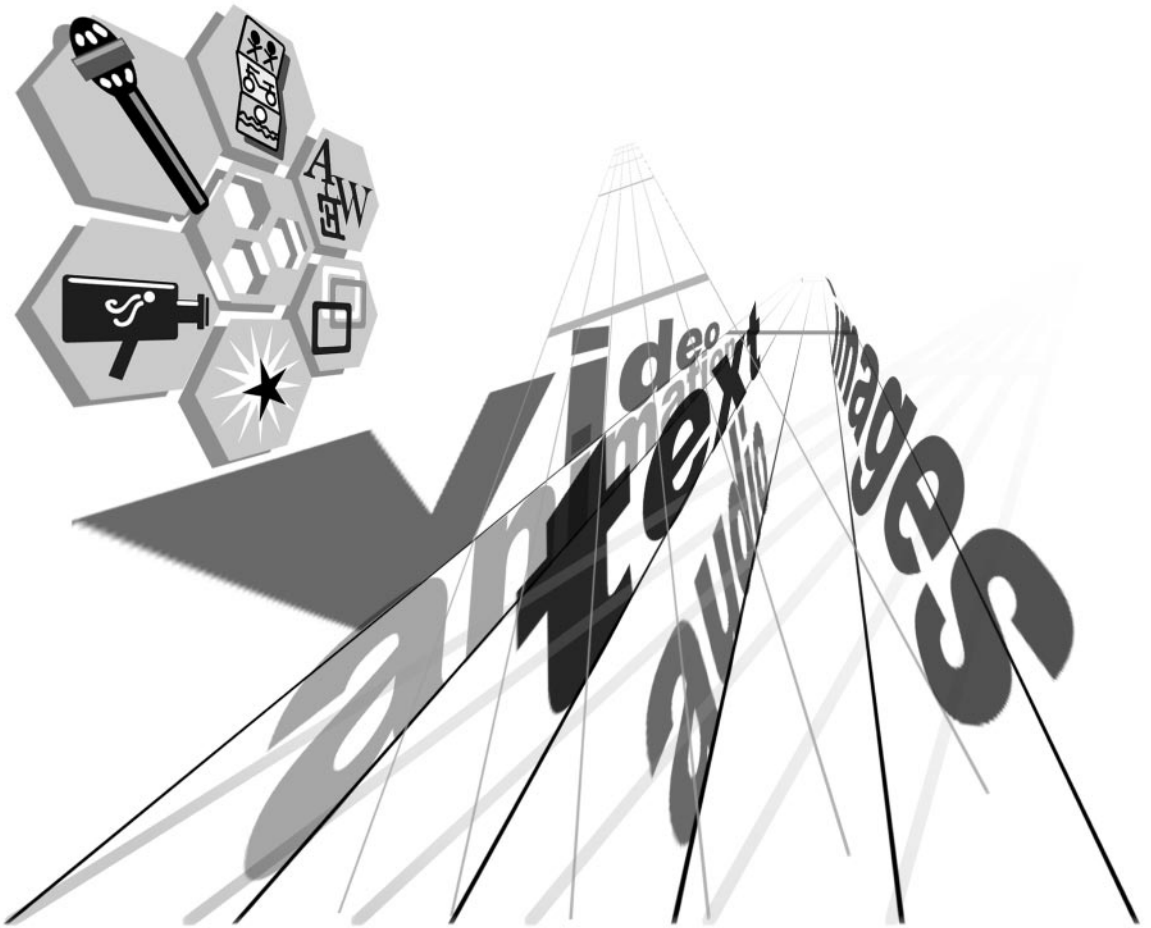
RealNetworks™

DELIVERING REALAUDIO® OR REALVIDEO® FROM A WEB SERVER

RealNetworks Technical Blueprint Series



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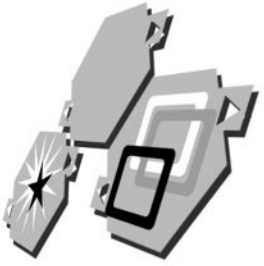


HOSTING CLIPS ON A WEB SERVER

It's easy to host RealAudio or RealVideo clips on a Web server. RealProducer encoding tools have wizards for creating clips and Web pages, as well as for uploading files to your Web server. This technical blueprint gives you information about putting RealAudio or RealVideo clips on a Web server in case the wizards do not meet your needs, or you prefer a "hands on" method for managing your clips.

Additional Information

You can download and purchase RealProducer tools at **http://www.realnetworks.com/products/index.html**.

Note

You should be familiar with HTML authoring and Web server URLs before following the instructions in this technical blueprint. This blueprint does not cover how to embed clips in a Web page.

Limitations on Web Server Playback

Although RealServer has better streaming capabilities, Web server playback provides a reasonable method for delivering clips to a small number of users. It is not recommended for lengthy or complicated presentations, however, or for clips viewed simultaneously by large numbers of people. Also note the following limitations when hosting clips on a Web server.

No SureStream Clips

When encoding a RealAudio or RealVideo clip, create a single-rate clip rather than a SureStream clip. A SureStream clip contains multiple encodings for different bandwidths. It can have, for example, encodings for 28 Kbps modems, 56 Kbps modems, and ISDN connections. Only RealServer can stream SureStream clips, however. When delivered by a Web server, each clip must be encoded for just one bandwidth.

Additional Information

To support multiple bandwidths through a single hypertext link, you can encode multiple versions of the clip and use a SMIL file to list the bandwidth choices. See "Setting Bandwidth Choices through SMIL" on page 3.

No RealPlayer Seeking

Because a Web server cannot jump to a new position in a clip timeline, the RealPlayer position slider cannot fast-forward the clip. If the user moves the slider forward, playback pauses as the clip continues to download at its normal rate. RealPlayer resumes playback once the clip data reaches the requested timeline position.

Configuring Web Server MIME Types

To download RealSystem clips to RealPlayer, a Web server must be configured with the following MIME types. Ask the Web server administrator to configure the MIME types listed in the following table.

Web Server MIME Types for RealSystem Clips and Files

File Type	Extension	MIME Type
Ram	.ram	audio/x-pn-realaudio
Embedded Ram	.rpm	audio/x-pn-realaudio-plugin
SMIL	.smil and .smi	application/smil
RealAudio	.ra	audio/x-pn-realaudio
RealVideo	.rm	application/x-pn-realmedia
RealPix	.rp	image/vnd.rn-realpix
RealText	.rt	text/vnd.rn-realtext

Note

This technical blueprint does not include information on RealPix or RealText. *RealPix Authoring Guide* and *RealText Authoring Guide* explain how to create these clips. See page 10 for more information.

Encoding Clips

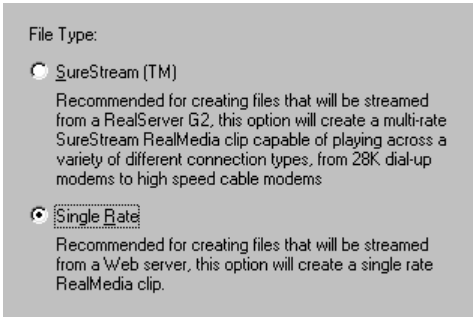
Create your RealAudio and RealVideo clips with RealProducer (a free product) or RealProducer Plus. These tools have easy-to-use, wizard-driven interfaces that let you quickly produce a streaming clip from a standard audio or video input format, such as WAV, AVI, or QuickTime. They encode files as RealAudio or RealVideo, both of which use the .rm file extension.

Additional Information

You can download and purchase RealProducer tools at **http://www.realnetworks.com/products/index.html**.

When you run the wizards to encode a file, be sure to choose a single-rate clip for Web server hosting. As described in "Limitations on Web Server Playback" on page 1, Web servers cannot host SureStream clips encoded for multiple playback rates. Also note that single-rate clips support only RealPlayer G2 or higher. Earlier versions of RealPlayer, such as RealPlayer 5.0, cannot play these clips.

Choosing Single-Rate Clips in the Recording Wizard



Additional Information

For background on preparing video and audio files for encoding, as well as improving audio quality with a sound editor, see the audio and video production chapters in *RealSystem G2 Production Guide*.

Setting Bandwidth Choices through SMIL

Pronounced "smile," SMIL stands for Synchronized Multimedia Integration Language. It is an international standard for delivering multimedia

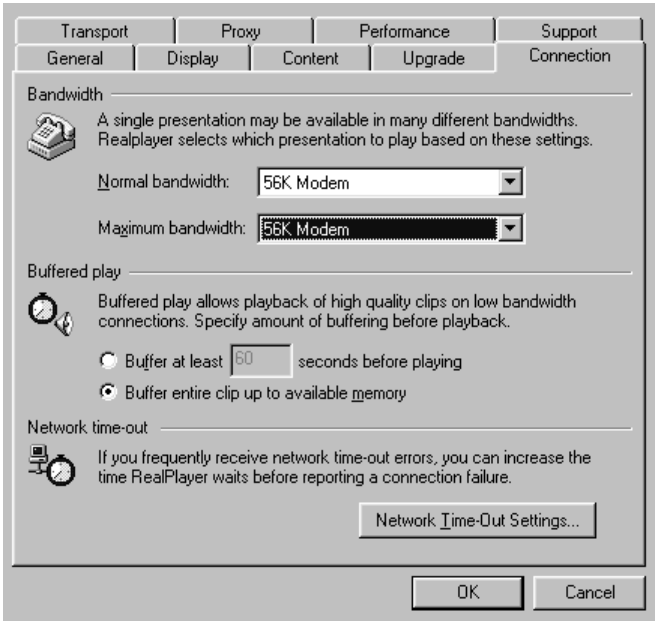
presentations, providing many features for laying out and timing clips. Using SMIL when delivering RealAudio or RealVideo clips from a Web server is optional, but it can provide many useful features such as the bandwidth selection feature described here.

Additional Information

For a full explanation of SMIL and its many features, see the SMIL chapter in *RealSystem G2 Production Guide*.

When you encode a set of single-rate clips for different bandwidths, you can use SMIL to specify the bandwidths. Your Web page then needs just one link to the SMIL file rather than a separate link to each clip. When a visitor to your Web page clicks the SMIL link, that user's RealPlayer reads the bandwidth choices and chooses the clip to play based on its bandwidth preference. This preference is set during RealPlayer installation and is also available on the **Connection** tab under the **Options>Preferences** command.

RealPlayer Bandwidth Preference

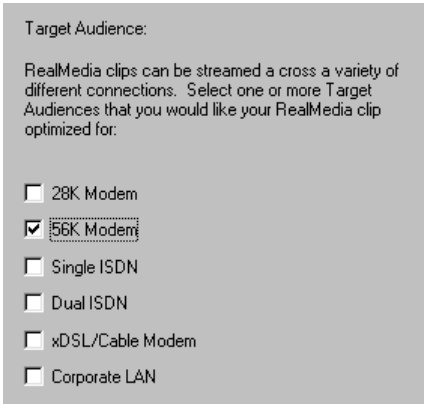


Choosing Target Bit Rates

When you encode a RealAudio or RealVideo clip, you choose a clip bandwidth in the RealProducer wizard dialog. Encode as many clips from the same source

file as necessary to support the bandwidths you want to target. You might encode a clip for 28 Kbps modems, another for 56 Kbps modems, and a third for dual-ISDN connections, for example. Save each clip with a different file name. Once you have encoded all the clips you want, you are ready to create your SMIL file.

Target Audience Dialog in RealProducer Recording Wizard



Writing the SMIL File

Write your SMIL file with any word processor or text editor that can save files as plain text. Base your file on the following example, which shows a complete SMIL file that enables RealPlayer to choose between six clips encoded for different bandwidths:

```
<smil>
  <body>
    <switch>
      <ref src="myclipcm.rm" system-bitrate="220000"/>
      <ref src="myclipcl.rm" system-bitrate="150000"/>
      <ref src="myclipdi.rm" system-bitrate="80000"/>
      <ref src="myclipsi.rm" system-bitrate="45000"/>
      <ref src="myclip56.rm" system-bitrate="32000"/>
      <ref src="myclip28.rm" system-bitrate="20000"/>
    </switch>
  </body>
</smil>
```

The following table explains this example. It shows that `myclipcm.rm` is for fast cable modems. The "SMIL File Bit Rate Specification" column lists the figures to use as the `system-bitrate` values. For a 28.8 Kbps clip, for example, use `20000`

to indicate that 20,000 bits per second is the minimum bandwidth needed to play the clip. This is below the full connection speed (28.8 Kbps, which equals 29491 bps) because a clip does not consume the entire connection bandwidth. Some bandwidth is reserved for network overhead, data loss, and so on.

Example Clips and Bandwidth Targets

Clip File Name	Connection Type	Clip Bandwidth	SMIL File Bit Rate Specification
myclipcm.rm	xDSL/cable modem	220 Kbps	220000
myclipcl.rm	Corporate LAN	150 Kbps	150000
myclipdi.rm	Dual ISDN	80 Kbps	80000
myclipsi.rm	Single ISDN	45 Kbps	45000
myclip56.rm	56.0 Kbps modem	32 Kbps	32000
myclip28.rm	28.8 Kbps modem	20 Kbps	20000

Of course, your SMIL file can support a different number of bandwidths and use different file names. For example, the following SMIL file supports 28 Kbps and 56 Kbps modem connections:

```
<smil>
  <body>
    <switch>
      <ref src="audio56.rm" system-bitrate="32000"/>
      <ref src="audio28.rm" system-bitrate="20000"/>
    </switch>
  </body>
</smil>
```

In this example, users with 28.8 Kbps modems receive the clip `audio28.rm`. Users with 56 Kbps modems or faster connections receive the clip`audio56.rm`.

SMIL File Extension

Save your SMIL file with the file extension `.smil` (recommended) or `.smi`. The file can have any name, such as `myclips.smil`. Make sure that when you save the SMIL file as plain text, your text editor does not add the extension `.txt`. If this happens, rename the file from the operating system.

Pointers on Creating a SMIL File

Keep the following important points in mind when creating a SMIL file.

Always List System Bandwidth Options from Highest to Lowest

RealPlayer evaluates SMIL bandwidth options in the order listed, selecting the first viable option even if subsequent options suit it better. Therefore, always list clips from highest bandwidth to lowest, as shown in the examples above. If a 28.8 Kbps option is first, for example, a RealPlayer with a fast dual-ISDN connection will choose that option because it is the first viable option listed.

Also ensure that the last option satisfies the lowest bandwidth connection you want to support. If you do not list an option suitable for 28.8 Kbps modems, for example, RealPlayers connected through those modems will not play any of the clips.

Give Full URLs if Clips and SMIL File are in Different Directories

The src attributes in the SMIL file examples above list only the clip file names, as shown here:

```
<ref src="audio56.rm" system-bitrate="32000"/>
```

These examples assume that the clips and the SMIL file are in the same Web server directory. If your clips are not in the same directory as the SMIL file, give the full URL to the clips within the SMIL file. Here's an example:

```
<ref src="http://www.company.com/media/audio56.rm" system-bitrate="32000"/>
```

Follow SMIL Syntax Rules

SMIL has a more rigid syntax than HTML. Using authoring practices common to HTML can create an unusable SMIL file. Observe these syntax pointers when writing a SMIL file:

- All text except for file names must be lowercase. For example, the following line, which uses uppercase and mixed case text, causes an error message in RealPlayer:

  ```
  <REF SRC="audio56.rm" System-Bitrate="32000"/>
  ```

- The src values in the SMIL file must match the referenced file names exactly. Differences in case will cause an error. For example, if the file on the Web server is actually `AUDIO56.RM`, a reference to `audio56.rm` causes an error message.

> **Tip**
>
> RealNetworks recommends that you always use lowercase file names for clips and the SMIL file.

- All attribute values must be quoted. For example, a SMIL file that contains the following line will not play in RealPlayer:

  ```
  <ref src=audio56.rm system-bitrate=32000/>
  ```

- Note that the ref tags end with a forward slash. Leaving out this slash, as in the following examples, makes the SMIL file unplayable:

  ```
  <ref src="audio56.rm" system-bitrate="32000">
  ```

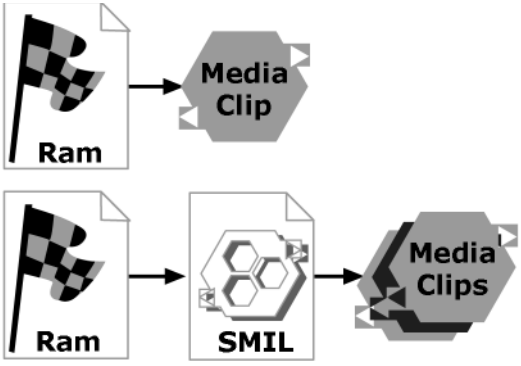
Additional Information

For more on SMIL file syntax, see the technical blueprint, *RealSystem G2 Syntax Style Guide*.

Creating a Ram File

A Ram file lists the location of your clip or SMIL file. You then link your Web page to the Ram file. When visitors click this link, their RealPlayers launch and play the clip or clips listed in the Ram file or SMIL file.

Ram File Refers to Clips or SMIL File



➤ **To create a Ram file:**

1. Open any editor or word processor that can save files as plain text. On the top line, enter the full URL of the SMIL file or the media clip. Specify the HTTP protocol and the Web server name, along with the SMIL file or media clip. Here is an example of a link to a single clip:

   ```
   http://www.company.com/media/video1.rm
   ```

   This example shows a link to a SMIL file:

   ```
   http://www.company.com/media/myclips.smil
   ```

To deliver a few clips or SMIL files in sequence, list the URLs in their playback order. You might list three clips, two SMIL files, a clip and then a SMIL file, or any other combination. For example:

```
http://www.company.com/media/video1.rm
http://www.company.com/media/video2.rm
http://www.company.com/media/morevids.smil
```

Note

Keep in mind that each clip needs to be specified in either a SMIL file or the Ram file, but not both.

2. Add comments to the Ram file (optional).

   You can add a comment to a Ram file by using a pound sign ("#") as the first character on a line. The following example shows two lines commented out of a Ram file:

   ```
   # Two videos and a SMIL presentation
   # streamed from my Web server.
   http://www.company.com/media/video1.rm
   http://www.company.com/media/video2.rm
   http://www.company.com/media/morevids.smil
   ```

3. Save the Ram file as plain text with a `.ram` extension, such as `myclips.ram`.

4. Move the Ram file, as well as your clips or SMIL file, to your Web server by your standard method, such as FTP. Contact your Web server administrator if you need help doing this.

5. Link your Web page to the Ram file with an HTML hyperlink such as this:

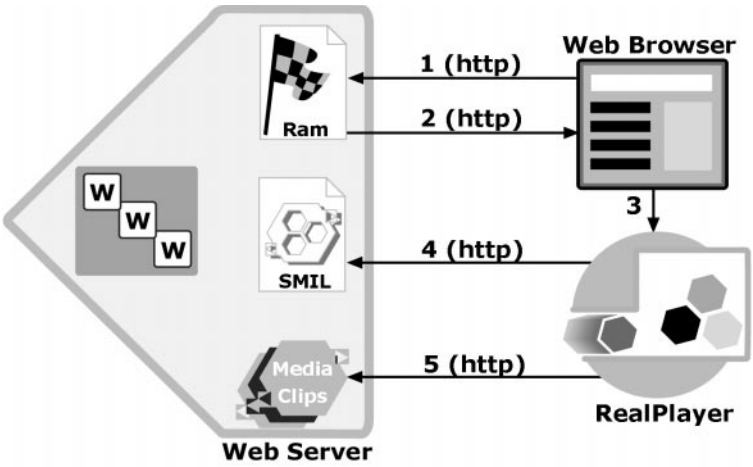
   ```
   <a href="http://www.company.com/media/myclips.ram">click for video</a>
   ```

   Be sure to tell your Web page visitors that they need RealPlayer G2 or higher to play your clips. You can also include a RealPlayer download link button so that visitors can get RealPlayer from RealNetworks. You can read RealNetworks' trademark policy and get RealSystem G2 logos from **http://www.realnetworks.com/company/guide/index.html**.

How RealPlayer Interacts with a Web Server

The following figure illustrates the process of requesting a presentation from a Web server. This shows how all the pieces (Ram file, SMIL file, and clips) fit together to deliver your clips from the Web server to RealPlayer G2.

Requesting Clips from a Web Server



1. When the user clicks the link to the Ram file in your Web page, the user's browser requests the Ram file from the Web server.
2. The Web server downloads the Ram file to the browser.
3. The Ram file extension (`.ram`) causes the Web browser to launch RealPlayer as a helper application.
4. RealPlayer receives the Ram file and requests the contents of the Ram file from the Web server. This may be a SMIL file, a single clip, or a sequential group of clips.
5. If you're using a SMIL file that lists clips for different bandwidths, RealPlayer evaluates the choices and determines which clip to receive. It then requests and plays back that clip from the Web server.

RealSystem Manuals

For full information on producing content for RealSystem G2, get the following manuals. You can download HTML and PDF versions of these manuals from **http://service.real.com/help/library/encoders.html**.

- *RealSystem G2 Production Guide*

  This guide explains the basics of creating content for RealSystem G2, covering RealAudio, RealVideo, Flash, SMIL, bandwidth, presentation URLs, and more.

- *RealPix Authoring Guide*

  This guide explains how to create a RealPix presentation to stream still images in JPEG or GIF format.

- *RealText Authoring Guide*

  This guide tells how to create and stream RealText.