

Basic Server Plus™ Administration Guide

Version 5.0

RealNetworks, Inc.

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Chapter 1 Overview

The Basic Server Plus provides an easy and quick solution for streaming media and allows your Internet or intranet users to easily access multimedia content in real time.

Superb audio and video quality, high transmission reliability, great broadcast scalability, and flexible modes of delivery have made RealNetworks software the market leader for professional live and on-demand streaming media on the Internet or your intranet. Basic Server Plus provides a proven, reliable platform for multimedia streaming (up to a maximum of 60-streams simultaneously) and allows you to grow as your needs and use expand.

An updated version of this document is available online at the RealNetworks Web site at:

www.real.com

Using This Guide

This *Basic Server Plus™ Administration Guide* explains how to install, configure, and operate the Basic Server Plus product. Easy step-by-step installation, configuration, and customization procedures for the server and each feature allow you to tailor your system and integrate it seamlessly with your network. Content and template samples are included when you install Basic Server Plus.

This guide is intended for the technical system administrator who is familiar with the Internet or intranet and who understands how to work with .html and .rm files. IS managers, server administrators, web masters and others providing Web pages for the Internet and intranet may also find this document useful.

Conventions

This manual uses the following conventions:

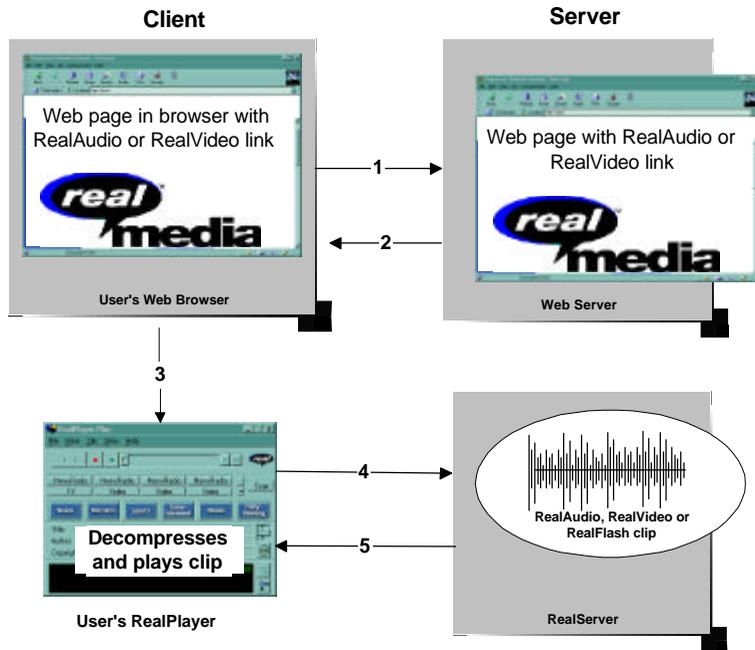
Command	Monospace font represents commands to be typed or information displayed on the screen.
<file name>	Angle brackets show where to insert information, such as the name and location of a file. Note: the brackets are not required when typing the command.
[]	Square brackets show optional command arguments. Note: the brackets are not required when typing the command.
Bold	Bold font is used for names of files, directories, commands, and options.

Conceptual Overview

Basic Server Plus employs a client/server architecture to provide features such as live broadcasting, interactive stream control (fast-forward and seek options), efficient use of network bandwidth, and scalability that can support large numbers of concurrent users.

Sophisticated compression, buffering, and transmission techniques allow Basic Server Plus to stream up to a maximum of 60 concurrent audio, video, and animation streams to RealPlayers, which continuously decompress and play back the stream in real time. Users can watch or listen to entire programs or navigate on-demand clips to experience what they want when they want it.

The following figure shows how Basic Server Plus components work together to deliver a typical RealAudio or RealVideo clip to a user (client).



1. When a user visits your Web page and clicks a link to a RealAudio or RealVideo file, the Web browser requests the metafile from your Web server.
2. Your Web server sends the metafile to the user's Web browser and based on the metafile extension, sets the MIME type.
3. Based on the MIME type, the Web browser starts the user's RealPlayer as a helper application and passes it the metafile.
4. The RealPlayer reads the first URL from the metafile and requests that clip from the Basic Server Plus at your Web site.
5. Your Basic Server Plus streams the clip to the user's RealPlayer, which plays the clip in real-time.

No messages pass between your Basic Server Plus and your Web server.

Components of Basic Server Plus

Basic Server Plus includes one or more tools for publishing, editing, and serving media files, for monitoring and managing your secured Web site.

The following table lists the components of a Basic Server Plus:

Component	Description
Tools	The tools for modifying RealAudio and RealVideo clips: RMTTools, RMMerge, RMEdit, RMPaste, RMCut, and RMDump.
RealPublisher™	<p>The program that creates RealAudio and RealVideo from a digitized audio clip, live audio input, digitized video clip, or live video input. RealPublisher allows the creation of synchronized multimedia presentations.</p> <p>RealPublisher is included with Basic Server Plus. RealPublisher creates RealAudio and RealVideo clips, creates HTML, and can publish your Web page to a remote server.</p>
RealEncoder™	<p>The program that creates RealAudio and RealVideo from a digitized audio clip, live audio input, digitized video clip, or live video input. RealEncoder allows the creation of synchronized multimedia presentations.</p> <p>RealEncoder is available for free download from the RealNetworks Web site. It can create clips but it cannot automatically publish them to your Web site.</p>
Basic Server Plus	The server program that delivers live and on-demand RealAudio, RealVideo, and RealFlash clips over a network. One Basic Server Plus can simultaneously deliver different clips to many RealPlayers.
System Manager	The program that allows you to track current usage of the server, configure the server, determine the most popular clips, and view the server loads in real time.
Log Files	All Basic Server Plus activity is recorded in log files. Log file data can be analyzed for reporting purposes.

Other Software

Basic Server Plus can be used as a standalone Internet or intranet system, but works with other software to provide a complete Web-based solution.

Web server The server program that delivers Web pages to clients. Typically, RealAudio and RealVideo clips are accessed from a Web browser when a user clicks a link on a Web page. The Web server also delivers the visual part of Synchronized Multimedia presentations.

Basic Server Plus 5.0 works with all popular Web servers.

Client Software

Basic Server Plus interfaces with the following software on your clients' machines to deliver media.

RealPlayer The client program that enables users to view and listen to RealAudio, RealVideo, and RealFlash clips. The RealPlayer can be used as a standalone application or as an ActiveX or Netscape Plug-in.

Web browser The client program that enables users to view Web pages. The Web browser is also used to display the visual part of Synchronized Multimedia presentations and can contain integrated the RealPlayer Plug-in.

Basic Server Plus works with all popular Web browsers.

Basic Server Plus Media Files

Basic Server Plus uses several file types, each identified by a specific file extension. A brief overview of the files and their file extensions is listed below.

RealAudio clip (.ra) Audio encoded to RealAudio format. This type of file is delivered by Basic Server Plus and is played on a

	RealPlayer.
RealVideo clip (.rm)	Audio and video encoded to RealVideo format. This file can contain multiple streams, including audio, video, image maps, and events. This type of file is delivered by Basic Server Plus and is played on a RealPlayer.
RealAudio or RealVideo metafile (.ram)	Connects a Web page to one or more RealAudio or RealVideo clips. This metafile is located on your Web server and is linked to from your Web page. A metafile contains the URL(s) for one or more clips stored on your Basic Server Plus.
RealPlayer Plug-in metafile (.rpm)	Like a RealAudio or RealVideo metafile (above), but used with RealPlayer Plug-in for Netscape Navigator and Internet Explorer 3.0 or later.
RealFlash clip (.swf)	Animation in RealFlash format.

Each of these file types is described in greater detail in the following sections.

RealVideo and RealAudio Clips

RealAudio and RealVideo are highly compressed files that are formatted to deliver the best possible sound and video over a limited-bandwidth connection.

- A RealAudio clip is a file (.ra) or live broadcast containing sound encoded in one of the RealAudio formats.
- A RealVideo clip is a file (.rm) or live broadcast containing sound and/or video encoded in one of the RealVideo formats.

Because there is no single best format for delivering audio and video, several formats are available. You can use RealPublisher and RealEncoder to provide formats that are optimized for different types of content and connection. You can choose to provide a clip in one or more formats based on the type of content and the available bandwidth. For example, you would use a different format to deliver speech over a 14.4 Kbps modem than you would to deliver a music video over an ISDN connection.

RealFlash Animation Clips

RealFlash is a highly compressed file that is formatted to deliver the best possible animation over a limited bandwidth connection. Basic Server Plus provides the only streaming solution available for RealFlash synchronized with audio. Combining RealFlash with RealAudio for fully synchronized low-bandwidth animation-and-audio allows content providers to provide long-form animated presentations over their Internet or corporate intranet.

Customizable Features of RealAudio and RealVideo Files

Image Maps

RealVideo allows users to interact with video content using clickable image maps.

An image map is an active area that overlays the RealVideo display. When clicked by the user, this “hot spot” sends a URL to the user’s Web browser. The Web browser goes to the new Web page without interrupting the RealPlayer.

Image maps are fully customizable; actions can be connected to rectangular, circular or polygonal content regions and can be varied over time intervals that you define when you encode the clip.

Encoding RealAudio and RealVideo Clips

Media files need to be encoded into RealPlayer format using one or more of the many codecs available with any installation of RealPublisher or RealEncoder.

Encoding a RealAudio or RealVideo clip is a one-way process; you cannot convert a RealAudio or RealVideo file back into the original source format. When you encode a RealAudio or RealVideo clip, the original file is not modified. If you want to be able to encode media in more than one format, it is important that you archive (save) the original source.

It is possible to modify various attributes of RealAudio and RealVideo clips without reencoding them. For example, you can override the title, author, and copyright of an encoded clip. For more information, see the customization sections in Chapter 8, “Configuring Your Web Site” or review the *RealAudio and RealVideo Content Creation Guide*.

Title, Author and Copyright

RealAudio and RealVideo clips include text strings for the title, author, and copyright. This text is displayed by RealPlayer when a clip is played. Although the player usually labels the text as title, author, and copyright, the text you supply when you encode the clip is displayed. After encoding, you can override encoded values using the metafile or RMEdit and RMTools.

Live Encoding and Live Broadcasting

The source for a RealAudio or RealVideo clip can be prerecorded file or live input. The encoded RealAudio or RealVideo clip can be stored as a file for later use, broadcast live over a network, or simultaneously stored as a file and broadcast live. If simultaneously encoding and broadcasting, you can save (or “archive”) the live broadcast in the encoded format.

All versions of RealEncoder and RealPublisher can encode a live input source. For details about encoding, refer to the *RealAudio and RealVideo Content Creation Guide*.

System Requirements

This section describes the hardware and software required to run Basic Server Plus.

Hardware Requirements

Ensure that the machine on which you install Basic Server Plus is secure and is not accessible to unauthorized users.

Memory Requirements

Basic Server Plus 5.0 requires approximately 6 MB of available RAM plus 40 KB RAM for each simultaneous stream. For example, to support 60 simultaneous connections (the maximum number supported by Basic Server Plus 5.0) requires approximately 10 MB of available memory.

CPU Requirements

Basic Server Plus has a modest CPU impact. A 120 MHz or faster processor is required. For example, a 60-stream Basic Server Plus operating on a 120 MHz Pentium computer consumes less than 30% of the CPU cycles. With enough

network bandwidth, the same computer can deliver all 60 28.8 Kbps streams simultaneously.

Disk Space Requirements

The Basic Server Plus program files require about 3 MB of disk space. You also need disk space for the content files you are serving. See also the *RealAudio and RealVideo Content Creation Guide*.

Bandwidth Requirements

Bandwidth requirements for audio and video depend on the encoding/decoding formats used. A T1 line is recommended for all installations.

Encoding Requirements

See the *RealAudio and RealVideo Content Creation Guide* for a list of hardware requirements for encoding media clips.

Other Requirements

You'll need a Web server for presenting your content.

Compatible Web Servers

Although a Web server is required to make the best use of RealAudio and RealVideo, it need not be installed on the same machine as Basic Server Plus.

To make the best use of RealAudio and RealVideo, you must have a Web site and a registered domain.

To ensure that the media files are accessible from links embedded in your Web pages, your Web server must be configured to recognize the various MIME types of your anticipated audience. Basic Server Plus can be configured to work with any Web server that supports configurable MIME types.

Basic Server Plus is compatible with the following Web servers

- Apache 1.1.1 and later versions
- CERN HTTPD version 3.0
- EMWC HTTPS version 0.96
- HTTPD4 Mac
- Mac HTTP
- Microsoft Internet Information Server
- NCSA HTTPD versions 1.3 or 1.4
- Netscape Netsite and Netscape Enterprise Server
- O'Reilly Website NT
- Spinner versions 1.0b12 through 1.0b15
- Webstar and Webstar PS

To view a current list of Web servers that are compatible with Basic Server Plus 5.0, visit the RealNetworks Web site at:

www.real.com

Chapter 2 Installing Basic Server Plus

This chapter explains how to install your Basic Server Plus, how to start, stop and test your server, and how to get help if you have installation problems.

There are three options for installing Basic Server Plus:

- Installing on Windows platforms
- Installing on UNIX platforms
- Upgrading from a previous version

Procedures for each option can be found in subsequent sections of this chapter, but before turning to the appropriate procedure, please review the installation notes.

Installation Notes

The Basic Server Plus setup program creates directories and copies the program, configuration, and sample content files into them. The Windows and UNIX installation sections list the default file and directory structures created during setup.

In general, you should not store media files in directories on your Web server. The Basic Server Plus is independent of and does not communicate with the Web server.

Smart Networking

Basic Server Plus 5.0 can broadcast to players behind firewalls by transmitting all data in HTTP over port 80 after more efficient transports have failed. Setup

asks if you would like to enable Smart Networking on port 80. The default answer is “yes.” It is strongly recommended that you take full advantage of this feature to maximize the viewership of your content.

Normally you cannot use Smart Networking if your Basic Server Plus is installed on the same machine as your Web server. The second bullet item below describes a solution.

If you enable this feature, the setup program checks port 80 for the presence of a Web server. If a conflict is detected, you can enable Smart Networking in one of two ways:

- You can move the Basic Server Plus to another machine and activate Smart Networking by setting the **HTTPPort** setting in the server configuration file (**server.cfg**).
- You can configure the computer to have two IP addresses (consult your system documentation for details), then configure Basic Server Plus to use the alternate IP address by setting the **IPBindingList** and **HTTPPort** settings in the **server.cfg** file. Note that Microsoft Internet Information Server (IIS) version 3.0 will bind to all IP addresses, regardless of this setting. IIS version 4.0 does allow binding to multiple IP addresses.

Testing RealServer with a Sample Media Clip

After installing Basic Server Plus, it is recommended that you test your installation by playing a sample media clip. You can do this easily from the Administration page, or you can use a Web browser to manually test the clip:

To play a test clip manually:

1. In a Web browser, type the following URL:

```
http://<servername>:<port>/ramgen/<filename>.rm
```

where **<servername>** is the name of your Web server, **<port>** is the port number it's using, and **<filename>** is the name of the file to be served. The key word “**ramgen**” tells RealServer to simulate .ram file behavior (.ram files are described in Chapter 8, “Configuring Your Web Site”). Be sure to type “**ramgen**” in lowercase. You can also include optional arguments, as described in “Customizing Calls to Video and

Audio Content” on page 107. For example, if the URL you would reference in the .ram file or the RealPlayer is:

pnm://www.server1.com/hello.rm

the URL you would type in the browser to test the file is

http://server1:7070/ramgen/hello.rm

2. If the clip plays correctly, the server is working properly.

If the media file does not play at all, or if the performance or playback quality is poor, check your log files for clues. To learn about log files, see Chapter 9, “RealServer Log Files.”

Installing Basic Server Plus on Windows Platforms

When installing Basic Server Plus, close all programs and turn off virus protection software to prevent installation conflicts.

To install from the Web

Basic Server Plus is available on the RealNetworks Web site at:

www.real.com

Follow the download instructions there.

To install Basic Server Plus from a CD-ROM

1. Insert the Basic Server Plus CD-ROM in your computer.
2. In Windows Explorer, click the icon for your CD-ROM directory and double-click the Install Basic Server Plus icon.
3. Follow the screen prompts on the Basic Server Plus Setup screen.

When prompted for Customer Name and License Key, use cut and paste. Enter them exactly as provided (via email) by RealNetworks or your RealNetworks reseller.

Basic Server Plus License Agreement

The setup program displays information about your server license. For example:

```
Your License has the following features:  
Valid License  
Version:                2  
Platform:               NT  
Start Date:             5/23/1997  
Expiration Date:        5/23/1999  
Licensed Streams:      10  
User Streams:           0  
Multi-Media:           Enabled  
Live:                   Enabled  
ISP Hosting:            Disabled  
ISP Only:                Disabled  
User Max Limit:         Disabled  
Platform Checking:      Disabled  
Intranet Only:          Disabled  
Remote License:         Disabled  
Remote Streams w/ Local Lic: Disabled  
Local Streams:          Enabled  
Remote Streams w/ Remote Lic: Disabled  
Dynamic ISP licensing:  Disabled  
Restricted IP Access:   Disabled  
RealFlash:              Disabled
```

Basic Server Plus Windows Directories and Files

The Basic Server Plus setup program creates the following directories and copies files into them:

Real\Server (default server directory)

- \bin**
- \content**
- \docs**
- \logs**
- \plugins**

Refer to the following sections for descriptions of the files that are copied to each of these directories during installation.

Real\Server Directory

The **Real\Server** is the default root directory for Basic Server Plus. This directory contains the following ASCII text files:

File	Description
server.cfg	The configuration settings for the server.

Bin Directory

The **bin** directory contains the following executables and libraries:

File	Description
crtsvc.exe	The service utility for installing Basic Server Plus (for Windows NT only).
delsvc.exe	The service utility for uninstalling Basic Server Plus (for Windows NT only).
pnservice.exe	The Basic Server Plus program.
raconv.exe	The bandwidth negotiation file converter, which converts RealAudio and RealVideo files to a bandwidth negotiation naming scheme.
rmfile.exe	The live file creation utility for creating (archiving) files from live broadcasts.
svrctrl.exe	Server Control Application for starting and stopping Basic Server Plus.
svrctrl.ico	Server Control Application icon.
swftune.exe	A command-line utility for altering the bit rate of a RealFlash file.

Content Directory

The **content** directory contains sample media files. This directory is also the location in which you should save content files you create.

Note: You should not store media files in directories on your Web server. The Basic Server Plus is independent of and does not communicate with the Web server.

Docs Directory

The **docs** directory contains the following ASCII files:

File	Description
license.txt	Server license agreement.
problem.txt	A list of known server problems.
readme.txt	Information about server installation and operation.

Logs Directory

The **logs** directory contains ASCII text files.

File	Description
log.txt	This file is a placeholder for the log directory.
Pnaccess.log	The access log, which logs information about clients that have connected to the server. If deleted or renamed, this file is dynamically created when you start Basic Server Plus.
Pnerror.log	The error log, which logs informational and error messages about server operation. If deleted or renamed, this file is dynamically created when you start Basic Server Plus.

Plugins Directory

The **plugins** directory stores any plug-in libraries used by Basic Server Plus.

File	Description
swf3250.dll	RealFlash plug-in library.
ppvf3250.dll	Administration page
stat3250.dll	Status page
tsfs3250.dll	Test sample content page

Installing Basic Server Plus on UNIX Platforms

Server installation files are available for several UNIX platforms. After selecting the appropriate installation file, you need to launch the setup program. Detailed instructions follow:

Accessing the Basic Server Plus Distribution File from the Web

Basic Server Plus is available from the RealNetworks Web site at

www.real.com

Follow the instructions on the download page.

Uncompress the file with the following command, then refer to the section titled “Running the Setup Program ” on page 27:

```
gunzip -c <filename>.tar.gz | tar xfv -
```

RealNetworks may send your Customer Name and License Key via e-mail, depending on the server package you’ve chosen. If so, cut and paste these values from the email to avoid typographical errors.

Accessing the Basic Server Plus Installation Files on CD-ROM

UNIX-based operating systems require you to mount a new file system or device before running the Setup program. The commands needed to mount a CD-ROM differ slightly depending on the system. Follow the appropriate mounting instructions below and then start the setup program.

To mount the CD-ROM on Sun Solaris

1. Insert the CD-ROM and wait for the operating system to mount the CD-ROM.

If you are running File Manager, a window displays the disk contents.

2. If you are not running File Manager, in a shell type:

```
cd /cdrom/pn_server
```

To mount the CD-ROM on all other UNIX-based systems

1. Insert the CD-ROM in the drive.
2. Log in as super-user.
3. From a shell, check for a **/cdrom** directory to mount the CD on. If one does not already exist, type:

```
mkdir /cdrom
```

4. Type the appropriate command to mount the CD-ROM:

Operating System	Command
Sun SunOS	<code>mount -rt hsfs /dev/sr0 /cdrom</code>
DEC UNIX	<code>mount -t cdfs -o noversion /dev/rz3c /cdrom</code>
SGI IRIX	<code>mount -rt iso9660 /dev/scsi/sc0d710 /cdrom</code>
IBM AIX	<code>mount -rv cdrfs /dev/cd0 /cdrom</code>
Hewlett-Packard HP-UX	<code>mount -rF cdfs /dev/dsk/c0t2d0 /cdrom</code>
FreeBSD	<code>mount -rt cd9660 /dev/cd0a /cdrom</code>
BSD/OS	<code>mount -rt cd9660 /dev/sd1 /cdrom</code>
Linux	<code>mount -rt iso9660 /dev/hdc /cdrom</code>

Running the Setup Program

After mounting the CD-ROM and uncompressing the distribution file, you need to launch it as an install program. During installation, the setup program can set some default options, such as passwords and default ports, for you or you can customize these configuration settings.

To start the install program

1. Change directory to the CD-ROM:

```
cd /cdrom
```

Sun Solaris only: Change directory to the `pn_server` directory:

```
cd /cdrom/pn_server
```

2. Change directory to the server directory:

```
cd server
```

HP-UX only: HP-UX computers cannot run `setup` from the CD-ROM.

Copy the `server.tgz` file to a directory on the computer and uncompress it, then extract the resulting file using the following commands:

```
gunzip -c <filename>.tar.gz | tar xfv -
```

3. From the directory in which you untarred the distribution file, run the `./setup` program. The following list of navigational controls are displayed:

Key Behavior

N Next

P Previous

X Exit

F Finish (Express Installation)

H Help

4. Type the **Customer Name** as provided (via e-mail or in the application packaging) by RealNetworks or your RealNetworks reseller.
5. Type **[N]**ext to continue.
6. Type the **License Key** exactly as provided (via e-mail or in the application packaging) by RealNetworks or your RealNetworks reseller. Use cut and paste if possible to avoid typographical errors.
7. Type **[N]**ext to continue.
8. Read the Server License agreement. Type **[N]**ext to accept the terms of the license, or any other key to cancel the installation.

9. The setup program displays information about your server license. Type [N]ext to continue.
10. All the information necessary for installation has been provided.
11. Press Express [F]inish to accept the default installation options or press [N]ext to set the options yourself.

If you are setting the options yourself:

1. Type a monitor password, or accept the default (letmein).
2. Type [N]ext to continue.
3. Type a Live Encoder password, or accept the default (letmein).
4. Type [N]ext to continue.
5. Type a Live File Archive password, or accept the default (letmein).
6. Type [N]ext to continue.
7. Type the TCP port on which the Basic Server Plus should listen, or accept the default (7070).
8. Type [N]ext to continue.
9. Type the e-mail address to which the Basic Server Plus should send system error messages.
10. Type [N]ext to continue.
11. Type the e-mail server hostname that Basic Server Plus should use for e-mail messaging service.
12. Type [N]ext to continue.
13. Type [Y]es to enable Smart Networking. For more information, see “Smart Networking” on page 27.
14. Type [N]ext to continue.
15. Type the user ID for running the server.
16. Type [N]ext to continue.
17. Type the group ID for running the server.
18. Type [N]ext to continue.
A screen displays the configuration settings you selected.
Verify the Basic Server Plus configuration settings you chose.
19. Type [N]ext to begin copying files to your directory.
A screen displays information about how to contact RealNetworks for help.
20. Type [N]ext to continue.

21. Type E [X]it to complete the installation.

After installing Basic Server Plus, it is recommended that you test your installation by playing a sample media clip. For instructions, see “Testing Basic Server Plus with a Sample Media Clip” on page 17.

Basic Server Plus License Agreement

The setup program displays information about your server license. For example:

Your License has the following features:	
Valid License	
Version:	2
Platform:	UNIX
Start Date:	5/23/1997
Expiration Date:	5/23/1999
Licensed Streams:	10
User Streams:	0
Multi-Media:	Enabled
Live:	Enabled
ISP Hosting:	Disabled
ISP Only:	Disabled
User Max Limit:	Disabled
Platform Checking:	Disabled
Intranet Only:	Disabled
Remote License:	Disabled
Remote Streams w/ Local Lic:	Disabled
Local Streams:	Enabled
Remote Streams w/ Remote Lic:	Disabled
Dynamic ISP licensing:	Disabled
Restricted IP Access:	Disabled
RealFlash:	Disabled

Basic Server Plus Directories and Files on UNIX Platforms

The Basic Server Plus setup program creates the following directories and copies files into them.

```
pnserver (default root directory)  
  /bin  
  /content  
  /docs  
  /logs  
  /plugins
```

Refer to the following sections for descriptions of the files that are copied to each of these directories during installation.

The Root Installation Directory

The default root installation directory contains the following ASCII text files:

File	Description
server.cfg	The configuration settings for the server.

The bin Directory

The **bin** directory contains the following executable files:

File	Description
pnserver	The Basic Server Plus executable.
raconv	The bandwidth negotiation file converter, which converts RealAudio files to a bandwidth negotiation naming scheme.
rainfo	Utility that displays header information (title, author, copyright) about a clip.
rmcut	Cuts a specific portion of a RealVideo file without changing the original source.
rmedit	Modifies the title, author, copyright, comment, MIME type, or stream name. It can also be used to print the current values for the file or stream.
rmfile	The live RealMedia file creation utility, which creates (archives) files from live broadcasts.
rmpaste	Combines two or more RealVideo files.
rssm	System Manager executable.
swftune	A command-line utility for altering the bit rate of a RealFlash file.

The content Directory

The **content** directory contains sample media files. This directory is also the location in which you should save content files you create.

Note: You should not store media files in directories on your Web server. The Basic Server Plus is independent of and does not communicate with the Web server.

The docs Directory

The **docs** directory contains the following ASCII files:

File	Description
PROBLEM	A list of known server problems.
README	Information about server installation and operation.
License.txt	Server license agreement.

The logs Directory

Until you launch the Basic Server Plus, this directory is empty. The **logs** directory contains the log files in ASCII text format. These files are dynamically created when you launch the Basic Server Plus.

File	Description
pnaccess	The access log contains information about clients that have connected to the server.
pnerror	The error log lists information and error messages about server operation.
pnserver.pid	When the server is running, this file contains the server's current process ID (PID) When the server is not running, this file contains the server's last-used PID.

The plugins Directory

The **plugins** directory stores any plug-in libraries used by Basic Server Plus.

File	Description
swf3250.dll	RealFlash plug-in library.
ppvfs.so.5.0	Administration page
statfs.so.5.0	Status page
tsfs.so.5.0	Test sample content page

Upgrading Basic Server Plus From a Previous Version

If you are upgrading from a previous version of Basic Server Plus, you should install the new version in addition to, and not instead of, the original version. Once you have installed, configured, and tested the new Basic Server Plus, you can then replace your old version with the new installation.

Installing with a Previous Version

To install without replacing an existing Basic Server Plus

1. Install the new version in a new directory.
2. In your original Basic Server Plus configuration file (**server.cfg**) note the **PnaPort** entry. (For information on editing the settings in this file, see Chapter 4, “Configuring and Maintaining Basic Server Plus.”) If the setting is not present, Basic Server Plus is using the default port 7070. You need to use a different port number for testing the new Basic Server Plus installation. To use a different port number, add or edit the following line in the **server.cfg** file for the new installation:

```
PnaPort    7072
```

Be sure to specify a port that is not used by another configuration parameter such as **ResolverPort**.

3. Send a test URL to the new Basic Server Plus. Add **:7072** (as in step 2, above) to the pnm URL.

Note: You cannot run two versions of Basic Server Plus simultaneously as a service on Windows NT. Run the new version of Basic Server Plus from a command window until you are ready to replace the original version with the new version.

```
pnm: //<my.server>:7072/144.rm
```

Configuring the New Version

After you have tested your new version of Basic Server Plus, configure it to match the original version.

To configure the new Basic Server Plus

1. Copy the **BasePath** setting from the **server.cfg** file of your original Basic Server Plus to the **server.cfg** file for the new version. It is best to use an absolute base path for the **BasePath** entry.
2. Send a test URL to the new Basic Server Plus. Remember to add :7072 to the pnm URL:

```
pnm://<my.server>:7072/welcome.rm
```

Replacing the Old Version with the New Version

When you are satisfied that the new Basic Server Plus installation supplies existing content correctly, stop the original server and move the new server into production.

To replace the old version with the new version

1. Stop both instances of Basic Server Plus. For instructions on how to do this, see Chapter 3, “Using Basic Server Plus.”
2. Rename the directory of original installation to something like **/old**.
3. Rename the directory for the new installation to the name of the original installation.
4. Copy all appropriate settings from the original configuration file into the new configuration file.
5. Set the **PnaPort** entry to its original value (default 7070).
6. Change the Web page links back to the original port number.

Troubleshooting Basic Server Plus Installation

This section describes the most common installation problems.

“Incorrectly Entered Customer Name or License Key”

If you enter the wrong customer name or license key, the setup program quits.

If you typed in the customer name or license key, ensure you did not make any typing errors. If you cut and pasted in the customer name and or license key from the e-mail message you received from RealNetworks, make sure that you pasted the entire name and license key and that you did not introduce any extra spaces.

If you have verified that the customer name and license key are correct, and you still receive this error message, contact Customer Service at RealNetworks.

“The Assigned User Name or Group is Invalid”

If you assign a user name (UID) to the server, it must have already been defined on the computer. If you assign a group (GID) to the server, it must have already been defined on the computer. If you assign a UID or GID that does not exist on the computer, Basic Server Plus will not start.

Re-installing the Basic Server Plus as an NT Service

If you are upgrading the Windows NT version of the Basic Server Plus and want to install it as an Windows NT Service, you may find it easier to manually install the service. Before you begin, make sure you stop the existing **pnservice** service by opening the Windows NT services window from the Windows NT control panel, highlight the Pnservice service and select the stop button.

The following two procedures can be used to accomplish this.

There are two command line utilities located in the Basic Server Plus bin directory of your NT Server:

Delsvc.exe is used to manually delete the service.

Crtsvc.exe is used to manually install the Basic Server Plus as an NT service

To delete the service:

1. Open a DOS Window and move to the Bin directory of your Basic Server Plus installation. For example:

```
c:\real\server\bin
```

2. Type **delsvc.exe** and press Enter.

To restore the service:

From the command line type the following:

```
<path>crtsvc.exe <path>pnservice.exe <path>server.cfg
```

For example:

```
crtsvc.exe c:\real\server\bin\pnservice.exe  
c:\real\server\server.cfg
```

Chapter 3 Using Basic Server Plus

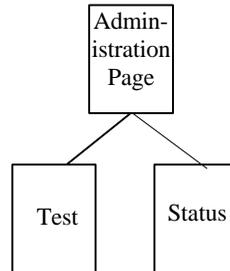
Basic Server Plus 5.0 comes with three graphical applications that you can use to start and stop Basic Server Plus and to monitor performance: the Administration Page, the System Manager and the Control Center. In addition, command line utilities that perform a subset of these functions are available.

The Administration Page and the Server Manager is primarily for viewing server status; Control Center is used to start and stop the server.

The following table lists the capabilities of the three applications:

	Administration Page	System Manager	Control Center
Start and stop server	Stop server only	No	Yes
Configure server settings	No	Yes	No
Track number of visitors connected	Yes	Yes	No
Show number of listeners per clip, bandwidth	No	Yes	No
View remotely via Web browser on any computer	Yes	No	No
Must be run on same computer as server	No	No	Yes
Operating system	All	Windows 95 and Windows NT; run under UNIX as command line	Windows 95 and Windows NT

Using the Administration Page



The Basic Server Plus Web-based Administration page allows you to monitor server status via your Internet or intranet. To use the Administration Page:

1. Start the RealServer using a method described in the “Starting and Stopping RealServer” section of this chapter.
2. In a Web browser, type the following URL:

`http://<myserver>:<port>/`

where **<my.RealServer.com>** is the name of your RealServer, and **<port>** is the port number as defined in the **server.cfg** file, such as 7070. For information on the **server.cfg** file, see Chapter 4, “Configuring and Maintaining RealServer.”

The user name is “Admin” and the password is defined in the **MonitorPassword** setting in the **server.cfg** file.

Using the System Manager

The System Manager can monitor server status of any Basic Server Plus for which the **server.cfg** file is accessible.

Windows

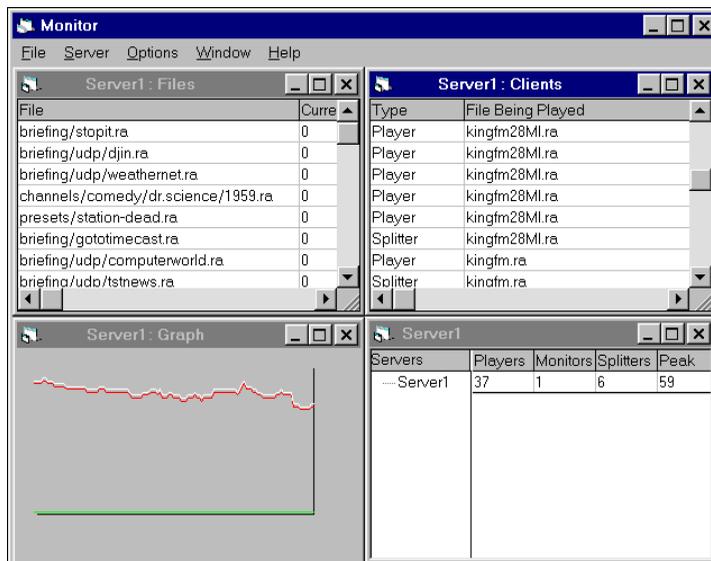
In the Windows environment, System Manager provides a graphical display of server information.

Starting the System Manager

1. **Windows 95 and NT 4.0:** Click the **Start** button, point to **Programs**, point to **Basic Server Plus**, and click **Basic Server Plus System Manager**.

Windows NT 3.51: Double-click the Basic Server Plus program group and double-click the **System Manager** icon.

2. On the **File** menu, click **Open**.
3. Click the name of the Server that you want to monitor and click **OK**.
4. On the Server menu, click **Clients**, **Files**, or **Graph** to display the type of information you want.



Monitoring Performance

System Manager includes windows that display clients currently connected, files being played, and a graph of all connections for the past two minutes.

Clients Window

You can view the following information in the Clients window:

Column	Description
Type	The type of client connected: Player, Monitor (System Manager), or Encoder.
File Being Played	Name of the file being played from your Basic Server Plus.
Domain Name	The domain name or IP address of the client computer. To toggle between IP address and domain name, click Preferences on the Options box, select the Client View tab, and check the Do DNS Lookups box.
Elapsed Time	The length of time that the client has been connected to that file since the System Manager has been attached to the Server. This information is also available in the Access Log.

Use the Clients window in System Manager to determine how many clients connect to your site simultaneously. Multiply this number by 10 to 20 Kbps to determine how much bandwidth your Basic Server Plus is using.

If you want the Clients window to update continuously, select **Preferences** from the Options menu, select the **Client View** tab and check the **Update Continuously** box.

Files Window

The Files window tells which files are being accessed and the number of times each file is being played. This helps you determine which files are most and least popular, which could help you decide what new files to add or remove to improve the popularity of your site.

Column	Description
File	Name of the file currently being played.
Current	Number of clients currently connected to that file.
Total	Total number of connections made to this file since the System Manager was started.

If you want the Files window to update continuously, click **Preferences** on the **Options** menu, select the **File View** tab and check the **Update Continuously** box.

Graph Window

The Graph window gives a graphical interpretation of selected connections made to your Server in the past two minutes. To control what information appears on the graph, select **Preferences** on the **Options** menu, select the **Graph View** tab and check the boxes for the statistics you want to display.

Resetting the Peak Usage

The **Peak** value in the System Manager display is maintained until you restart the Server or manually reset the value.

To reset the Peak value, click **ResetPeak** on the Server menu.

UNIX

System Manager is a command line program (**rssm**) under UNIX. It does not have a graphical interface. System Manager can monitor a Server running on any platform. Information provided by System Manager includes the number and status of Player connections, System Manager connections, Unknown connections (connections currently being negotiated with the Server), and Total connections.

Using the rssm Program

System Manager runs in two modes: interactive and non-interactive. When the System Manager is in the non-interactive mode, information is automatically appended to **STDOUT** every 5 minutes, unless that time span is modified by the **-l** command. The System Manager accepts commands from the command line; however, it does not prompt for them.

Syntax

```
rssm [-v] [-l <update>] [-p <password>] [-c] [-i]
      [-k] <hostname[:port]>
```

where:

- v** Displays the version information of the System Manager. This includes the platform, build and release tags used to identify a particular release.
- l <update>** Sets the update period for output to the screen to update seconds.
- p <password>** Provides the password required by System Manager to connect to the Server. If this option is not used the System Manager prompts for the password. This feature is not secure. The password is easily accessible to knowledgeable searchers. The password is required each time you want to start monitoring a Server. You can include **-p <password>** in the **rssm** command line in automatic monitoring scripts to avoid having to enter the password interactively.
- c** Connects to the server to verify it is still accepting connections and then exits. Prints a message if the connection fails and the exit status is non zero.
- i** Starts interactive mode and permits entry of the commands listed in the command section.
- k** Does DNS lookups on incoming IP addresses to translate them to full domain names. This command can slow down responses on System Manager. If you are experiencing delays in System Manager

information or in response to commands, make sure that this feature is turned off.

<hostname> To connect System Manager to a Basic Server Plus, set **hostname** to the DNS name or IP address of the Basic Server Plus. If the server is running on a port other than 7070, specify the port number.

Example

```
rssm -i -p mypassword 203.70.154.100:7070
```

Interactive Commands

The interactive mode is started with the `-i` command, which enables the System Manager to print prompts and accept commands from the command line.

After starting System Manager in interactive mode by using the `-i` command-line option, you can enter any of the following interactive commands at the System Manager prompt (`>`):

Command	Function
c	Displays the current configuration after it has been retrieved using the t command.
e	Resets peak usage value.
g	Displays the time that the peak usage value was last reset.
h or ?	Prints a list of commands.
i	Prints the Server's version number and platform.
k	Begins collating hostname information for connected clients by doing reverse DNS lookups on the IP numbers provided by the Server.
l	Provides the current list of connected clients.
n	Modifies a Server configuration variable.

Command	Function
o	Prints # of Players, System Managers, unknowns, and total connections to STDOUT every five minutes, or the number of seconds specified by the -l option on the command line. This command can be toggled to start and stop.
p	Prints Server license information.
s	Prints a single line of summarized status information.
u	Continuous display. Updates whenever a client status changes.
x	Exit the program.

System Manager displays the information about clients connected to the Server in the following format:

```
<client> <name>
```

where **<client>** is the type of client connected (Monitor or Player) and **<name>** is the domain name or IP address of that client.

For example, a client listing might look like:

```
monitor 204.71.154.93
Player 204.71.153.24
```

If you prefer to receive System Manager information in a report, use the **-l** option and append the output to a file. To do this, use the following command:

```
rssm -l<seconds> <hostname>[:port] >>
monitor.txt
```

where **<seconds>** is the number of seconds between reports, **<hostname>** is the name of the computer you are collecting data from, and **monitor.txt** is the name of the report that the information is appended to.

Example

To monitor a Server in interactive mode, with updates every 20 seconds and fully qualified host names for clients, use the following command:

```
rssm -l 20 -k -I yourServer:7070
```

Starting and Stopping Basic Server Plus

Before starting or stopping Basic Server Plus, you may want to ascertain whether Basic Server Plus is running.

Determining Whether Basic Server Plus Is Running

Windows

Windows NT: If Basic Server Plus is running, it will be listed on the Applications tab of the Windows NT Task Manager.

Windows 95: If Basic Server Plus is running, it will be listed on the Taskbar.

UNIX

Determine whether Basic Server Plus is running by typing a **ps** command and a **grep** command that searches for **pnservice**—for example,

```
ps -ef | grep pnservice
```

If the server is running, the **ps** and **grep** command return two lines for the pnservice processes that look similar to this:

```
username 25851 25850 0 16:51:11 0:00 bin/pnservice server.cfg
username 25850 1 0 16:51:11 0:00 bin/pnservice server.cfg
```

The lines above indicate that the pnservice process and the pnservice resolver process (which is a child process of the pnservice process) are running. The PIDs for the two processes should be sequential. In the example above, the pnservice process has a PID of 25850, and the pnservice resolver process has a PID of 25851.

Starting Basic Server Plus

When you start Basic Server Plus, it asks you to register online. Basic Server Plus will not start unless you register.

When you first install Basic Server Plus, it is configured to start automatically each time you start your computer. The instructions below describe how to disable this.

Starting Basic Server Plus Automatically

Windows

Basic Server Plus is installed as a service under Windows NT, where it can be controlled from the Services Control Panel.

If you want to remove Basic Server Plus as a service, first stop Basic Server Plus, then run the **delsvc.exe** program in the **bin** directory.

To restore automatic starting, run **crtsvc.exe**, which is also located in the **bin** directory.

When you run Basic Server Plus as a Service, errors are written to the Windows NT error logs rather than the Error Log specified in the Basic Server Plus configuration file. You can view them just like any other Windows NT errors.

UNIX

If you want to disable automatic starting, remove the Basic Server Plus command from the boot-time scripts of your UNIX system.

To restore automatic starting, add the **pnservice** command to start Basic Server Plus to the boot-time scripts of your UNIX system. The boot-time scripts generally reside in files or directories beneath the **/etc** subdirectory. Be sure to use complete path names in your script.

If you do not have permission to change the boot-time scripts on your computer, you may need to have your system administrator do this for you.

Starting Basic Server Plus Manually

Windows

To start Basic Server Plus manually using the Control Center:

1. On the **Start** menu, point to **Programs**.
2. Point to **Basic Server Plus** and select **Basic Server Plus Control Center**. The Basic Server Plus Control Center dialog box appears. The default configuration file, **server.cfg**, is automatically loaded. The status bar displays the status of the server.



To select a different configuration file, click **Open** on the **File** menu. Select a configuration file. Click **Open**.

3. On the **Server** menu, click **Start**.

To start Basic Server Plus manually from the command line:

1. At a command line, change to the directory where you installed Basic Server Plus.
2. Start Basic Server Plus by typing:

```
bin\pnserver server.cfg
```

Basic Server Plus does not return any messages to indicate that it has started, and there is no prompt on the screen for as long as it is running.

If Basic Server Plus does not start, review the error messages in the Basic Server Plus Error Log as described in Chapter 9, “Basic Server Plus Log Files.”

UNIX

Because Basic Server Plus runs on a high-numbered, unprivileged port, you do not need super-user privileges to start it unless you have configured for PNAviaHTTP by setting HTTPPort 80. However, if you do start it while you are logged on as super-user, then Basic Server Plus can configure itself to use additional system resources, such as file descriptors, that it needs to support a large number of users connected simultaneously.

After you start Basic Server Plus with super-user privileges and it adjusts its resource limits, Basic Server Plus assumes the user and group IDs entered into the configuration file.

To start Basic Server Plus manually from the command line:

1. At a command line, change to the directory where you installed Basic Server Plus.
2. Type the following:

```
bin/pnserver server.cfg
```

Basic Server Plus returns the command prompt and runs in the background. It does not return any messages to indicate that it has started.

If Basic Server Plus does not start, review the error messages in the Basic Server Plus log files as described in Chapter 9, “Basic Server Plus Log Files.”

Stopping Basic Server Plus

If you stop Basic Server Plus while users are connected, they may receive error messages. To prevent users from receiving error messages, first prevent new users from connecting, then stop the server. If no users are connected, you can skip directly to the instructions listed in “Stopping Basic Server Plus.”

Preventing New Users From Connecting

By shutting down Basic Server Plus gracefully, you can prevent new connections without disconnecting current users. After your current users have disconnected, stop the Basic Server Plus. Be sure to change the PnaPort back to its normal value before restarting Basic Server Plus.

System Manager:

1. On the **Server** menu, click **Configuration**.
2. Change the PnaPort setting to an unused value such as 9999.
3. Click **OK**.

UNIX command line:

1. Change the **PnaPort** configuration setting in **server.cfg** to an unused value such as 9999.
2. Issue the SIGHUP signal.

After the currently connected users stop playing clips, stop the server.

Stopping Basic Server Plus

Use either the Administration Web Page or the Control Center to stop RealServer.

To stop Basic Server Plus using the Control Center, follow the platform-specific directions below.

Windows

If you started Basic Server Plus with the **pnservice** utility, press **Ctrl+C** at the command line. If you started Basic Server Plus from the Control Center, click **Stop** on the **Server** menu.

UNIX

1. Log on either as super-user or by using the same user ID as Basic Server Plus.
2. If you know the process ID, type:

```
kill <processid>
```

If you don't know the process ID, change to the **pnservice** directory and type:

```
kill 'cat logs/pnservice.pid'
```

Network Performance Considerations

A number of factors can interfere with the quality of the media being delivered over the Internet. Media packets can be lost during delivery if they pass through slow routers or if the network is especially busy. Recurrent problems may indicate that you need to modify your connection to your Internet service provider.

To monitor media quality, read the connection statistics in the Access Log to learn more about packets that are early, late, missing, or out-of-order. Also, you should periodically use RealPlayer to listen to the clips on your Basic Server Plus. Open the Statistics window on RealPlayer and monitor the percentage of packet loss that is occurring. If the media quality you experience is poor, it is likely that your users are also experiencing poor media quality.

If you determine that there is a high level of packet loss, consult your Internet provider. You may need a faster Internet connection or there may be other problems with your Internet service.

Troubleshooting Basic Server Plus

Testing the Installation

If you are experiencing problems with Basic Server Plus, you need to use RealPlayer to test links on your site to isolate the source of the problem. Before you try to connect to your site, launch System Manager to see if your Basic Server Plus has an available connection for you to use. If your Basic Server Plus has a license that includes Hosting Service, you can use hosting to reserve a stream for your own testing.

The access and Error Logs record errors and information generated by Basic Server Plus.

The following questions can help diagnose the problem:

Is Basic Server Plus running on the host machine?

Use `ps` (on UNIX), or the Services Control Panel (on Windows NT) to check if Basic Server Plus is running. If the Server is not running, start the server.

Is the IP address of the host machine correctly configured in the network routers?

If the Player cannot access the Server over the network, then you cannot expect media to play. Configuring IP address and routers is a complex issue. Contact a networking specialist for help.

Is the machine you are using to test the media connected to the network used by the Server host computer?

You must have a network connection between the RealPlayer and the Basic Server Plus for media to play. Contact a networking specialist for help.

Is there a firewall between the Player and the Server?

You need to configure your system's firewalls to permit media to play through them.

Can you connect to the Basic Server Plus with the System Manager?

The System Manager application can help you diagnose the problem by validating communications between the Player and Basic Server Plus and by letting you view the running state of the connection during attempts to play media.

Is the media file downloading to the Player instead of playing in real time?

Media files cannot be referenced directly by your Web document. Remember that the Web page is being served by a Web server, but the media file is being served by Basic Server Plus. The Web page must point the user's Web browser to the media file by way of a metafile, which is a text file you create and save with a .ram extension. The metafile contains the URL of the .ra file located on your Basic Server Plus. The Web page contains a link to the metafile.

Is there unreadable text displaying on the screen instead of media?

You have not configured your Web server to recognize RealAudio and/or RealVideo MIME types.

If you still have problems after considering these possibilities, please contact RealNetworks at:

www.real.com

Common Error Messages

The following is a list of the more common error messages you might encounter:

Could not allocate enough file descriptors to meet capacity. Capacity has been set to <connection number>

The number of simultaneous connections has exceeded the capacity of your operating system. Basic Server Plus has automatically reset the number of media connections allowed to connect.

Invalid license key or information

Either you have not specified any licensing information for the **LicenseKey** setting in **server.cfg** or the licensing information you entered was incorrect. Check to make sure the information was entered exactly as you received it.

This license is for another platform

The license information you specified for the LicenseKey setting in **server.cfg** is for a different operating system. Check to make sure that you installed Basic Server Plus on the proper machine.

Server cannot be started before <date>

The Basic Server Plus license you purchased does not become valid until the date listed. Because Basic Server Plus requires a valid license to operate, your Basic Server Plus will not start until the date listed.

Server cannot be started after <date>

The Basic Server Plus license you purchased is not valid after the date listed. Basic Server Plus requires a valid license to operate.

Your license does not support ISP Hosting.

Your configuration file contains Hosting Service settings, but your license does not include Hosting Service. The Hosting Service configuration settings are ignored.

You must restart the server for this change to take effect.

You have made a change in the **server.cfg** file that will not take effect until you restart Basic Server Plus.

Out of Memory

Basic Server Plus is unable to dynamically allocate enough memory to create a new connection or manage existing connections. If you receive an Out of Memory message, you may require additional memory or you may need to add swap space for your Basic Server Plus machine to use for dynamic memory allocation.

Error retrieving <file name>

A user tried to access a file and the file could not be found. The user may have supplied the wrong URL and the Server rejected the request. However, if you see this more than once for the same file, you should check your metafile to ensure that the URL pointing to the file is accurate.

SIGPIPE Received, code:13 (UNIX systems only)

The SIGPIPE signal is sent to Basic Server Plus by the operating system when the client abruptly drops the connection. No action is required for this message.

Error retrieving URL <file name> (Codec error)

Error retrieving URL <file name> (Insufficient bandwidth)

The Player requested a file for which it does not have the correct CODEC installed or for which it does not have sufficient bandwidth to play. For example, a RealAudio Player 2.0 requesting RealAudio 3.0 content generates this error message.

Chapter 4 Configuring and Maintaining Basic Server Plus

This chapter introduces the server configuration file (**server.cfg**), which contains all the configuration settings for Basic Server Plus. When you want to change an aspect of server operation, you must edit the configuration file. A default server configuration file is created in the **Real\Server** directory on Windows NT, and in the **pnservr** directory on UNIX during installation.

The configuration file stores pairs of configuration options and their settings. This is a plain-text file, but settings are case-sensitive such as:

LocalHost	Matisse
LiveFilePassword	fauvist
EncoderTimeout	30

After making changes to the server configuration file, restart the server so that the changes can take effect.

Editing the Configuration File

There are two tools you can use to edit the configuration file:

- System Manager
- Any text editor

You can edit the configuration file using the System Manager only when the server is running. With a text editor, you can edit the configuration file whether the server is running or not.

Refer to the appropriate section below for editing procedures for each editing tool.

Editing the Configuration File with the System Manager

The System Manager is a graphical tool for configuring and monitoring a Basic Server Plus in Windows. When Basic Server Plus is running, you can change its configuration using System Manager.

For a discussion of starting the System Manager, see Chapter 3, “Using Basic Server Plus.”

Windows

To use the System Manager to change Basic Server Plus configuration settings:

1. Start System Manager.
2. On the **Server** menu, click **Configuration**.
3. Edit the setting or settings you want to change.
4. When you have finished editing Configuration settings, click **OK**.

Restart the server for the new configuration settings to take effect.

Editing the Configuration File with a Text Editor

You can edit the configuration file with any text editor. When Basic Server Plus is not running, editing the configuration file with a text editor is the only way to change settings.

Windows

1. Using a text editor such as Notepad, open the **server.cfg** file located in the **Real\Server** directory.
2. Edit the entry or entries you want to change.
3. Save the file.
4. If Basic Server Plus was running when you made changes, restart the server for the changes to take effect.

Note: The configuration file must be saved in a text only format and no line feeds should be included in the file.

UNIX

1. Using a text editor such as **vi**, open the **server.cfg** file located in the **pnserver** directory.
2. Edit the entry or entries you want to change.
3. Save the file as text.
4. To force the new configuration settings to reload, restart the Basic Server Plus, or use the following command:

```
kill -HUP 'cat pnserver.pid'
```

Configuration File Settings

The server configuration file (**server.cfg**) controls both the basic and the optional features of Basic Server Plus.

The following are the groups of settings in the **server.cfg** file:

- General
- Network
- Live broadcasting

Each group controls a different aspect or feature of your server. Some features require a license in order to be enabled. Detailed descriptions these groups follow.

Note: Because the server file is crucial to the operation of the Basic Server Plus, be sure to place it in a location that is inaccessible to any unauthorized users.

General Settings

General settings control the basic operation of Basic Server Plus. Basic Server Plus is installed with default configuration settings that should work on your computer.

After installing Basic Server Plus, you do not have to change any of these settings for Basic Server Plus to operate properly. You may find it useful, however, to customize Basic Server Plus for your particular requirements and environment.

The basic configuration settings can be divided into the following groups:

- **Ownership Information**—controls miscellaneous aspects of the server operation.
- **Firewall Settings**—configures the Basic Server Plus IP address and port settings to work with a Web server or firewall.

- **Logging Settings**—specifies what information the server logs and where this information is logged.
- **Notification Settings**—configures e-mail notification for the server, including operation thresholds that generate e-mail messages from the server when exceeded.
- **Bandwidth and Connection Volume**—limits the bandwidth used by the server and the number of simultaneous client connections to the server.
- **IP-Based Access Control (Intranet Solution only)**— allows only computers with certain IP addresses to contact the Basic Server Plus.
- **Monitor Settings**—controls the System Manager access to the server.

Ownership Information

This table summarizes the general configuration settings that control miscellaneous aspects of Basic Server Plus operation. A detailed description of each setting follows the table.

Setting	Description
BasePath	The path to the root directory of your media files.
CustomerName	Your customer name, as received from RealNetworks. Must be correct for the server to operate.
Group	Default group ID (GID) for server. (UNIX only)
LicenseKey	Encrypted license string from RealNetworks. Must be correct for the server to operate.
LocalHost	Fully-qualified name that overrides the system default name.
MaxThreads	Limits the number of threads used by the server.
MinPlayer Protocol	The minimum PN protocol that a Player must have to connect to the server.
PnaPort	The TCP/IP port on which the server listens for connection requests from clients.
PIDPath	The file that records the server's process ID. (UNIX

Setting	Description
	only)
Timeout	The number of seconds the server waits before disconnecting an inactive Player.
User	The default user ID (UID) for the server. (UNIX only)
RestoreOriginal PrivilegeOnReload	Allows user logged on with name specified by User setting to issue the SIGHUP command to load changed configuration file settings, even if the server has already been started by someone with Root permissions.
HTTPPort	Enables players that may be behind firewalls to access content served from your server.
ResolverPort	The TCP port to use for resolving DNS addresses.
IOBufferSize	Determines the amount of memory the Basic Server Plus allocates for each sequential read of a RealFlash (.swf) content file.

BasePath

Path to root directory of your media files. Most media content delivered by your Basic Server Plus resides in, or in a subdirectory of, the directory specified by **BasePath**.

By default, **BasePath** points to the **content** subdirectory of your Basic Server Plus installation directory, since this directory contains several sample documents. For further information about organizing media content see “Bandwidth Negotiation” in the *RealAudio and RealVideo Content Creation Guide*.

Default value	content
Range of values	Valid directory names

Syntax

BasePath <path>

Example

Windows

BasePath `c:\real\server\content`

UNIX

BasePath `/user/local/pnserver/content`

CustomerName

Name specified in the license you received from RealNetworks (by e-mail) or from your RealNetworks reseller. For your Basic Server Plus to function, you must enter this parameter. Type the exact customer name or Basic Server Plus will not operate. If you purchase a new or upgraded license, copy and paste the new Customer Name and License Key values that you receive from RealNetworks or from your RealNetworks reseller.

Default value	(none)
Range of values	Valid alpha-numeric string

Syntax

CustomerName `<licensename>`

Example

CustomerName `Very Big Corporation`

DefaultErrorFile

Basic Server Plus sends a Player an error message when a requested file is not available. If you set the **DefaultErrorFile** setting, Basic Server Plus plays the specified media file instead of sending the error message.

The path to your error file should be an absolute path. Your error file should be an audio file recorded in 14.4 format and indicate that there was a format compatibility problem. For example, “We are sorry but the file requested is not available in your Player’s format. Please try another file.”

Note: You can specify a video (.rm) file for **DefaultErrorFile** rather than an audio (.ra) file. However, because RealAudio Players 3.0 (or earlier) will not be able to play a video file, this is not recommended.

Default value	error.ra
Range of values	Media file name and path

Syntax

DefaultErrorFile <path>

Example

Windows

DefaultErrorFile pnservice/content/nofile.ra

UNIX

DefaultErrorFile c:\real\server\content\nofile.ra

Group (UNIX only)

Default group name for Basic Server Plus for UNIX. The group name must exist on the computer on which Basic Server Plus is running; otherwise, Basic Server Plus will not start.

If you do not specify a group name when installing Basic Server Plus, the group name defaults to the group name of the user who first starts Basic Server Plus.

Default value	(none)
Range of values	Valid user and group names

Example

Group **users**

LicenseKey

Encrypted license string enabling your Basic Server Plus to operate. The default license allows two streams. For your Basic Server Plus to operate, you must type the license key exactly as you received it from RealNetworks or your reseller.

Default value	none
Range of values	N/A

Syntax

LicenseKey <encryptedkey>

If you downloaded your software, **encryptedkey** is in the e-mail message that gave you access to the download URL. If you purchased your software on

CD-ROM, **encryptedkey** is provided via e-mail from RealNetworks or is affixed to your CD-ROM case or Basic Server Plus software package.

If you purchase a new or upgraded license, you must type the new Customer Name and License Key values that you receive from RealNetworks or from your RealNetworks reseller.

Example

```
LicenseKey 43819m554420998372983729857298752983758hf2
           938299192384j6esu3829879298
```

LocalHost

Fully-qualified name that overrides the system default domain name. If you experience problems running multiple processes, you can set the **LocalHost** parameter in your Basic Server Plus configuration file.

On some platforms, the system does not return a fully-qualified domain name, which causes difficulty for Basic Server Plus in locating other RealServers in a multiprocessing configuration. With the **LocalHost** parameter, you can override the system default domain name and provide Basic Server Plus with a fully-qualified domain name.

Default value	(none)
Range of values	Valid domain name

Syntax

```
LocalHost <domain name>
```

Example

```
LocalHost mycomputer.mydomain.com
```

MaxThreads

Maximum number of threads or processes. This entry lets Basic Server Plus run multiple processes within a single machine. Basic Server Plus can take advantage of multiple CPUs.

Note: This configuration parameter affects your computer’s CPU usage.

Default value	1
Range of values	Integers greater than zero

Syntax

MaxThreads <count>

Example

MaxThreads 5

MinPlayerProtocol

The minimum protocol supported by Basic Server Plus. Players that do not supply a protocol number equal to or greater than this value as part of their connection information cannot connect to Basic Server Plus.

Default value	0
Range of values	0 All players 4 RealAudio Player 1.0 and later (same a 0) 7 RealAudio Player 2.0 and later 9 RealAudio Player 3.0 only 10 RealPlayer only

Syntax

MinPlayerProtocol <number>

Example

To allow only RealAudio 2.0 and later players, type:

MinPlayerProtocol 7

PnaPort

Number of the TCP port Basic Server Plus uses for receiving requests from clients. The only reason to use a port other than the default is to allow several Servers to coexist on one system, or to achieve some level of privacy when serving information by using an unusual port number.

Default value	7070
Range of values	Valid port number

Syntax

PnaPort <number>

Note: To use a port lower than 1024 on a UNIX system, you need to be logged on as super-user.

Example

PnaPort 7074

PidPath (UNIX Only)

File used by Basic Server Plus for UNIX to record its process ID. If you do not specify a PidPath, Basic Server Plus records its process ID in **pnservice/logs/pnservice.pid**.

For administration, the process ID file should reside in the same directory as your access and error log files.

Default value	pnservice.pid
Range of values	Valid path and file name

Syntax

PidPath <path/filename>

Example

PidPath /pnservice/logs/pnservice.pid

Timeout

Number of seconds Basic Server Plus waits before disconnecting an inactive Player. Because every connection consumes valuable resources, connections should not be permitted to sit idle for long periods of time. A connection is idle when the Player has paused playing of media or has reached the end of the media program without disconnecting. The client can automatically reconnect after being timed out by Basic Server Plus if the user clicks the **Play** button.

Default value	300
Range of values	120 - 900

Syntax

Timeout <Seconds>

Example

`Timeout 240`

HTTPPort

Enable Players that may be behind firewalls to access content from your server. If not set, the port is not opened and HTTP cloaking is not available.

Default value	80
Range of values	none or 80

Syntax

`HTTPPort <port>`

Example

`HTTPPort 80`

ResolverPort

The TCP port to use for resolving DNS addresses.

Default value	PnaPort + 1
Range of values	Valid port number

Syntax

`ResolverPort <port>`

Example

`ResolverPort 8081`

User (UNIX only)

Default user name for Basic Server Plus for UNIX. The user name must exist on the computer on which Basic Server Plus is running; otherwise, Basic Server Plus will not start.

If you do not specify a user name when installing Basic Server Plus, the user name defaults to the user name of the user who first starts Basic Server Plus.

Default value	Username of first person to log in
Range of values	Valid user and group names

Syntax

```
User <UserName>
```

Example

```
User fredk
```

RestoreOriginalPrivilegeOnReload (UNIX only)

When set to True, allows user logged on with name specified by **User** setting to issue the SIGHUP command to load changed configuration file settings, even if the server has already been started by someone with Root permissions. If **RestoreOriginalPrivilegeOnReload** is set to False, only the person who started the Basic Server Plus can issue the SIGHUP command to reload the new settings without restarting the Server.

Default value	False
Range of values	True, False

Syntax

```
RestoreOriginalPrivilegeOnReload <value>
```

Example

```
RestoreOriginalPrivilegeOnReload False
```

IOBufferSize

This setting is specific to RealFlash media. It determines the amount of memory the Basic Server Plus allocates for each sequential read of a RealFlash (.swf) content file. Higher values increase the Basic Server Plus streaming

performance, but higher values also reduce the amount of memory available to the system.

RealFlash is an optional feature controlled by the license you purchase from RealNetworks.

Default value	4096
Range of values	4K to 64K

Syntax

```
IOBufferSize <size>
```

Example

```
IOBufferSize 4096
```

Firewall Settings

Smart Networking allows Basic Server Plus to stream content to a RealPlayer behind a firewall that does not permit TCP/UDP transmissions. This is accomplished through a HTTP-like protocol. If the Web server is on the same computer as the Basic Server Plus and has a second IP address available, Smart Networking requires two settings.

Setting	Description
HTTPPort	If no Web server is running on the machine that is running Basic Server Plus, the default is to perform HTTP transmission on port 80. The Basic Server Plus can also be configured to perform HTTP transmission on other ports.
IPBindingList	For security or convenience in running a Web server and Basic Server Plus on the same machine, you can configure the server to transmit on an alternate IP address.

HTTPPort

Alternate ports to which the Basic Server Plus can be assigned to stream via HTTP. If no Web server is running on the machine that is running Basic Server Plus, the server can be configured to perform HTTP transmission by adding this setting to your **server.cfg** file.

Although you can use any valid TCP/IP port number, RealPlayer will try to connect to port 80. If port 80 is not available, the server will not perform HTTP transmissions.

Note: To use port 80 on UNIX, the server must be started as root (super-user).

Default value	(none)
Range of values	Valid port numbers

Syntax

HTTPPort <port number>

Example

HTTPPort 80

IPBindingList

Use when the Basic Server Plus and the Web server are installed on one machine that has multiple IP addresses. The **IPBindingList** reserves an IP address (or addresses) for Basic Server Plus exclusive use.

This setting may be used in conjunction with Smart Networking. For example, if you have only two IP Addresses available for the computer on which the Basic Server Plus and Web server are installed, refer to one IP address with the **IPBindingList** setting. For additional information, see Chapter 2, “Installing and Configuring Basic Server Plus.”

Note: Note that Microsoft Internet Information Server (IIS) version 3.0 will bind to all IP addresses, regardless of this setting. IIS version 4.0 does allow binding to multiple IP addresses.

Default value	(none)
Range of values	Valid IP address(es)

Syntax

IPBindingList [{<IPAddress1>}, {<IPAddress2>}, {<IPAddress3>}, ...]

where <IPAddress> is a valid IP address that has been obtained and associated with the host machine.

Example

IPBindingList [174.16.32.60]

To set up virtual IP addresses in Windows

1. On the **Start** menu, point to **Settings**, then select **Control Panel**.
2. Double-click **Network**.
3. On the **Protocol** tab, select **TCP/IP**, and click **Properties**.
4. If you have two ethernet cards, select the other card and change the last digits of the IP address.

If you have one ethernet card, click **Advanced**, then click **Add**. Type the new IP address. Click **Add**.

5. Restart your computer.

To set up virtual IP addresses in UNIX

The procedure for setting up virtual IP addresses on UNIX depends upon the operating system. Refer to your operating system manual for more information. If your system does not automatically route traffic to the new address, be sure to manually route to the virtual IP address.

Logging

You can specify what information Basic Server Plus tracks about client connections and errors. You can also specify where Basic Server Plus logs this information.

The following table summarizes the access and error log settings. A detailed description of each setting follows the table.

Setting	Description
ErrorLogPath	The path and file name of the error log file.
LogPath	The path and file name of the access log file, which logs information about client access to Basic Server Plus.
LoggingStyle	Type and amount of information to capture.
StatsMask	Specifies additional access log statistics to request from Players.

ErrorLogPath

Path and filename of the file storing errors that occur during the operation of Basic Server Plus. If the ErrorLogPath setting is not specified in **server.cfg**, Basic Server Plus records errors in the **pnerror.log** file located in the same directory as pnserver.

Default value	logs/pnerror.log
Range of values	Valid path and file name

Syntax

```
ErrorLogPath <path>
```

Example

Windows

```
ErrorLogPath c:\real\server\logs\pnerror.log
```

UNIX

```
ErrorLogPath /pnserver/pnerror.log
```

LogPath

Path and file name for the access log file. Uses a relative path from the directory from which Basic Server Plus was started. Basic Server Plus logs information regarding every access to your Server into the file specified by the LogPath.

During installation, LogPath is set to **pnaccess.log** in the logs subdirectory of your Basic Server Plus directory. If the LogPath setting is not specified in **server.cfg**, Basic Server Plus records access information in the **pnaccess.log** file located in the same directory as pnsrver.

Default value	logs/pnaccess.log
Range of values	relative path

Syntax

LogPath <path>

Example

Windows

LogPath c:\real\server\logs\pnaccess.log

UNIX

LogPath /logs/pnaccess.log

LoggingStyle

Specifies what format to use for the Access Log. Used with **StatsMask**. The **StatsMask** parameter specifies which additional information is included when **LoggingStyle** is set to 1 or 2. Style 2 adds a unique player ID to style 1.

Default value	0
Range of values	0 - Original RealAudio Format 1 - RealAudio 3.0 2 - Basic Server Plus 4.0 3 - Basic Server Plus 5.0

Syntax

LoggingStyle <value>

Example

LoggingStyle 1

StatsMask

Specifies which additional Access Log statistics to request from Players. These statistics are included in the Access Log only when the **LoggingStyle** configuration parameter is set to 1.

Default value	0
Range of values	0 No additional statistics
	1 Statistics type 1 only
	2 Statistics type 2 only
	3 Both statistics types 1 and 2
	4 Statistics type 3 only
	5 Both statistics types 1 and 3
	6 Both statistics types 2 and 3
7 All statistics (types 1, 2, and 3)	

Syntax

StatsMask <value>

Example

StatsMask 3

Note: Statistics type 2 are returned only by RealAudio Player 3.0. Statistics type 3 are returned by RealPlayer 5.0.

Notification Settings

You can configure Basic Server Plus to send e-mail messages that alert you to important Basic Server Plus events. You can specify the following aspects of e-mail operation:

- One or two addresses to which Basic Server Plus sends e-mail messages
- The SMTP mail server that Basic Server Plus uses to send e-mail messages
- The types of messages (informational, warning, or error) that Basic Server Plus sends
- The number of times Basic Server Plus sends an e-mail message about a particular event (such as a usage threshold being crossed)
- A Basic Server Plus usage threshold that, when exceeded, causes Basic Server Plus to notify you by e-mail

Configuring Basic E-mail Operation

The following configuration settings control Basic Server Plus notification:

Setting	Description
MailMessageLevel	Minimum severity level for e-mail messages sent by Basic Server Plus
MailMessageLimit	Maximum number of e-mail messages to send about a particular event.
MailMessageSMTPHost	The mail server that Basic Server Plus uses to send e-mail messages.
MailMessageUser	E-mail address of the primary contact for Basic Server Plus e-mail messages.
MailUsageCC	E-mail address of the secondary contact for Basic Server Plus e-mail messages

MailMessageLevel

Specifies the severity of messages that are e-mailed to the system administrator. Specifying a level prevents Basic Server Plus from sending messages with a lower severity. The default value, which is no value, prevents Basic Server Plus from sending e-mail messages.

Default value	(none)
Range of values	INFO, WARNING, ERROR

Syntax

MailMessageLevel <level>

Example

MailMessageLevel WARNING

Sends e-mail about WARNING and ERROR messages, but not INFORMATION messages.

MailMessageLimit

The number of times that Basic Server Plus sends a specific e-mail message. Limits the number of times Basic Server Plus notifies the system administrator of the same problem. You can disable Basic Server Plus e-mail messaging by setting **MailMessageLimit** to 0.

Default value	5
Range of values	Integers greater than or equal to 0

Syntax

MailMessageLimit <number>

Example

MailMessageLimit 3

MailMessageSMTPHost

The e-mail server that Basic Server Plus uses to send e-mail messages.

Default value	(none)
Range of values	Valid Domain Name System (DNS) name or IP address

Syntax

MailMessageSMTPHost <address>

Example

MailMessageSMTPHost mail.mycorp.com

MailMessageUser

The e-mail address of the primary contact, or system administrator, to which the e-mail messages will be sent. You can use a group email ID to broadcast the message to several addresses.

Default value	(none)
Range of values	Valid e-mail address

Syntax

```
MailMessageUser <address>
```

Example

```
MailMessageUser sysadmin@mycorp.com
```

MailUsageCC

The secondary e-mail address to receive e-mail from Basic Server Plus.

Default value	sales@real.com
Range of values	Valid e-mail address

Syntax

```
MailUsageCC <address>
```

Example

```
MailUsageCC support@corp.com
```

Configuring Threshold E-mail

Basic Server Plus can send notification messages when a percentage of Basic Server Plus bandwidth or connection limits is exceeded. These two thresholds are set with **MaxBandwidth** setting (see page 78) and **ClientConnections** setting (see page 77).

Setting	Description
MailUsagePeriod	Specifies the time period over which MailUsageThreshold is calculated.

MailUsageThreshold	Specifies the server usage level that causes Basic Server Plus to send a usage e-mail message.
---------------------------	--

The notification e-mail lists the number of licensed streams (60 maximum concurrent streams for the Basic Server Plus 5.0), the threshold exceeded, and the time for which the threshold was exceeded. A sample email message that is sent when bandwidth threshold is exceeded:

```
In last 89 hours, server usage exceeded 92% for
a total of 5342 seconds
Licensed Streams: 60
>--- BANDWIDTH THRESHOLD exceeded ---<
Maximum Bandwidth: 413
Bandwidth Used: 398
Maximum Audio Connections: 750
Number of Connections Used: 732
```

MailUsagePeriod

Specifies the time period over which **MailUsageThreshold** is calculated. At the end of each **MailUsagePeriod**, the server resets the statistics used to calculate **MailUsageThreshold**. Basic Server Plus resets the **MailUsageThreshold** statistics every week.

Default value	24
Range of values	Positive Integers

Syntax

```
MailUsagePeriod <hours>
```

Example

```
MailUsagePeriod 168
```

MailUsageThreshold

Percentage of maximum bandwidth (if specified) or total license streams that will generate a usage threshold e-mail.

If **MaxBandwidth** is set to a value, **MailUsageThreshold** is a percentage of the **MaxBandwidth** value.

If no maximum bandwidth is specified, **MailUsageThreshold** is a percentage of the **ClientConnections** value.

If **ClientConnections** is not set, **MailUsageThreshold** is a percentage of Basic Server Plus licensed streams.

Default value	60
Range of values	1 to 60

Syntax

```
MailUsageThreshold <percent>
```

Example

```
MailUsageThreshold 60
```

Bandwidth and Connection Volume

Basic Server Plus lets you control how much of your network resources are dedicated to media by letting you specify how much bandwidth Basic Server Plus can use. You can also control how many clients can simultaneously connect to Basic Server Plus.

A detailed description of each setting follows the table.

Setting	Description
ClientConnections	The maximum number of simultaneous client connections to Basic Server Plus.
MaxBandwidth	The maximum bandwidth that Basic Server Plus can use on particular network connection.

ClientConnections

Maximum number of simultaneous client connections (Basic Server Plus 5.0 supports a maximum number of 60 concurrent streams). You can set a lower limit than that specified by your license.

The maximum number of connections cannot exceed the maximum number that the bandwidth of your network connection supports. If **ClientConnections**

is not specified, Basic Server Plus uses the number of streams specified by your license. If a **LicenseKey** is not specified or if your license key expires, Basic Server Plus allows a minimum of 2 streams.

A value of 0 means to use the maximum number of streams allowed by the license key. To specify a greater number of connections than the license on this computer allows, obtain additional streams from a remote license server.

Default value	Licensed number of streams
Range of values	0, 1 - 60

Syntax

```
ClientConnections <integer>
```

Example

```
ClientConnections 60
```

MaxBandwidth

Maximum bandwidth (in Kbps) that Basic Server Plus can use out of the total bandwidth capacity of a particular network connection.

Default value	0
Range of values	Positive Integers

The value 0 means bandwidth is limited indirectly by the number of simultaneous streams that Basic Server Plus can support. The maximum number of simultaneous streams is determined by the lesser of **ClientConnections** and the number of licensed streams.

Syntax

```
MaxBandwidth <number>
```

Example

```
MaxBandwidth 750
```

Restricts Basic Server Plus to using half of a T1 connection's capacity.

IP-Based Access Control

Aside from using a firewall, there are two ways that you can control access to media files served by Basic Server Plus:

- Put URLs for media files on restricted Web pages.
- Use the **ConnectControlList** setting to specify which network domains can access Basic Server Plus.

Setting	Description
ConnectControlList	Addresses from which clients are allowed to access Basic Server Plus.

ConnectControlList

Specifies the IP addresses allowed to access Basic Server Plus. If you purchased an intranet license for Basic Server Plus, you must specify a **ConnectControlList** to enable users on your intranet to access your Basic Server Plus.

If you purchased an Internet license for Basic Server Plus, you can optionally use this setting to restrict access to your Server.

Default value	(none)
Range of values	<p><address> is the domain address of the computer allowed to access Basic Server Plus. All four octets of the address must be specified.</p> <p><net mask> is a mask that specifies which bits in the domain address are treated as wildcards. The bits in the IP address that correspond with the zeros in the net mask are treated as wildcards.</p>

Syntax

```
ConnectControlList [{<address>, <net mask>},...]
```

Example

```
ConnectControlList [{121.23.101.0, 255.255.255.0}]
```

This entry accepts all IP addresses from 121.23.101.0 to 121.23.101.255. If the netmask in this example were 255.255.255.128, all IP addresses from 121.23.101.0 to 121.23.101.127 are accepted.

The net mask 255.255.255.255 accepts only the single IP address specified.

Note: Servers with intranet licenses cannot specify a net mask of 0.0.0.0.

To allow any player to connect, do not include a **ConnectControlList** setting in your configuration file. To prevent any player from connecting, specify:

```
ConnectControlList [{0.0.0.0, 255.255.255.255}]
```

Monitor Settings

You can specify the maximum number of System Manager sessions that can connect to Basic Server Plus at the same time. You can also specify a password that System Manager must use to connect to Basic Server Plus.

Setting	Description
MonitorConnections	Maximum number of System Manager sessions that can connect to Basic Server Plus.
MonitorPassword	Password that System Manager must use to connect to Basic Server Plus.

MonitorConnections

Maximum number of System Manager sessions that can connect to Basic Server Plus. The maximum number of System Manager connections does not reduce the allowed number of media connections. The System Manager connects to Basic Server Plus over a TCP/IP connection. The connections should be restricted to the number of system administrators you anticipate will monitor this server.

Default value	4
Range of values	Whole number greater than or equal to zero

Syntax

```
MonitorConnections <count>
```

Example**MonitorConnections 6****MonitorPassword**

Password that allows the Performance Monitor to connect to Basic Server Plus.

Note: If you accepted the default password (letmein) during Setup, you should change this setting immediately so that the Basic Server Plus is secure.

Default value	(none)
Range of values	Alphanumeric string without spaces

Syntax**MonitorPassword <password>****Example****MonitorPassword SrvTest1**

Live Broadcasting Settings

Bandwidth negotiation during live events is a feature from RealAudio 3.0 that is no longer supported in Basic Server Plus. If you are using RealAudio 3.0, connect one encoder for each encoding algorithm you want to support. Specify the same file name as the output from each encoder. Basic Server Plus recognizes the format of each stream and directs it to RealPlayers requesting that format.

Setting	Description
EncoderPassword	Password used by RealAudio Encoder, RealVideo Encoder, and the rvtlta utility program to connect to Basic Server Plus.
EncoderControlList	List of users and passwords. Allows multiple people to encode and use the same file name for different files.
EncoderTimeout	The time in seconds that the Server will wait before disconnecting a RealAudio Encoder or RealVideo

Setting	Description
	Encoder that is not sending data.
LiveFilePassword	Password used for archiving live broadcasts.
LiveFileSize	Size of file, in megabytes, used for creating archive files of live broadcasts.
LiveFileTarget	File or directory to use to create the archive files of live broadcasts.
LiveFileTime	Maximum length, in time, of a archive file of a live broadcast.
URL	URL that points to the live media stream to be recorded by rafile .
BandwidthEncoding	The default bandwidth for archive files of live broadcasts.
LiveFileBandwidthNegotiation	Specifies that the rafile program use bandwidth-negotiation style of naming for archive files of live broadcasts.
InputFile	The path of a file to convert to a live file.
OutputFile	Name of the simulated live stream sent using the rvslta utility.
ServerHost	Name of a Basic Server Plus to receive the live file.
ServerPassword	Password that rvslta must use to connect to Basic Server Plus.
ServerPort	Number of port on the Basic Server Plus to receive the live file from rvslta .

EncoderPassword

Password used by RealEncoder, RealPublisher, and the **rvslta** utility program to connect to Basic Server Plus. Note that the default setting of no password allows any RealAudio Encoder or RealVideo Encoder to connect to the server.

Default value	(none)
Range of values	Alpha-numeric string without spaces

Syntax

```
EncoderPassword <password>
```

Example

```
EncoderPassword rmRecord1
```

EncoderControlList

Allows multiple people to encode live content and use the same file name for different files. The file is published to a virtual directory beginning with the user's name.

Default value	(none)
Range of values	Alpha-numeric string without spaces

Syntax

```
EncoderControlList [ {user1, user1password},  
                    {user2, user2password}, ...]
```

Example

```
EncoderControlList [ {smith, encd} ]
```

In this example, any files encoded by the user "smith" will appear in a virtual directory named "smith." So if the user encodes a file and calls it "live.rm," the path to file will be "pnm://my.server.com/smith/live.rm".

EncoderTimeout

The time in seconds that the Server will wait before disconnecting a RealEncoder or RealPublisher that is not sending data. If the connection to the Encoder is lost, the Server must disconnect before the Encoder can reconnect. Setting EncoderTimeout to less than 10 seconds is not recommended.

Default value	30
Range of values	1 - 32767 seconds

Syntax

```
EncoderTimeout <seconds>
```

Example

```
EncoderTimeout 20
```

LiveFilePassword

Password used for archiving live broadcasts. Used by Basic Server Plus for automatic archiving and by the **rmfile** or **rafile** utility program.

Default value	(none)
Range of values	alphanumeric string without spaces

Syntax

```
LiveFilePassword <password>
```

Example

```
LiveFilePassword rmBroadcast1
```

LiveFileSize

Size of file, in megabytes, used for creating archive files of live broadcasts. Used by **pnserver**, **rmfile**, and **rafile**. By default, **rmfile** or **rafile** uses this setting unless overridden with the **-s** option.

Default value	0
Range of values	Integers greater than or equal to zero

Syntax

```
LiveFileSize <value>
```

Example

```
LiveFileSize 5
```

LiveFileTarget

File or directory to use to create the archive files of live broadcasts. Used by **pnserver**, **rmfile**, **rafile**. By default, **rmfile** or **rafile** uses this value unless overridden by a file or directory name on the command line.

If name is a directory name, **rmfile** or **rafile** uses the filename of the live broadcast to name files. If it is a filename, it creates files in the working directory used to start **rmfile** or **rafile** or Basic Server Plus. In either case, it appends numbers to the archive files, starting at 0.

Default value	(none)
Range of values	Valid file name

Syntax

```
LiveFileTarget <name>
```

Example

```
LiveFileTarget pnf.m.rm
```

Makes **rmfile** create archive files named **pnfm1.rm**, **pnfm2.rm**, and so on.

Windows

```
LiveFileTarget c:\real\server\content
```

UNIX

```
LiveFileTarget /usr/evand/rmfiles
```

Makes **rmfile** create archive files in the directory **/usr/evand/rmfiles** and names files using the filename list in the URL setting.

LiveFileTime

Maximum length, in time, of a archive file of a live broadcast. Specify time as a number and letter, such as 1m for one minute, 1h for one hour, and 1d for one day.

Default value	0
Range of values	Integers greater than or equal to zero and letters d, h, and m.

By default, **rmfile** or **rafile** uses this setting unless overridden with the **-t** option.

Syntax

`LiveFileTime <value>`

Example

`LiveFileTime 1h`

URL

URL that points to the live media stream to be recorded by **rafile**. Used by **rmfile**, **rafile**. **Rmfile** or **rafile** uses this setting unless overridden by a URL on the command line.

Default value	(none)
Range of values	valid URL

Syntax

`URL <url>`

Example

`URL pnm://server:7070/live1.rm`

BandwidthEncoding

Specifies the default bandwidth for archive files of live broadcasts. Required for **rafile**; not required for **rmfile**. By default, **rafile** uses this setting unless overridden with the **-e** option.

Default value	None
Range of values	14_4.18, dnet.20, dnet.25, 28_8.36, dnet.50, dnet.100

Syntax

`BandwidthEncoding <value>`

Example

`BandwidthEncoding dnet.20`

Note: **Rmfile** is the main utility and supports .rm files; .ra files were used in the RealAudio 3.0 Server.

LiveFileBandwidthNegotiation

Specifies that the **rafile** program use bandwidth-negotiation style of naming for archive files of live broadcasts. Used by **pnservice**, **rafile**; not required for **rmfile**. By default, **rafile** uses this setting unless overridden with the **-b** option.

Default value	False
Range of values	True, False

Syntax

```
LiveFileBandwidthNegotiation <value>
```

Example

```
LiveFileBandwidthNegotiation TRUE
```

Note: **Rmfile** is the main utility and supports .rm files; .ra files were used in the RealAudio 3.0 Server.

InputFile

The path of a file to convert to a live file. Used by **rvtlta**. By default, rvtlta uses this value unless overridden by a filename on the command line.

Default value	(none)
Range of values	Valid file name

Syntax

```
InputFile <filename>
```

Example

Windows

```
InputFile c:\real\server\content\show1.rm
```

UNIX

```
InputFile /usr/content/show1.rm
```

OutputFile

Name of the simulated live stream sent using the **rvtlta** utility. **Rvtlta** uses this setting unless overridden by a filename on the command line.

Default value	(none)
Range of values	Valid media file name

Syntax

```
OutputFile <filename>
```

Example

```
OutputFile broadcast.rm
```

ServerHost

Name of a Basic Server Plus to receive the live file. The **rvtlta** utility uses this setting unless overridden by a host name on the command line.

Default value	(none)
Range of values	Valid DNS name

Syntax

```
ServerHost <host>
```

Example

```
ServerHost server1.real.com
```

ServerPassword

Password that **rvtlta** must use to connect to Basic Server Plus. By default, **rvtlta** uses this value unless overridden by a password on the command line.

Default value	(none)
Range of values	Alpha-numeric string without spaces

Syntax

```
ServerPassword <password>
```

Example

```
ServerPassword StreamKey1
```

ServerPort

Number of port on the Basic Server Plus to receive the live file from **rvtlta**. Must be the port number of the Basic Server Plus specified by the **ServerHost** setting. **Rvtlta** uses this setting unless overridden by a port number on the command line.

Default value	(none)
Range of values	Valid port number

Syntax

```
ServerPort <port>
```

Example

```
ServerPort 8081
```

Configuring Web Servers to Work with Basic Server Plus

Basic Server Plus works with any Web server that supports configurable MIME types. Setting the correct MIME type makes the user's Web browser play the contents of a media file with a RealPlayer rather than download the contents of the file.

Your Web server needs to define the following MIME types:

audio/x-pn-realaudio (files with a .ra, .rm or .ram file extension)
audio/x-pn-realaudio-plugin (files with a .rpm file extension)

The procedure for associating media files with these MIME types varies from one Web server to another. If the Web server is on the Basic Server Plus machine, this is done by installers on Internet Explorer and Netscape on Windows NT, and on Apache, Netscape and NCSA on UNIX. The following procedures tell how to add MIME types to some common brands of Web servers. If you have questions, or if your Web server is not listed here, please consult your Web server documentation or the online documentation at the RealNetworks Web site:

www.real.com

CERN HTTPD (v.3.0) Server

1. Add the following lines to the **httpd.conf** file under the server's root directory:
2.

AddType .ram audio/x-pn-realaudio	binary
AddType .rpm audio/x-pn-realaudio-plugin	binary
3.

AddType .ra audio/x-pn-realaudio	binary
AddType .rm audio/x-pn-realaudio	binary
4. Reinitialize the Web server.

EMWAC HTTPS (Windows NT Only)

1. In Control Panel, start the HTTP server applet.
2. Click **New Mapping**.
3. In the Extension edit box, type the filename extension:
RAM
4. In the Mime Type edit box, type the full MIME type:
audio/x-pn-realaudio
5. Click **OK**.
6. Repeat Steps 3 and 4, using the file extension:
RPM and the MIME type:
audio/x-pn-realaudio-plugin
7. Reinitialize the Web server.

Mac HTTP and HTTPD4Mac Servers

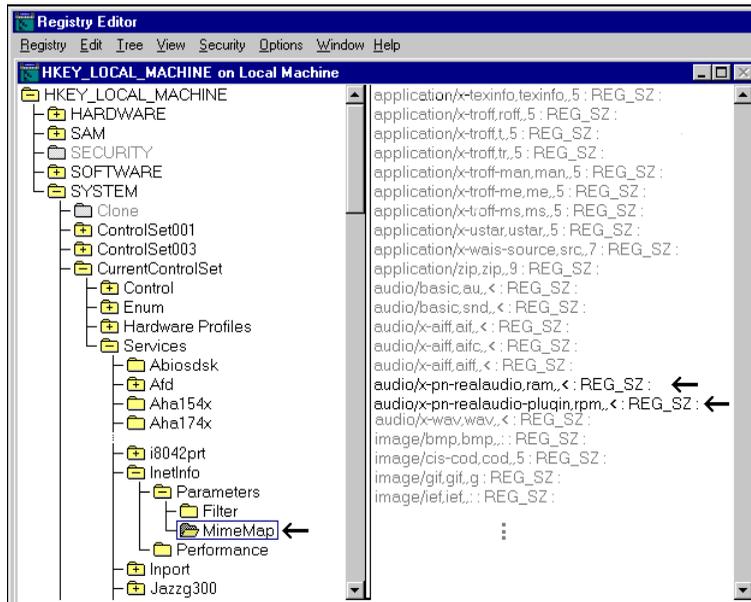
1. Enter the following information into your configuration file in the format appropriate for your server:
Action: TEXT
File Suffix: .ram
File Type: *
MIME Type: audio/x-pn-realaudio
Creator: *
2. Repeat with the File Suffix:
.rpm
and the MIME Type:
audio/x-pn-realaudio-plugin

Microsoft Internet Information Server (Windows NT Only)

MIME type configuration is done in the Windows NT registry. To edit the registry:

1. Log on as Administrator.
2. Start **Regedt32**.
3. Click the entry:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\InetInfo\Parameters\MimeMap



4. On the Edit menu select **Add Value**.
5. In the **Add Value** box, type:


```
audio/x-pn-realaudio-plugin.rpm, <
```
6. In the **Data Type** box select:


```
REG_SZ
```
7. Click **OK**.
8. Leave the **String** box blank and click **OK**.
9. Repeat Steps 4 through 7. For Step 5, enter:


```
audio/x-pn-realaudio.ram, <
```

NCSA HTTPD (v. 1.3 and 1.4) Server

1. In the file `srm.conf` in the `SERVER_ROOT/conf` subdirectory, add the following lines:
2. AddType `audio/x-pn-realaudio .ram`
AddType `audio/x-pn-realaudio-plugin .rpm`

3. AddType audio/x-pn-realaudio .ra
AddType audio/x-pn-realaudio .rm
4. Reinitialize the Web server.

Netscape Netsite Server

1. Add the following to the **MIME.types** file:
2. type=audio/x-pn-realaudio exts=ram
type=audio/x-pn-realaudio-plugin exts=rpm
3. Add the following line to the Server's main configuration file (called **magnus.conf** in the examples given in the Netsite documentation):
4. Init fn=load-types mime-types=mime.types
5. Reinitialize the Web server.

O'Reilly Website NT Server

Use the admin tool on the mapping page to change the content type by entering the following commands:

```
.ram audio/x-pn-realaudio  
.rpm audio/x-pn-realaudio-plugin  
.ra audio/x-pn-realaudio  
.rm audio/x-pn-realaudio
```

Webstar and Webstar PS

1. Start the Admin program for the Webstar server.
2. On the Configure menu, click **Suffix Mapping**.
3. Enter the MIME type information into its associated fields exactly as shown in the following example (these fields are case sensitive):

```
Action: TEXT  
File Suffix: .ram  
File Type: *  
MIME Type: audio/x-pn-realaudio  
Creator: *
```
4. Click the **Add** button to update the MIME types directory.
5. Repeat Steps 3 and 4, using the File Suffix:

.rpm

and the MIME Type:

audio/x-pn-realaudio-plugin

Spinner 1.0b12 - 1.0b15 / Roxen 1.0

1. Point your browser to the following URL:

**http://<server_name>:18830/Configurations/Gnats/
Contenttypes/
Extensions?40**

where:

<server_name> is the name of computer running your Web server
<18830> is the default administration server port; change this port
number to your administration server port if necessary

2. Type the MIME types in the dialog box.

Apache 1.1.1

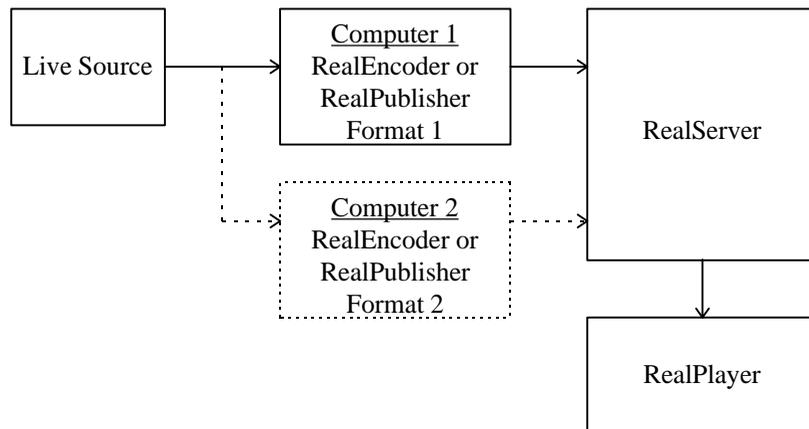
Apache comes preconfigured, but the MIME type for RealAudio and RealVideo files needs to be changed from audio/x-realaudio to audio/x-pn-realaudio. MIME types are normally stored in **/usr/local/etc/httpd/conf**.

Chapter 5 Delivering Live Content

With Basic Server Plus and RealEncoder or RealPublisher, you can send live events such as performances, speeches and public events directly to users' computers. Live events can also be saved to disk for later transmission or for archive purposes.

Basic Server Plus can deliver live content in the same way it delivers pre-recorded or static content, or if your all components of your network are configured for multicasting, you can multicast the live content.

To provide content in multiple compression algorithms, you need to run a RealEncoder or RealPublisher and a separate computer for each codec, all with the same input signal. All concurrently running RealEncoders or RealPublishers should use identical settings except for compression type and stream name. Each computer sends its output to a Basic Server Plus.



Note: Bandwidth negotiation during live events is not supported by RealEncoder 5.0, RealPublisher 5.0 or Basic Server Plus 5.0.

Advertising Your Event

If you want help advertising your site or live event, you can advertise in Timecast: Your RealMedia Guide (www.timecast.com), the RealNetworks online resource for RealAudio and RealVideo sites and live events.

Inform the Timecast staff of your site or event by completing an online form. After you submit the online form, the data is verified by a staff member of Timecast and posted on the Timecast site. Timecast strives to be a quality listing service and therefore maintains editorial control over all information submitted. If you have any questions or need to make changes to any submissions please email Timecast@Timecast.com.

To advertise your site on Timecast:

Use the Web form located at <http://cgi2.timecast.com/cgi-bin/addsite.cgi> to submit your newly completed site for inclusion in either Timecast's Audio, Video, or Live Stations Guide. On the Web form, you enter basic information about the site such as the site name, URL, and description.

To advertise your event on Timecast:

Use the Web form located at <http://cgi2.timecast.com/cgi-bin/addlive.cgi> to submit all your live events. On the Web form, you enter basic information about the event, such as name, complete URL, date and time of the event, and a short description. You can also indicate whether the event is recurring (occurs weekly) or non-recurring (one-time only).

Delivering Live Content

Make sure that your system requirements are met, that the configuration settings reflect your choices, and that you know how to use RealEncoder or RealPublisher. For information on using these programs, see the *RealAudio and RealVideo Content Creation Guide*. You will need:

- A live source
- RealEncoder or RealPublisher
- Basic Server Plus

The computer running RealEncoder or RealPublisher and the computer running Basic Server Plus can be on different platforms.

To deliver live content:

1. Attach your audio or video source to the audio or video capture card.
2. Configure the **server.cfg** file. For information on how to configure this file, see Chapter 4, “Configuring and Maintaining Basic Server Plus.”

Be sure the following configuration settings are included in the Basic Server Plus configuration file:

- **PnaPort** - the port number to which RealEncoder or RealPublisher connects.
- **EncoderPassword** - the password the RealEncoder uses to connect. Passwords are necessary to keep unauthorized users from connecting to the stream of your live broadcast.
- **EncoderTimeout** - configuration parameter specifies how long Basic Server Plus stays connected to a RealEncoder/RealPublisher that is not sending data.
- **EncoderControlList** - Allows multiple people to encode live content and use the same file name for different files. The file is published to a virtual directory beginning with the user’s name.`.server.com/smith/live.rm`”.
- **LiveFileTarget** and **LiveFilePassword** - (Optional) Specify that the server saves the live content as a file.

3. Configure RealEncoder or RealPublisher for live broadcasting and click **Start** to begin encoding.

Archiving Live Broadcasts

You can choose to save (or “archive”) a live broadcast for playback later. Basic Server Plus can be configured to automatically archive live broadcasts or you can use the **rafile** or **rmfile** utility program to archive broadcasts from any Basic Server Plus over a network. You can choose to create just one file, a new file based on elapsed time such as every 30 minutes, or a new file based on size such as every 5 MB. **Rafile** archives audio-only broadcasts; **rmfile** archives video-only or audio-and-video broadcasts.

If the RealServer or **rafile** or **rmfile** archives a live broadcast with the same destination path and file name as an existing file, RealServer renames the existing file by appending a unique number to the end. For example, if RealServer encountered a file named “concert.rm” in the archive directory, it would rename the file as “concert.rm.86400”. The number that RealServer chooses is related to a timestamp; larger numbers indicate newer files. In this way, one directory can be used to store the latest version of a broadcast and the previous versions as well. Reusing the same output file name can simplify Web page maintenance, because the links for a recurring event remain the same.

Rmfile can be driven either by command line options or by a configuration file. The command line options will always overrule the configuration file.

To configure Basic Server Plus to archive automatically:

If you specify the **LiveFileTarget** and **LiveFilePassword** settings in the server’s configuration file (see Chapter 4, “Configuring and Maintaining Basic Server Plus”), Basic Server Plus automatically archives any live media stream that arrives at the Server. These media streams are created as RealMedia (.rm) files. Be sure you have enough available disk space to store the files generated from a live broadcast. The archive files are stored in the directory specified by the **LiveFileTarget** setting, or in the working directory that was used to start Basic Server Plus if a target directory is not specified.

To configure Basic Server Plus to save manually:

The **rafile** and **rmfile** programs can run on a different computer than Basic Server Plus or RealEncoder/RealPublisher because they accept a network

address for the media source. Archive files written by **rafile** or **rmfile** are stored in the directory specified, or in the working directory used to start the **rafile** or **rmfile** program if no directory is specified.

For a list of options for the **rmfile** program, at a command line, type:

```
rmfile /?
```

Detailed information on the **rafile** and **rmfile** programs and their settings is available in the *RealAudio and RealVideo Content Creation Guide*.

Example 1:

A television station broadcasts over the Internet and wants to archive the entire broadcast day in multiple files each 60 minutes long to the **/usr/Archive** directory. The broadcast is named Live.rm and is available in RealVideo 28.8 format only. The relevant configuration settings are:

```
LiveFilePassword rmBroadcast1  
LiveFileTarget /usr/Archive  
LiveFileTime 1h
```

Basic Server Plus automatically archives the live broadcast to a series of files named Live0.rm, Live1.rm, Live2.rm, and so on, in the **/usr/Archive** directory. Each file contains one hour of audio data encoded in the RealVideo 28.8 format.

Example 2:

A concert promoter broadcasts a live concert over the Internet and wants to archive the entire concert on a separate computer. The archive computer runs the **rmfile** utility program from a command line.

The configuration file setting on the Basic Server Plus computer is:

```
LiveFilePassword rmBroadcastZ
```

The command on the archive computer is:

```
rmfile -b -p rmBroadcastZ pnm://my.server.com:7070/live.rm  
c:\real\server\content\archive
```

The **rmfile** utility program connects to the server using the URL **pnm://my.server.com/live.ra**. The resulting files can be copied to a Basic Server Plus for later rebroadcast of the concert.

Simulating a Live Broadcast

At times, you might want to play a recorded media file as if it were being broadcast live. Perhaps you want to test your system before a live event or delay broadcast of a concert. The **rvtlta** (Simulated Live Transfer Agent) utility lets you play a recorded media file as if it were live. Users connecting to the site will get the event “in progress.” It can be used as a test, to delay broadcast of a live event or to multicast pre-recorded content.

To use **rvtlta**, you need to specify the password listed under the **EncoderPassword** configuration setting (in the Basic Server Plus configuration file) and the names of the input and output files.

Syntax

```
rvtlta -i <inputfile.rm> -o <outputfile.rm> -s  
<server> [-p <port>] [-w <password>]  
[-l <iterations>]
```

where:

<inputfile> is the path and file name to the input file.

<outputfile> is the path and file name to the output file.

<server> is the server name.

<port> is the server port (port defaults to 7070).

<password> specifies the password **rvtlta** uses to connect to the server.

It matches the password specified by the **EncoderPassword** in the configuration settings file. For information on setting this password, see Chapter 4, “Configuring and Maintaining Basic Server Plus.”

<iterations> is an integer that specifies how many times to loop the content.

Example

```
rvtlta -i c:\archive.rm -o livenow.rm -s  
www.my.server.com -p 7070 -w rmRecord1
```

Enhancing Live Broadcasts with Video Image Maps and Synchronized Web Pages

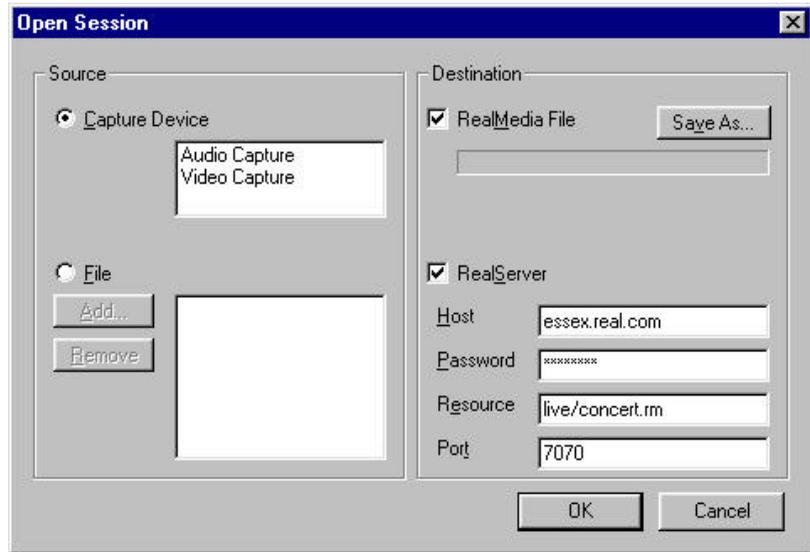
You can deliver a Synchronized Multimedia presentation or apply an image map to a video stream with a live broadcast. The events are delivered relative to the time a client begins playing the live broadcast, instead of relative to an absolute position in the broadcast.

The URL events must be defined before the broadcast, but you can change the content of the Web page the URL references during the broadcast.

To create a Synchronized Multimedia presentation for a live broadcast:

1. Create the input file that defines each event and the time that the event is sent. Remember that the times you specify are relative to when the client begins playing the live broadcast.
2. Run the **rmmerge** tool to create an .rm file.
3. Repeat steps 1 and 2 for any image maps.
4. Name the .rm file with the same filename you specify in the **Resource** box in RealPublisher for the broadcast.
5. Move the .rm file to the path specified in the **Resource** box in RealPublisher.

For example, if you set up RealPublisher as follows, the file must be named **concert.rm** and it must be located in the **/live** directory relative to the server's base path.



Chapter 6 Configuring Your Web Site

After encoding your RealMedia files, you are ready to attach the files to Web pages. The following sections explain the construction and use of RealMedia content on your Web site. When you have your Basic Server Plus set up, use this information to showcase audio and video content from your site.

Making the Most of Your Content

To get the most out of your RealMedia content, educate your Web site's visitors about RealAudio and RealVideo. Let people know that they can listen and view your clips instantly, without download delays. Identify each clip with a Real bubble icon to distinguish it as real-time audio and video.



The graphics are available from the RealNetworks Web site at

www.real.com

Make it easy for your visitors to get RealPlayer by linking the graphics to the RealNetworks home page at:

www.real.com/

Metafiles

RealMedia material is reached via links, just as HTML documents use hyperlinks to connect Web pages. However, the RealMedia links you put into your HTML pages are not direct references to the RealAudio or RealVideo files. Instead they are references to text files which contain information needed to establish a connection between your Basic Server Plus and the user's RealPlayer and to initiate playback. These files are called metafiles.

Metafiles contain the URL of the file (or files) you want associated with the hyperlink. The visitor's browser passes the URLs to RealPlayer, which retrieves **.ra** or **.rm** files from your Basic Server Plus.

Metafiles contain the addresses of RealAudio (.ra), RealVideo (.rm) and RealFlash (.swf) files. These addresses are in the form of URLs. The URLs used to establish a direct connection between a RealPlayer and your Basic Server Plus begin with "pnm://" (RealNetworks Metafile). Once in place, this direct connection is used to stream to the Player and to carry commands (such as seek or pause) back to your Basic Server Plus.

Note: With certain browsers, when a Web page points to a local .ram file that in turn points to a local clip, the Player displays the following error message: "The requested URL is not valid." Some versions of some browsers require that ram files include an absolute path when pointing to local files.

Creating Metafiles

Your Web pages will link to metafiles, which in turn point to the DNS name or IP address of the computer on which your Basic Server Plus and RealMedia files are located.

If you are using RealFlash Animation, you'll include that information in the metafiles.

To create a metafile:

1. Use a text editor (such as Notepad) to create a file containing the RealAudio or RealVideo URL. The contents of your file should be in the following form:

```
pnm://hostname/path/filename
```

where **hostname** is the name of your Web server, **path** is the path to the file (relative to the BasePath of the Basic Server Plus), and **filename** is the name of the file ending with **.rm**, **.ra**, or **.swf**.

For example, to provide access to a RealVideo file called **hello.rm**, the text of your metafile would be:

```
pnm://www.server1.com/hello.rm
```

where **www.server1.com** is the DNS name of the machine running your Basic Server Plus, on which you store your RealAudio or RealVideo files.

If you want more than one file to play in sequence when the user clicks your link, create a metafile containing several URLs (on separate lines with no intervening blank lines). For example, if your metafile contains:

```
pnm://www.server1.com/hello.rm
```

```
pnm://www.server1.com/welcome.rm
```

```
pnm://www.server1.com/coolstuff.rm
```

the Player automatically plays your three files in sequence. A listener can use the Clip menu on the Player to move forward and backward between clips.

If you are using RealFlash Animation, combine the audio file name with the RealFlash file name using the plus (+) sign:

```
pnm://www.server1.com/hello.rm+hello.swf
```

```
pnm://www.server1.com/welcome.rm
```

```
pnm://www.server1.com/coolstuff.rm
```

2. Save your metafile in the "All files (*.*)" format, using a **.ram** file name extension.

For example, you could save the three lines shown above in a file named **welcome.ram** on your Web server.

3. In your HTML document, reference the metafile in a hyperlink, followed by a reference to the RealAudio or RealVideo icon (so that the icon is displayed to the left of the file):

```
<A HREF="http://www.real.com/welcome.ram"> <IMG  
SRC="http://www.real.com/pics/rvfile.gif"  
align=left border=0> Welcome!</A>
```

where **welcome.ram** is the metafile.

File Name Extensions

Each metafile that you create must be given a file name extension. This extension tells your Web server what the metafile is, to ensure that the enclosed URL is handled properly.

There are two metafile types: **.ram** and **.rpm**. These different file name extensions are passed on by your Web server and tell the user's Web browser which application to launch to play the referenced file:

.ram file – Web browser launches RealPlayer

.rpm file – Web browser launches RealPlayer Plug-in (see below)

Note: You must configure your Web server to understand that the extension **.ram** refers to the MIME type **x-pn-realaudio** and that the extension **.rpm** refers to the MIME type **x-pn-realaudio-plugin**.

Customizing Calls to Video and Audio Content

Optional arguments may be added to metafiles to finesse what is seen and heard by users when they click your RealMedia link. You may alter the point in a clip at which play starts or ends, or the Title, Author, and Copyright information is displayed by RealPlayer.

Add the options to your metafile following the URL to which they apply. Options must be preceded by a ? (question mark) and separated from each other by an & (ampersand). The syntax is as follows:

```
prnm://www.real.com/test.rm?[opt1]&[opt2]
```

where opt is a name/value pair separated by an equal sign (=). For example,

```
title="mymovie"
```

Changing Start and Stop Times

To create a link that starts playing a clip from a point other than the beginning of the file, use the **start** command. Specify the time into the clip at which play should begin. For example:

```
pnm://www.real.com/test.rm?start="30"
```

would result in playback starting thirty seconds into the file.

The format for the start time is as follows:

```
start="dd:hh:mm:ss.ss"
```

Tenths of seconds are separated from seconds by a decimal point; the other units of time are separated by colons. The time is interpreted from right to left, and it is not necessary to specify days, hours, or minutes if these are not relevant.

Similar to the **start** option is the **end** option. For example, the metafile text:

```
pnm://www.real.com/test.rm?end="5:30"
```

is used to provide for playback of test.rm that terminates five minutes and thirty seconds from the start of the clip.

Note: The end time is always measured from the actual start of the data in the file, even in the case where playback begins elsewhere. For example, the line:

```
pnm://www.real.com/test.rm?start="30"&end="5:30"
```

is used to start play of test.rm from the thirty-second mark and to stop play five minutes later.

Changing Title, Author, or Copyright Information

The following options exist to change the descriptive information from within the metafile:

```
title="new title"  
author="new author"  
copyright="new copyright"
```

Strings can be changed independently or in combination.

Changing information in this manner does not change what is stored in your file—only what is displayed when it is accessed through this particular metafile. This functionality is especially useful if, for example, you have one large file that contains your band's entire CD, and you want to credit the author of each song as it plays. You could create a multi-clip .ram file as follows:

```
pnm://www.server/band.rm?end="5:30"&title="Song1"  
pnm://www.server/band.rm?start="5:31"&end="7:45"  
&title="song2"&author="Joe Smith"  
pnm://www.server/band.rm?start="7:46"&end="15:01"  
&title="song3"&author="Jane Smith"&copyright="My  
Music, 1996"
```

HTTP Streaming

HTTP streaming enables content providers to stream RealMedia clips from a Web server. While this method is not as robust as using metafiles, it provides a reasonable method for providing short RealMedia content to a limited number of users.

Before you can stream RealAudio and RealVideo clips through HTTP, you must define the following MIME types for your Web server:

audio/x-pn-RealAudio (files with a .ra, .rm or .ram file extension)

audio/x-pn-RealAudio-plugin (files with a .rpm file extension)

video/x-pn-RealVideo (files with a .ra, .rm or .ram file extension)

video/x-pn-RealVideo-plugin (files with a .rpm file extension)

Some Web servers are pre-configured with these MIME types.

Note: If you are running a Web page off an ISP server, ask the ISP administrator to configure the server for the RealPlayer MIME types.

To stream RealAudio and RealVideo content using HTTP:

1. Copy your encoded RealAudio and RealVideo files (files with the .ra or .rm extension) to your Web server.
2. Use a text editor (such as Notepad) to create a metafile containing the RealAudio or RealVideo URL. For example, the contents of your file should be in the following form:

```
http://hostname/path/filename
```

where **hostname** is the name of your Web server. For example:
www.real.com

3. Save your metafile as "All Files (*.*)" using a .ram file name extension.
4. In your HTML document, reference the metafile in a hyperlink. For example:

```
<A HREF="file.ram">
```

```
<A HREF="http://hostname/file.ram">
```

5. You can use relative or complete paths. If you use complete paths, you must include both the hostname and the complete path. For example:

```
<A HREF="http://www.real.com/home/welcome.ram">
```

6. When a user clicks on the link, the audio or video file(s) begin to download. RealPlayer begins playing after a few seconds; it does not need to wait for the entire file to be downloaded.

Custom Controls for RealAudio and RealVideo

RealAudio and RealVideo enables seamless integration of RealPlayer Controls into your Web page layout. You can place individual interactive components, such as a play button or image window, anywhere on your page, just as you would place an image using the tag in HTML.

There are two products which, in conjunction with the most popular Web browsers, enable "in page" audio controls.

- RealPlayer Plug-in provides Player-like features to browsers that support the Netscape Navigator Plug-in architecture. This plug-in also works in Internet Explorer 3.0.

- RealPlayer Control for ActiveX works with Internet Explorer 3.0 and Visual Basic applications to provide RealAudio and RealVideo playback capabilities.

Using RealPlayer Plug-in

The Plug-in runs as an adjunct to Web browsers that support Netscape's Plug-in architecture. The RealPlayer Plug-in is included in the RealPlayer installation.

The `<EMBED>` tag specifies Plug-in attributes in HTML pages in much the same way that the `` tag specifies image attributes. The basic `<EMBED>` tag for RealPlayer contains only the attributes `SRC`, `WIDTH`, and `HEIGHT`, as shown below:

```
<EMBED SRC=metafile.rpm WIDTH=width_value
HEIGHT=height_value>
```

For example:

```
<EMBED SRC="sample1.rpm" WIDTH=300 HEIGHT=134>
```

creates an in-page RealPlayer that is 300 pixels wide and 134 pixels high.

For the Plug-in, metafiles are stored with a `.rpm` file name extension.

The name tag is supported as an option with JavaScript to refer to a specific plug-in.

Note: Do not place the `<EMBED>` tag within a table.

Feature	Description
SRC Attribute	<p>The SRC attribute specifies a metafile to be accessed. RealPlayer Plug-in is associated with a <code>.rpm</code> file name extension. This extension tells the user's Web browser to load RealPlayer Plug-in rather than the stand-alone RealPlayer.</p> <p>For the user's Web browser to correctly identify <code>.rpm</code> files, you or your system administrator must first configure the <code>.rpm</code> MIME type in your Web server. Users do not need to configure their Web browsers to recognize</p>

Feature	Description
	<p>the .rpm MIME type. The plug-in architecture automatically sends .rpm files to RealPlayer Plug-in. Files with a .rpm extension are identical to .ram files, except for the extension.</p>
<p>WIDTH and HEIGHT Attributes</p>	<p>The WIDTH and HEIGHT attributes specify the size of the embedded RealAudio or RealVideo component. Unlike images, Plug-ins do not size automatically. The WIDTH and HEIGHT can be specified in pixels (the default) or as a percentage of the Web browser window (for example: WIDTH=100%).</p> <p>Note If the WIDTH and HEIGHT attributes are not included, the Plug-in may appear as a tiny (and useless) icon with some browsers.</p> <p>If you want your Plug-in component to maintain an absolute size, specify HEIGHT and WIDTH in pixels. If you want the Plug-in graphic to scale with the Web browser window, specify size as a percentage. For example, if you want to fit the entire width of the Web browser window, use WIDTH=100%.</p>
<p>CONTROLS attribute</p>	<p>The CONTROLS attribute of the <EMBED> tag allows you to place individual control elements within your page. You can use multiple <EMBED> statements to construct a custom interface, made up of individual controls. You can also place multiple controls within a single <EMBED> statement. CONTROLS supports the following values: All, ControlPanel, InfoVolumePanel, InfoPanel, StatusPanel, StatusBar, PlayButton, StopButton, VolumeSlider, PositionSlider, PositionField, StatusField, ImageWindow.</p>
<p>CONSOLE attribute</p>	<p>Sets a console name used to link multiple control instances. All controls with the same console name work together. For example, if you have multiple Play and Stop buttons on the same page, the console name would enable them to control the same RealAudio or RealVideo clip. Call this function once for each instance of the Play or Stop button you want to link.</p>

Feature	Description
	The console name. “_master” links to all instances. “_unique” links to no other instances.
AUTOSTART attribute	Sets whether or not the control automatically starts playing once the source data is available. Valid values are TRUE or FALSE.
NOLABELS attribute	Suppresses the Title, Author, and Copyright label text in the controls window. The text strings in the fields are still displayed.
RESET attribute	Resets RealPlayer Control for ActiveX playlist. Valid values are TRUE or FALSE.
AUTOGOTOURL attribute	Specifies how a URL is handled. Valid values are TRUE or FALSE. TRUE indicates that RealPlayer Control for ActiveX automatically forwards the URL event to the browser. FALSE indicates that the OnGotoURL VBScript event is used instead.

Creating HTML Pages for Browsers Unable to Use the Plug-in

Some Web browsers do not support plug-ins. You can create HTML pages that are enhanced for plug-ins but which also work for other browsers. Simply use the **<NOEMBED>** tag to include HTML statements for use by Web browsers that do not support Plug-ins.

The **<NOEMBED>** command should appear after an **<EMBED>** command and take the following syntax:

```
<NOEMBED> HTML to be ignored </NOEMBED>
```

For example, the command:

```
<EMBED SRC="sample1.rpm" WIDTH=300 HEIGHT=134>
<NOEMBED> <A HREF="sample1.ram"> Please play the
clip using the stand-alone RealPlayer.
</A></NOEMBED>
```

would show a page with the Plug-in if your page were accessed by a browser supporting Plug-ins, and would otherwise display the message “Please play the clip using the stand-alone RealPlayer.” (and allow playback with the standard RealPlayer).

Using RealPlayer Control for ActiveX

You can embed RealPlayer Control for ActiveX in HTML pages using the Object tag.

The following is an example of RealPlayer Control <OBJECT> in an HTML page.

```
<OBJECT
  ID=RAOCX
  CLASSID="clsid:CFCDA03-8BE4-11cf-B84B-0020AFBCCFA"
  HEIGHT=140
  WIDTH=312>
  <PARAM NAME="SRC" VALUE="prn://audio.real.com/file.rm">
  <PARAM NAME="CONTROLS" VALUE="all">
</OBJECT>
```

Note: Directory names cannot have spaces.

Embedded Object Parameters for ActiveX

Feature	Description
OBJECT	Tag is used to embed RealPlayer Control for ActiveX. There should be one <OBJECT> tag per RealPlayer Control on the page.
CLASSID	Specifies the control's CLSID. This value is always “clsid:CFCDA03-8BE4-11cf-B84B-0020AFBCCFA” for RealPlayer Control for ActiveX.
HEIGHT	Specifies the control's height on the HTML page. A value of 0 makes the control invisible.
WIDTH	Specifies the control's width on the HTML page. A value of 0 makes the control invisible.

Feature	Description
PARAM	Specially embedded tag for supplying parameters to the ActiveX object.

The following properties are available to the PARAM setting:

Property	Description
SRC	Sets the source of RealAudio or RealVideo clip. The SRC location can be pnm, file or http protocol. This parameter is required.
CONTROLS	Sets the visible components of the control. Valid CONTROLS include All, ControlPanel, InfoVolumePanel, InfoPanel, StatusPanel, StatusBar, PlayButton, StopButton, VolumeSlider, PositionSlider, PositionField, StatusField, and ImageWindow.
CONSOLE	Sets a console name used to link multiple control instances. All controls with the same console name work together. For example, if you have multiple Play and Stop buttons on the same page, the console name would enable them to control the same RealAudio or RealVideo clip. Call this function once for each instance of the Play or Stop button you want to link. The console name. “_master” links to all instances. “_unique” links to no other instances.
AUTOSTART	Sets whether or not the control automatically starts playing once the source data is available. Valid values are TRUE or FALSE.
NOLABELS	Suppresses the Title, Author, and Copyright label text in the controls window. The text strings in the fields are still displayed.
RESET	Resets RealPlayer Control for ActiveX playlist. Valid values are TRUE or FALSE.
AUTOGOTOURL	Specifies how a URL is handled. Valid values are TRUE or FALSE. TRUE indicates that RealPlayer Control for ActiveX automatically forwards the URL event to the browser. FALSE indicates that the OnGotoURL VBScript event is used instead.

Specifying How the Control Should Look

The **CONTROLS** attribute allows you to place individual control elements within your page. The **CONTROLS** attributes for the Netscape Navigator Plug-in and RealPlayer ActiveX Control are the same. The following explains the output of each attribute:

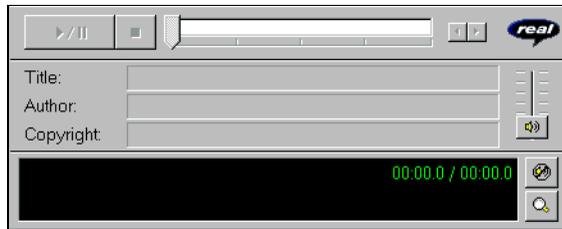
All - Displays a full Player view including the Control Panel, Information-and-Volume Panel and Status Bar.

Minimum Width: 21%

Maximum Width: 100%

Minimum Height: 23%

Maximum Height: 80%



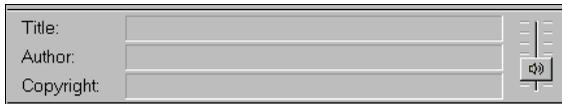
InfoVolumePanel - Displays the Title, Author, and Copyright information panel and the volume slider.

Minimum Width: 21%

Maximum Width: 100%

Minimum Height: 12%

Maximum Height: 50%



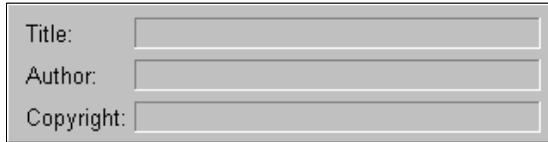
InfoPanel - Displays the Title, Author, and Copyright information.

Minimum Width: 20%

Maximum Width: 100%

Minimum Height: 10%

Maximum Height: 50%



A rectangular form with a light gray background and a thin border. It contains three text input fields stacked vertically. The first field is labeled "Title:", the second "Author:", and the third "Copyright:". Each label is positioned to the left of its corresponding input box.

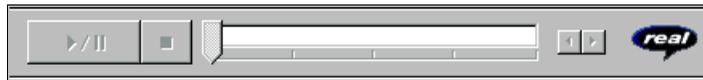
ControlPanel - Displays the play/pause button, the stop button and the position slider.

Minimum Width: 21%

Maximum Width: 100%

Minimum Height: 8%

Maximum Height: 25%



StatusPanel - Displays the Status Panel showing informational messages, current time position, and clip length. If you do not embed a Status Panel in your page, error messages are displayed in the Web browser's status bar.



PlayButton - Displays the play/pause button.

Minimum Width: 5%

Maximum Width: 100%

Minimum Height: 2%

Maximum Height: 25%



StopButton - Displays the stop button.

Minimum Width: 5%
Minimum Height: 2%

Maximum Width: 100%
Maximum Height: 25%



VolumeSlider - Displays the volume slider.

Minimum Width: 4%
Minimum Height: 10%

Maximum Width: 100%
Maximum Height: 100%



PositionSlider - Displays the position slider.

Minimum Width: 8%
Minimum Height: 5%

Maximum Width: 100%
Maximum Height: 25%



PositionField - Displays the field of the Status Bar showing position and clip length.

Minimum Width: 10%
Minimum Height: 4%

Maximum Width: 100%
Maximum Height: 25%



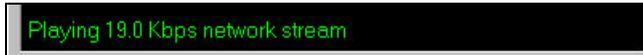
StatusField - Displays the message text area of the Status Bar.

Minimum Width: 13%

Maximum Width: 100%

Minimum Height: 4%

Maximum Height: 15%



ImageWindow - Displays the video image. (Only available for .rm files)

Minimum Width: 100%

Maximum Width: 100%

Minimum Height: 100%

Maximum Height: 100%



StatusBar - Displays the status field, position field, channels (stereo/mono).

Minimum Width: 21%

Maximum Width: 100%

Minimum Height: 5%

Maximum Height: 14%



ActiveX Methods and Properties

Methods

Methods are functions that control the performance of the Control. Unless otherwise noted, these methods have no return values and no parameters.

Method	Description
DoPlayPause	Plays or pauses the current clip. Equivalent to clicking the Play/Pause button.
DoStop	Stops the clip. Equivalent to clicking the Stop button.
DoNextItem	Skips to the next clip in a .ram file that contains multiple clips. A .ram file is a metafile that points to one or more RealAudio or RealVideo files.
DoPrevItem	Skips to the previous clip in a .ram file that contains multiple clips. A .ram file is a metafile that points to one or more RealAudio or RealVideo files.
CanPlayPause	Tests if Play/Pause function is available. Returns TRUE or FALSE
CanStop	Tests if Stop function is available. Returns TRUE or FALSE.
HasNextItem	Tests if the next clip function is available. The next clip function is available when the connected source is a .ram file that contains multiple clips, and the current clip is not the last clip in the .ram file. Returns true or false.
HasPrevItem	Tests if the previous clip function is available. The previous clip function is available when the connected source is a .ram file that contains multiple clips, and the current clip is not the first clip in the .ram file. Returns true or false.
AboutBox	Opens the Copyright information for the control.

Method	Description
EditPreferences	Opens the Preferences dialog box. Enables the end user to set his or her preferences. These preferences are global to all RealAudio or RealVideo clients on the machine.
HideShowStatistics	Shows or hides the Connection Statistics dialog box.
IsStatisticsVisible	Tests if the Connection Statistics dialog box is displayed. Returns true or false.
DoGotoURL(url, target)	Causes the control to attempt a navigation to the specified URL in the specified frame target. The container must support URL browsing. Parameters: string URL, string target.

Object Properties

The object properties are set within Visual Basic and specify properties about the control.

Property	Description
Source	Specifies the URL of the clip to play. The Source location can be pnm:, file: or http: protocol.
Controls	Returns/Sets the visible components of the control. Valid CONTROLS include ALL, ControlPanel, InfoVolumePanel, InfoPanel, StatusBar, StatusPanel, PlayButton, StopButton, VolumeSlider, PositionSlider, PositionField, ImageWindow and StatusField.
Console	Sets a console name used to link multiple control instances. All controls with the same console name work together. For example, if you have multiple Play and Stop buttons on the same page, the console name would enable them to control the same clip. Call this function once for each instance of the Play or Stop button you want to link. The console name master links to all instances while unique links to no other instances.

Property	Description
Autostart	Sets whether or not the control automatically starts playing once the source data is available. Valid values are TRUE or FALSE.
NoLabels	Suppresses the Title, Author, and Copyright label text in the controls window. The text strings in the fields are still displayed.
AutoGotoURL	Specifies how a URL will be handled. Valid values are TRUE or FALSE. TRUE indicates that the RealPlayer ActiveX Control will automatically forward the URL event to the browser. FALSE indicates that the OnGotoURL VBScript event will be sent instead.

Java and JavaScript Methods

Methods

Methods are functions that control the performance of the Java enabled RealPlayer Plug-in.

Method	Description
SetSource(String <i>Source</i>)	Specifies the URL of the RealAudio clip to play. The Source location can be pnm:, file: or http: protocol.
SetControlsString (String <i>ControlsString</i>)	Returns/Sets the visible components of the control. Valid CONTROLS include ALL, ControlPanel, InfoVolumePanel, InfoPanel, StatusBar, PlayButton, StopButton, VolumeSlider, PositionSlider, PositionField, StatusField, StatusPanel, and ImageWindow.
SetConsoleName (String <i>ConsoleName</i> Boolean <i>True</i>)	Sets a console name used to link multiple RealVideo Plug-in instances. All Plug-ins with the same console name work together. For example, if you have multiple Play and Stop buttons on the same page, the console name would enable them to control the same clip. Call this function once for each instance of the

Method	Description
	Play or Stop button you want to link. The console name master links to all instances while unique links to no other instances.
SetAutoStart(Boolean <i>bAutoStart</i>)	Sets whether or not the Plug-in automatically starts playing once the source data is available. Valid values are TRUE or FALSE.
SetNoLabels(Boolean <i>bNoLabels</i>)	Suppresses the Title, Author, and Copyright label text in the Plug-in window. The text strings in the fields are still displayed.
DoPlayPause()	Plays or pauses the current clip. Equivalent to clicking the Play/Pause button.
DoStop()	Stops the RealAudio clip. Equivalent to clicking the Stop button.
DoNextItem()	Skips to the next clip in a .ram file that contains multiple clips. A .ram file is a metafile that points to one or more RealAudio files.
DoPrevItem()	Skips to the previous clip in a .ram file that contains multiple clips. A .ram file is a metafile that points to one or more RealVideo files.
CanPlayPause()	Tests if Play/Pause function is available. Returns TRUE or FALSE
CanStop()	Tests if Stop function is available. Returns TRUE or FALSE.
HasNextItem()	Tests if the next clip function is available. The next clip function is available when the connected source is a .ram file that contains multiple clips, and the current clip is not the last clip in the .ram file. Returns true or false.
HasPrevItem()	Tests if the previous clip function is available. The previous clip function is available when the connected source is a .ram file that contains multiple clips, and the current clip is not the first clip in the .ram file. Returns true or false.

Method	Description
AboutBox()	Opens the Copyright information for the control.
EditPreferences()	Opens the Preferences dialog box. Enables the end user to set his or her preferences. These preferences are global to all clients on the machine.
HideShowStatistics()	Shows or hides the Connection Statistics dialog box.
IsStatisticsVisible()	Tests if the Connection Statistics dialog box is displayed. Returns true or false.

CallBack Methods

CallBack methods are functions that provide notification from the RealAudio or RealVideo engine. CallBack methods can only be used with Java applets by implementing the RAObserver interface.

Method	Description
onClipOpened(String <i>shortClipname</i> , String URL)	Sent when a clip has been opened.
onClipClosed()	Sent to indicate that no clip is currently open.
onShowStatus(String <i>status</i>)	Sent to indicate that the status text is changing.
setAutoGoToURL (boolean <i>bAutoGoToURL</i>)	Specifies how a URL will be handled. Valid values are true or false. True indicates that the RealPlayer Plug-in will automatically forward the URL event to the browser. False indicates that the OnGoToURL event will be handled by the Java applet instead.
onGoToURL(String <i>url</i> , String <i>target</i>)	Sent when a URL event has been encountered for the currently playing clip. This event will only occur if the AutoGotoURL property is false.

Advanced Control Attributes

The more exciting features of RealPlayer Plug-in and RealPlayer Control for ActiveX can be enabled by specifying custom attributes within your HTML documents.

Removing Text Labels from Controls

If your Web page is in a language other than English, or if you want to use the Description fields to display information other than Title, Author, and Copyright, you may remove the Title, Author, and Copyright Labels from the information area. Controls that display Title, Author, and Copyright information for a clip, support a **NOLABELS=TRUE** attribute.

For example, allowing the default behavior

```
<EMBED SRC="use_lbl.rpm" WIDTH=350 HEIGHT=80  
CONTROLS=InfoPanel>
```

or specifying **NOLABELS=FALSE**

```
<EMBED SRC="use_lbl.rpm" WIDTH=350 HEIGHT=80  
CONTROLS=InfoPanel NOLABELS=FALSE>
```

results in the following display.



On the other hand, using **NOLABELS=TRUE**, for example:

```
<EMBED SRC="no_lbl.rpm" WIDTH=350 HEIGHT=80  
CONTROLS=InfoPanel NOLABELS=TRUE>
```

produces the following InfoPanel:



Starting Clips Automatically

Adding an **AUTOSTART=TRUE** attribute tells the user's browser to automatically begin playing your clip when the page is visited. You can use this feature to begin narration, to play a welcome message or start a video.

Since only one clip can play at a time, if you specify **AUTOSTART** for more than one control instance, only the last control to load will play. The order in which your files are delivered is dependent on the Web server and on the browser's cache size. This is not necessarily the order in which you put them within your HTML. Therefore, you should specify **AUTOSTART** for only one control instance per page.

Playing Clips with a Hidden Control or Plug-in

If you want to play RealAudio or RealVideo clips without having a visible Plug-in control, you hide the control. By embedding a Plug-in in your page that has its size set to `width=2 height=0`, no image appears on your Web page. You can control the Plug-in with JavaScript.

For example:

```
<script Language=JavaScript>
function playSource()
{if (navigator.appName == "Netscape")
{document.javaPlug1.DoPlayPause();}
else
{RAOCX.DoPlayPause();}
}
</script>
<A HREF="#" onClick="playSource()"><IMG
SRC="button.gif"></A>
<OBJECT ID=RAOCX CLASSID="clsid:CFCDA03-8BE4-
11cf-B84B-0020AFBCCFA" WIDTH=2 HEIGHT=0>
<PARAM NAME="SRC"
VALUE="pnm://audio.real.com/welcome.rm">
<PARAM NAME="CONTROLS" VALUE="PlayButton">
<embed src="start.rpm" Width=2 Height=0
Controls=PlayButton name=javaPlug1>
```

`</OBJECT>`

The above example works in both Netscape and Internet Explorer. Only one control will appear on the Web page.

Making Controls Work Together

You can embed any number of RealPlayer controls within a Web page. Normally, each tag instance refers to different content. Sometimes, however, you may want to link two or more controls together. For example, you can create a play button and an image window that work as a pair.

To include multiple components that work together, specify a `CONSOLE` attribute for each control and assign this the same value in each instance. For example:

```
<EMBED SRC="sample1.rpm" WIDTH=30 HEIGHT=33
CONTROLS="PlayButton" CONSOLE="Clip1">
<EMBED SRC="empty1.rpm" WIDTH=176 HEIGHT=144
CONTROLS="ImageWindow" CONSOLE="Clip1">
```

Note: Each `<EMBED>` tag must have a unique `SRC` attribute (if the same source is specified for two tags, one is ignored). Create a dummy `.rpm` file (named, for example: `empty1.rpm`) for a second control accessing a clip. Put a hard carriage return (ASCII code 13) into the dummy file.

Specifying a `CONSOLE` value of “`_master`” links a particular control to all other RealPlayer Controls on the page. Use this value, for example, to add a Status Bar to display information for all clips, for example:

```
<EMBED SRC="sample1.rpm" WIDTH=300 HEIGHT=33
CONTROLS="StatusBar" CONSOLE="_master">
```

Because many platforms, including Windows, only support one volume setting, all volume sliders act on the same underlying value and affect all clips regardless of `CONSOLE` name. For this reason, you may want to include only one volume slider per page, with no reference to a `.rm` file in its associated `.rpm` file.

If you only include an `ImageWindow` control on the Web page, the video stream may still be controlled by using the context sensitive pop-up menu. For Windows users, right-click the `ImageWindow`; Macintosh users, click and hold the mouse button until the pop-up menu appears.

Frame Document

A frame document describes the sub-HTML documents or frames that make up a window. The basic structure of a frame document is similar to that of a normal HTML document except that the FRAMESET tag replaces the BODY tag. Each frame is defined by the FRAME tag. In order to effectively use RealVideo, each FRAME tag needs the SRC and NAME attributes. The SRC points to the URL to be displayed in the frame. The NAME attribute assigns a name to the frame so that it can be targeted by links in other documents. The example below shows a simple frame document that would create two frames:

```
<HTML>
<FRAMESET ROWS="105,*">
    <FRAME SRC="banner.html" NAME="banner">
    <FRAME SRC="lyrics.html" NAME="Lyric">
</FRAMESET>
</HTML>
```

Synchronizing Frames and Video and Audio

Frames and RealVideo and RealAudio content are synchronized in the same way that a regular Web page and RealVideo and RealAudio content are synchronized: a .rae file. The difference lies in the addition of the targeted frame name to the text file that is used to create the .rae file. The syntax for each entry should follow the format:

```
u starttime endtime &&frameName&&EventURL
```

where:

u stands for URL event (each line starts with the letter **u**)
starttime is the time into the clip when the new event is shown
endtime is the time into the clip when that event ends, **&&** is a delimiter
frameName is the frame name as specified in your frame document
EventURL (generally beginning with "http:" or "file:") is the URL for that event (usually an HTML document).

The time format is:

```
[ [ [days:]hours:]minutes:]seconds[.tenths]
```

The lines of the input file must be in ascending order of start time. The end time should be at least one tenth of a second before the start time for the next event.

The example below shows an .rae input file for a Web site that displays lyrics as a song plays. Each verse is displayed within a frame called Lyric.

```
u 00:00:10.0 00:00:35.0
&&Lyric&&http://www.songs.com/ver1.html
u 00:00:35.0 00:00:50.0
&&Lyric&&http://www.songs.com/ver2.html
```

Note: You cannot use frames within a presentation using RealPlayer as a helper application. You can only use frames within a multimedia presentation using the Plug-in or ActiveX Control.

Synchronized Multimedia

In addition to basic audio and video content, RealAudio and RealVideo System allows you to create real-time on-demand multimedia presentations using the RMMerge tool (Windows or UNIX). These presentations can be as simple as a narrated slide show of your home page or as intricate as a multi-frame training program that the viewer controls.

RealAudio and RealVideo System includes the ability to synchronize World Wide Web pages with audio. Thus the audio can be used as a “time line” to display new pages or frames in the Web browser or to update its content. This enables the creation of Internet slide shows, presentations, guided tours and site walk-throughs. A user can have full random access (fast forward and rewind), and the Web browser content is synchronized with the audio.

RealAudio and RealVideo System stores the information for the synchronized events in a file with a .rm file extension. Basic Server Plus streams audio and event information to RealPlayer. The event information is streamed to RealPlayer, and in turn RealPlayer sends Web page information to the Web browser telling it to update the page’s content.

Another way to create a synchronized multi-media presentation is using RealPlayer Plug-in. However, since sending the Web browser to a new URL

unloads RealPlayer Plug-in when the HTML page is unloaded, it is best to create separate frames for RealPlayer Controls and for the changing images.

Creating a RealVideo Events File

Creating a synchronized multimedia event using .rm files uses the **rmmerge** tool. This is a three-step process:

1. Use a text editor to create an input file specifying the display time for each URL, title, author or copyright event.
2. Use the **rmmerge** tool to generate a binary file from the text input file by typing the following command:

```
rmmerge -f rmevents.dll event.txt output.rm
```

where:

event is the text file created in step 1

output is the .rm file that contains these events

3. Merge your new events .rm file with an audio or video file using the following command:

```
rmmerge <event file> <audio or video file> <output file>
```

where:

<event file> is the .rm file created in the previous step

<audio or video file> is the file merged with the event file

<output file> is the file resulting from the merge

For example:

```
rmmerge event.rm audio_video.rm output.rm
```

Creating the Input File

Begin by creating a list of the URLs, titles, authors, or copyrights that you want to be shown during your presentation and the times within RealAudio or

RealVideo clip when they should be displayed. The syntax for each entry should follow the format (with a space between each part of the command):

```
u starttime endtime EventURL  
i starttime endtime Title  
a starttime endtime Author  
c starttime endtime Copyright
```

where:

- u** stands for URL event; each line starts with the letter **u**
- i** stands for title; each line starts with the letter **i**
- a** stands for author; each line starts with the letter **a**
- c** stands for copyright; each line starts with the letter **c**
- starttime** is the time into the clip when the new event is shown
- endtime** is the time into the clip when that event ends
- EventURL** (generally beginning with “http:” or “file:”) is the Internet address for that event (usually an HTML document)

The time for **starttime** and **endtime** is:

```
[ [ [days:]hours:]minutes:]seconds[.tenths]
```

The lines of the input file must be in ascending order of start time. The end time should be at least one tenth of a second before the start time of the next event. The following example shows how an input file might look:

```
u 00:00:10.0 00:00:59.9 http://www.real.com/  
u 00:01:00.0 00:02:00.0 http://www.mysite.com/page2/
```

This input file tells RealPlayer to send the Web browser to the RealNetworks home page ten seconds into the audio clip. One minute into the audio clip, the Web browser displays a page from “www.mysite.com.”

The input file may also contain comment lines beginning with the # symbol. These comment lines are ignored by the event creation tool and are a good way to document the date that the file was created and the type of information found on each page.

Creating a RealAudio Events File

The RealAudio system allows you to create real-time on-demand multimedia presentations using the **Cevents** utility (Windows or UNIX). Creating a synchronized multimedia event using the **Cevents** command line tool is a three-step process:

1. Use a text editor to create an input file specifying the display time for each URL.
2. Use the **Cevents** command line tool to generate a binary file from the text input file.
3. Place the resulting .rae file in the same directory as the .ra audio file.

Creating the Input File

Create the Input File as described in “Creating the Input File” on page 5.

Generating an Event File

After creating the text version of the input file, you must convert the file to a binary event file. This is done with the command line utility **Cevents32** (Windows) or **Cevents** (UNIX). It uses the following syntax:

Windows

```
cevents32 <InputTextFile> <OutputEventFile>
```

UNIX

```
cevents <InputTextFile> <OutputEventFile>
```

where:

<InputEventFile> is the file you just created

<OutputEventFile> is the same name as the file with which it will be associated.

For example, to create a synchronized multimedia presentation to accompany `paradise.ra`, you would generate `paradise.rae` using the following command:

```
cevents paradise.txt paradise.rae
```

Placing Event Files on Your Server

Copy the `.rae` file to the same directory as your `.ra` file. The `.ra` and `.rae` files must have the same name except for the file extension. Basic Server Plus automatically detects the file and send the event information to RealPlayer, which then sends it the Web browser.

Using Synchronized Multimedia from Local Files

RealPlayer can also read local `.rae` files just as the Server does. In order for the local presentation to work with multiple platforms and with both Internet Explorer and Netscape Navigator, without hardcoding the directory structure, you need to follow these steps.

To play a `.rae` file locally:

1. Place all `.rpm/.ram`, `.ra`, HTML and image files in one directory. The starting document should be named `Index.html`.
2. Do not use the slash mark (`/`) in your file names. Use the syntax described in “Creating the Input File,” above.

Note: If you will be using the presentation on a Macintosh computer, do not use relative path commands such as `../`.

`.TXT` file - convert into `.rae` file using Cevents compiler

```
u 10:00:45.00 &&media&&test2.html
```

`.RAM` and `.RPM`

```
file:1shapfut.ra
```

IMAGES

```
<IMG src="1shapfut.gif">
```

HREFs

```
<a href="ras1d011.htm">
```

EMBEDs

```
<EMBED SRC="lecture5.rpm">
```

Using Synchronized Multimedia with Bandwidth Negotiation

When you deliver a Synchronized Multimedia presentation using Bandwidth Negotiation, you can choose to deliver the same event for all encoding formats, or you can choose to deliver different events for each encoding format.

You can create a single synchronized multimedia presentation for multiple formats, or you can create a different multimedia presentation for each encoding format. If you are working with previously created content, you can continue to use the previous method to create presentations.

For more information on this topic, see the *RealAudio and RealVideo Content Creation Guide*.

Chapter 7 Basic Server Plus Log Files

Basic Server Plus writes important status information to the following log files, which reside in the **logs** subdirectory of your Basic Server Plus installation:

Log	Default File Name	Purpose
Access Log	pnaccess.log or pnaccess	Records transactions by visitors.
Error Log	pnerror.log or pnaccess	Records events and error messages about Basic Server Plus operation.

The log files are plain text files that can be read using any text editor or word processor. Each Basic Server Plus log file records transactions in a file format common to most Web servers. Transaction fields are delimited by spaces.

Access Log

The Basic Server Plus Access Log (**pnaccess.log** or **pnaccess**) displays the number of clients that are connected to your server, the names of the client machines, the clips they listened to, the times of day they connected, and errors that were generated by Basic Server Plus. This information can give you an idea of who your audience is and which clips are popular.

Reading the Access Log File

Two configuration parameters, **LoggingStyle** and **StatsMask**, control what is captured in the Access Log. For more information on these settings, see Chapter 4, “Configuring and Maintaining Basic Server Plus.”

View the Access Log File by opening **pnaccess.log** or **pnaccess** in a word processor or text editor.

Syntax

The format for an Access Log record is:

```
<IP_address> <- -> <timestamp> "<GET filename>  
<protocol>" <return_code> <bytes_sent>  
[<client_ID_string>] [<client_unique_id>] <stat1>  
<stat2> <stat3> <file_size> <file_time> <sent_time>  
<resends> <failed_resends>
```

where:

<IP_address>

IP address of Client. For example:

```
123.45.678.90
```

<- ->

Two hyphens for compatibility with Web server log formats.

<timestamp>

Time that Client accessed the file in the format:

```
[<dd>/<Mmm>/<yyyy>:<hh>:<mm>:<ss> <TZ>]
```

where TZ is the time zone expressed as the number of hours relative to the Coordinated Universal Time (Greenwich, England). For example:

```
[ 31/Oct/1996:13:44:32 -0800 ]
```

<GET filename>

File requested by Client. *Filename* is the relative path to the Server's **BasePath** value. For example:

```
GET /bands/fourfrosh/classics.ra
```

<protocol>

Protocol and version used by Client in the format:

PNA<type>/<number>

where:

<type> is **T** for TCP connections, **H** for PNAviaHTTP, **M** for Multicast, and blank for UDP connections.

Type appears only if the **LoggingStyle** configuration parameter is set to 1.

<number> is the PN protocol number. For example:

PNA/8
PNAT/8

<return_code>

Return code using HTTP standard error codes.

<bytes_sent>

Number of bytes transferred to Client during play. This field may be lower than the total size of the media file, indicating partial playback of the file. If this field is consistently low for some or all media files, it may mean that RealPlayers are able to connect to your server, but are unable to play files. Check your system Error Logs for messages relating to network system errors.

[<client_ID_string>]

Client ID string. This field is not part of the common Web server Access Log format; it is text sent by the Client that describes the version and type of Player being used. RealAudio Player versions 2 and 3 use the following format:

**<platform>_<version>_<player>_<type>_<dist>_
<language>_<CPU>**

where:

<platform> is the operating system that RealPlayer is running on—Win16, WinNT, Mac, and so on.

<version> is the operating system version number.

<player> is the version number of RealPlayer.

<type> is the type of RealPlayer.

<dist> is the distribution code of RealPlayer.

<language> is the code of RealPlayer. EN is US English.

<CPU> is the type of processor running the platform. If the processor does not have a hardware Floating Point Unit, the string “no-FPU” is appended to the end of the CPU field with no delimiter. For example:

Win95_4.0_3.0.0.19_play32_PN01_EN_586

RealAudio Player version 1 uses an ID string in the following format:

<platform><player>

The field descriptions are the same as the newer format. For example:

Win1.0.0

If the client is a splitter, the Client ID field contains the following string:

splitter

<client-unique_id>

Unique ID generated during RealPlayer installation that enables you to track details for individual players, allowing you to enhance the quality of the captured statistics. This entry is displayed only when LoggingStyle is set to 2.

This will also display the new entries for LoggingStyle 1.

<stat1>

Connection statistics sent by the Client when it completes playing a clip. These optional fields are sent only when the StatsMask configuration parameter is set to 1 or 3. The Player user can also set a preference value to block sending connection statistics. When the Client blocks connection statistics, when the Client is a splitter, or when StatsMask is set to 0, the **<stat1>** and **<stat2>** fields are replaced by **[UNKNOWN]**.

The connection statistics field starts with the string “Stat1” and has the following format:

```
[Stat1: <total> <order> <missing> <early> <late>
<audioformat>]
```

where:

<total> is the total number of packets received by the Client.

<order> is the number packets received by the Client out of order. These packets are reordered as they are being played by the Client.

<missing> is the number of packets requested by the Player, but that the Client did not receive. This is the most common problem reported in the Error Log. A low percentage of missing packets does not have a serious effect on quality; a high percentage seriously degrades media quality.

<early> is the number of requested packets received too early by the Client. If the Client receives packets too early, then older packets are discarded. This problem is rare, and it may indicate that the client’s machine is running too slow or has a bad Internet connection. However, if this problem shows up often, you need to investigate further.

<late> is the number of packets received too late by the Client. If the Client receives packets too late, the Player will have already played that portion of the media. This is a rare occurrence; if it happens often, your server’s Internet connection may not be fast enough.

<audioformat> is the name of the decoder used to play the clip. Possible values are:

dnet	RealAudio 3.0 formats
28.8	RealAudio 2.0 28.8 format
1pcJ	RealAudio 2.0 14.4 format

For example:

```
[Stat1: 641 0 0 0 0 dnet]
```

<stat2>

Extended connection statistics sent by the Player when it completes playing a clip. These statistics are supported by all Players.

These optional fields are sent only when the StatsMask configuration parameter is set to 2 or 3. The Player user can also set a preference value to block sending connection statistics. When the Client blocks connection statistics, when the Client is a splitter, or when StatsMask is set to 0, the `<stat1>` and `<stat2>` fields are replaced by `[UNKNOWN]`.

The extended connection statistics field starts with the string "Stat2" and has the following format:

```
[Stat2: <bandwidth> <available> <highest><lowest>
<average> <requested> <received><late> <rebuffering>
<type> <startup> <videofmt>]
```

where:

`<bandwidth>` is the bandwidth in bits per second of the clip.

`<available>` is the average bandwidth in bits per second available to the user while the clip was playing.

`<highest>` is the highest time in milliseconds between the Client requesting a resent packet and receiving the packet.

`<lowest>` is the lowest time in milliseconds between the Client requesting a packet be resent and receiving the packet.

`<average>` is the average time in milliseconds between the Client requesting a resent packet and receiving the packet for all resent packets.

`<requested>` is the number of resent packets requested by the Client.

`<received>` is the total number of resent packets received by the Client.

`<late>` is the number of resent packets received by the Client too late.

`<rebuffering>` is the rebuffering percentage for the clip.

`<type>` is the transport type for the connection. Values are: **0** (UDP), **1** (TCP), **2** (IP Multicast), and **3** (PNAviaHTTP)

<startup> is the time in milliseconds from the Client sending the first packet to the Server to the Client receiving the first packet from the Server.

<video format> is the name of the video decoder used to play the clip. Values are:

pnrv - RealVideo 1.0
clrv - RealVideo (Fractal)

For example:

```
[Stat2: 15234 15552 0 0 0 0 0 0 0 0 220 28.8]
```

<stat3>

Statistics sent by the client which capture behavior observed by a data renderer. These statistics are only sent to the Basic Server Plus when the RealPlayer preferences are set to send statistics. Moreover, these fields are only requested by the RealServer when the StatsMask configuration setting is set to 4, 5, 6, or 7. Pipe '|' characters are used as field separators in the Stat3 record. Multiple Stat3 records are delimited by a semi-colon character (;).

```
[Stat3:<timestamp>|<elapse time>|<action>|<(data)>;]
```

where:

<timestamp> Time when action occurred. Time is recorded in milliseconds, and is relative to the connect time of the client.

<elapse time> Elapse time of the clip when the behavior occurred, where time is recorded in milliseconds.

<action> Behavior, where values are:

ABORT client stop/application closure (not natural end of clip play)

RESUME resume play after a pause, seek or stop

PAUSE client pause

SEEKSTART client begin seek

RECSTART client begin record (RealPlayer Plus only)

RECEND end record (RealPlayer Plus only)

CLICK image map click-through

ADSTART elapse time of an advertisement clip when the client started play

ADEND elapse time of an advertisement clip when the client ended play

<(data)> Optional field containing a string which defines the action. The string found in this field is surrounded by parenthesis characters “(” and “)”. Individual values found in the field are separated by the comma “,” character.

For example:

```
[Stat3:6000|10000|PAUSE|;78600|10000|RESUME|;200000|1350000|SEEKSTART|;2004500|3280000|RESUME|;]
```

Note: Note, a Stat3 record is not generated at either the initial play or natural end of .rm file stream. This information is directly derived from the main section of the Access Log.

Data Definitions Within the **Stat3** Record

CLICK Where the data field defines a **CLICK** action, the following values appear:

```
(<horizontal coordinate>,<vertical coordinate>,<action_tag>)
```

where:

<horizontal coordinate> is the horizontal coordinate the client interacted with

<vertical coordinate> is the vertical coordinate the client interacted with

<action_tag> is the action comprising the image map values are:

```
<PLAYER=" ">
```

```
<URL=" ">
```

<SEEK= >

For example:

```
[Stat3:80000|80000|CLICK|(28,43,URL="http://www.
realnetworks.com");]
```

ADSTART Where the data field defines an ADSTART action, the following values appear:

(<AD URL>,<elapse time>)

where:

<AD URL> is the relative path and file name of the advertisement media

<elapse time> is the elapse time in milliseconds of the advertisement media when play began

For example:

```
[Stat3:1000|0|ADSTART|(/ads/mci.rm,0);]
```

ADEND Where the data field defines an ADEND action, the following values appear:

(<AD URL>,<elapse time>,<ad duration>)

where:

<AD URL> is the relative path and file name of the advertisement media

<elapse time> is the elapse time in milliseconds of the advertisement media when play ended

<ad duration> total duration time in milliseconds of the advertisement media

For example:

```
[Stat3:1000|0|ADSTART|(/ads/mci.rm,0);31000|0|AD  
END|(/ads/mci.rm,30000);]
```

<file_size>

Total amount in bytes of media data in the media file. This number is less than the size of the media file because it does not include the file header and other non-media information stored in the file. This field appears only if the LoggingStyle configuration parameter is set to 1.

For live broadcasts, file_size is always 0.

<file_time>

Total length, in seconds, of media stored in the media file. This field appears only if the LoggingStyle configuration parameter is set to 1.

For live broadcasts, file_time is always 0.

<sent_time>

Total length, in seconds, of the media sent to the Player. This field appears only if the LoggingStyle configuration parameter is set to 1.

<resends>

Number of packets successfully resent because of transmission errors. This field appears only if the LoggingStyle configuration parameter is set to 1.

<failed_resends>

Number of packets not successfully resent in time to correct transmission errors. This field appears only if the LoggingStyle configuration parameter is set to 1.

Example Access Log

The following example shows three Access Log entries:

```
172.16.2.139 - - [04/Nov/1996:14:45:57 -0700] "GET  
newclips/realcool.ra PNA/8" 200 590976  
[Win95_4.0_3.0.0.19_play32_PN01_EN_586] [Stat1: 2592 0 0 0
```

```
0 28.8][Stat2: 15234 15552 0 0 0 0 0 0 0 0 220 28.8]
590976 310 310 0 0
172.16.2.139 - - [04/Nov/1996:14:53:49 -0700] "GET
classic/xyz144.ra PNAT/8" 200 4
[Win95_4.0_3.0.0.19_play32_PN01_EN_586] [UNKNOWN] 5580 5 0
0 0
172.16.2.139 - - [04/Nov/1996:16:01:10 -0700] "GET
speeches/carter.ra PNA/5" 200 55680 [Win1.0.0] [Stat1: 229
0 0 0 0] 630020 630 55 0 0
```

Error Log

The Error Log contains both information and error messages about server operation. By looking for patterns of errors, you can troubleshoot and correct possible problems on your site.

The default error log name is **pnerror.log**, but you can change the name of the file errors are recorded in by changing the **ErrorLogFilePath** specified in the configuration file. For information on this setting, see Chapter 4, “Configuring and Maintaining Basic Server Plus.”

View the text of the Error Log using a word processor or text editor.

Syntax

Error messages are recorded in the Error Log in the following format:

[Date] [Time] [Servername](ProcessID) : [Error Message]

If the Basic Server Plus is running on a UNIX platform, the Error Log also includes information about extreme errors such as faulty streams, memory corruption, and product incompatibilities. The following is a report from a server that has had errors from which it recovered:

```
***13-Nov-97 13:50:47.175 pnserver(6905): TRAPPED  
FAULT: Please File Bug Report
```

```
***13-Nov-97 13:50:47.177 pnserver(6905): Fault  
Report: 5.0.1.1-rvserver-build-223 FreeBSD-2.1.x  
0x00015516: 53ca6850 d8680001 68000153 000153f3  
0cbe75e8 540b6800 6be80001 a1000cbe  
0x00001b9c: 4074c085 0b6a006a 12c51be8 6a006a00  
c512e806 006a0012 09e80a6a 6a0012c5
```

```
***13-Nov-97 13:50:47.177 pnserver(6905): TRAPPED  
FAULT: Attempting Crash Avoidance...
```

```
***13-Nov-97 13:50:47.177 pnserver(6905): Fault caused  
by type 9 client from 172.16.2.212
```

```
***13-Nov-97 13:50:47.178 pnserv(6905): TRAPPED  
FAULT: Crash Avoidance Successful
```

The following is a sample entry from a server which was not able to recover from an error:

```
***13-Nov-97 13:49:23.105 pnserv(6890): FATAL ERROR:  
Couldn't Handle Fault: Terminating...
```

```
***13-Nov-97 13:49:23.105 pnserv(6890): FATAL ERROR:  
Please File Bug Report
```

If you have an entry that refers to a fatal error, contact the RealNetworks Technical Support Department for assistance.

Example Error Log

A sample error message looks like this:

```
***15-Nov-96 14:13:30.488 myserver(1556): 6220: No  
such user: joe
```

You can also have Basic Server Plus send messages to your e-mail address to notify you when certain thresholds are exceeded.

Log File Maintenance

Because new records are appended to log files for each event (error or transaction) these files can become rather large quickly. To keep your log files a manageable size, it is recommended that you review them regularly and archive them to maintain a record of your server's performance.

You should read your log files on a regular basis. How frequently you read them depends on the amount of traffic your Basic Server Plus handles and if you are encountering any problems.

Archiving Log Files

You can archive a log file by changing the filename in the Basic Server Plus configuration file. Basic Server Plus writes any new information to the new file, and the old file retains the archival information.

Using the System Manager

Windows

1. Connect System Manager to the Basic Server Plus whose log file you want to rename.
2. On the **Server** menu, click **Configuration**.
3. Select the setting that you want to change:
 - **ErrorLogPath** for the Error Log
 - **LogPath** for the Access Log
 - **LogPath** for the Advertising Presentation Log
4. Type a new name for the log file and click **OK**.
5. Basic Server Plus starts writing to the new file.

Restart the Basic Server Plus to cause the new configuration settings to take effect.

UNIX

1. For UNIX servers, UNIX continues to write to the new, renamed file until you send a SIGHUP signal. Upon receiving the SIGHUP signal, Basic Server Plus closes the existing, now renamed log file. When the next event occurs, Basic Server Plus opens a new log file using the settings in the configuration file.
2. For example, to change your Access Log file from **pnaccess.log**, rename it **access1.log**. Basic Server Plus continues to write to **access1.log**. Once Basic Server Plus receives a SIGHUP signal, it closes **access1.log** and writes the next event to a new, empty file **pnaccess.log**.
3. If you do not want to keep your log files, simply delete the log file and issue a SIGHUP signal. Once Basic Server Plus receives this signal, it opens a new empty file with the same name.
4. To send a SIGHUP signal, use the **kill** command with the server's process id. If you are in the logs directory, use the following syntax:

```
kill -hup 'cat pnserver.pid'
```

Appendix A Server Commands

cevents

The **cevents** utility takes the supplied text file containing the multimedia event descriptions and converts it to a compiled events file.

Syntax

```
cevents <inputfile> <outputfile>
```

Example

Windows

```
cevent32.exe events.txt events.rae
```

UNIX

```
cevents events.txt events.rae
```

where

-v Displays the version information of the **cevents** utility.

<inputfile> Inputfile has the following format:

```
u <starttime> <endtime> <URL>
```

where each entry is on a single line with each value separated by spaces and where:

<starttime> is the start time of the event in HH:MM:SS.t format

<endtime> is the end time of the event in HH:MM:SS.t format

<URL> is the URL of the page for the event

Example

```
u 00:00:20.0 00:00:59.9 http://204.71.156.200/demo/banner.htm
u 00:01:00.0 00:02:00.0 http://204.71.156.200/demo/pictures.htm
u 00:02:05.0 00:03:00.0 http://204.71.156.200/demo/pictures2.htm
```

If you are using frames in your synchronized multimedia, you can target a specific frame by putting the name of your target frame in the event file as follows:

```
u 00:00:20.0 00:00:59.9
&&targetframe&&http://204.71.156.200/demo/banner.htm
u 00:01:00.0 00:02:00.0
&&targetframe&&http://204.71.156.200/demo/pictures.htm
u 00:02:05.0 00:03:00.0
&&targetframe&&http://204.71.156.200/demo/pictures2.htm
```

kill

Syntax

```
kill -HUP <processID>
```

where **<ProcessID>** is the process id of Basic Server Plus.

You can reconfigure a running server on a UNIX machine using the command-line interface. First, change the parameters you want by editing the **server.cfg** file. Then use the **kill** command with the **-HUP** flags. This forces the Server to reload with the new configuration settings.

If you do not know the process id, run **ps** to obtain it. The parameters for **ps** depend upon the version of UNIX you are using:

UNIX platform	Command
BSDI, FreeBSD, LINUX, SunOS	ps -aux grep pns
AIX, HP-UX, DEC UNIX, IRIX, SOLARIS	ps -ef grep pns

pnserver

The **pnserver** command starts Basic Server Plus.

Syntax

```
pnserver [-v] [-n] [-p port] <configfile>
```

where:

- v** Displays the version information of Basic Server Plus. This includes the platform, build and release tags used to identify a particular release.
- n** (UNIX only) Do not detach from the command terminal. This prevents the server from becoming a daemon process.
- p port** Use the supplied TCP port as the connection port for the server. This overrides any configuration file setting.
- <configfile>** Specifies a file of configuration settings for pnserver. If no file is specified, uses the settings in **server.cfg**. If another file is specified, settings in this file override values in **server.cfg**. For information on configuration settings, see Chapter 4, “Configuring and Maintaining Basic Server Plus.”

Example

Windows

```
bin\pnserver server.cfg
```

UNIX

```
bin/pnserver server.cfg
```

raconv

Bandwidth negotiation file converter. The **raconv** utility takes the supplied files and converts them to the Bandwidth Negotiation naming scheme and places them in the specified directory. More than one file name can be supplied.

Syntax

```
raconv [-v] [-f] <file names> directory
```

where:

- v** Displays the version information of the utility. This includes the platform, build and release tags used to identify a particular release.

- f** Forces raconv to overwrite existing files with the same filenames.

Example

The file `newband.ra` is encoded in three formats: RealAudio 2.0 - 28.8, RealAudio 3.0 - ISDN Mono, and RealAudio 3.0 - Dual ISDN Stereo. The files are stored in the following locations:

```
/usr/rawdata/old28_8/newband.ra  
/usr/rawdata/isdnmono/newband.ra  
/usr/rawdata/dualisdn/newband.ra
```

To create these files, issue the following commands:

```
raconv /usr/rawdata/old28_8/newband.ra /usr/rafiles  
raconv /usr/rawdata/isdnmono/newband.ra /usr/rafiles  
raconv /usr/rawdata/dualisdn/newband.ra /usr/rafiles
```

The **raconv** utility program creates a directory named `/usr/rafiles/newband.ra` that contains the files `28_8.36`, `dnet.50`, and `dnet.100`.

rssm

System Manager enables remote monitoring and administration of Basic Server Plus from the UNIX command line. To connect System Manager to a Server, set `hostname` to the DNS name or IP address of the Server. If the Server is running on a port other than 7070, specify the port number.

System Manager can monitor a Basic Server Plus running on any platform. Information provided by System Manager includes the number and status of Player connections, System Manager connections, Unknown connections (connections currently being negotiated with the Server), and Total connections. This information can then be used to monitor activity on Basic Server Plus on a regular basis.

System Manager runs in two modes: interactive and non-interactive. When the System Manager is in the non-interactive mode, information is automatically appended to `STDOUT` every 5 minutes, unless that time span is modified by the `-l` command. The System Manager accepts commands from the command line; however, it does not prompt you.

The interactive mode is started with the `-i` command, which enables the System Manager to print prompts and accept commands from the command line.

Syntax

```
rssm [-v] [-l <update>] [-p <password>] [-c]
      [-i] [-k] <hostname[:port]>
```

where

- v** Displays the version information of the System Manager. This includes the platform, build and release tags used to identify a particular release.
- l update** Sets the update period for output to the screen to update seconds.
- p password** Provides the password required by System Manager to connect to the Server. If this option is not used the System Manager prompts for the password. This feature is not secure. The password is easily accessible to knowledgeable searchers. The password is required each time you want to start monitoring a Server. You can include `-p <password>` in the `rssm` command line in automatic monitoring scripts to avoid having to enter the password interactively.
- c** Connects to the server to verify it is still accepting connections and then exits. Prints a message if the connection fails and the exit status is non-zero.
- i** Starts interactive mode and permits entry of the commands listed in the command section.
- k** Does DNS lookups on incoming IP addresses to translate them to full domain names. This command can slow down responses on System Manager. If you are experiencing delays in System Manager information or in response to commands, make sure that this feature is turned off.

Interactive Commands

After starting System Manager in interactive mode by using the **-i** command-line option, you can enter any of the following interactive commands at the System Manager prompt (>):

Command	Function
c	Displays the current configuration after it has been retrieved using the t command.
e	Resets peak usage value.
g	Displays the time that the peak usage value was last reset.
h or ?	Prints a list of commands.
i	Prints the Server's version number and platform.
k	Begins collating hostname information for connected clients by doing reverse DNS lookups on the IP numbers provided by the Server.
l	Provides the current list of connected clients.
n	Modifies a Server configuration variable.
o	Prints # of Players, Server Monitors, unknowns, and total connections to STDOUT every five minutes, or the number of seconds specified by the -l option on the command line. This command can be toggled to start and stop.
p	Prints Server license information.
s	Prints a single line of summarized status information.
u	Continuous display. Updates whenever a client status changes.
x	Exit the program.

System Manager displays the information about clients connected to the Server in the following format:

```
<client> <name>
```

where:

<client> is the type of client connected (Manager or Player).

<name> is the domain name or IP address of that client.

For example, a client listing might look like:

```
Manager 204.71.154.93
Player  204.71.153.24
```

If you prefer to receive System Manager information in a report, use the **-l** option and append the output to a file. To do this, use the following command:

```
rssm -l<seconds> <hostname>[:port] >>
<reportname.txt>
```

where:

<seconds> is the number of seconds between reports.

<hostname> is the name of the computer you are collecting data from.

<reportname.txt> is the name of the report that the information is appended to.

Example

To monitor a Basic Server Plus in interactive mode, with updates every 20 seconds and fully qualified host names for clients, use the following command:

```
rssm -l 20 -k -i yourServer:7070
```

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