

altiverb



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This software contains convolution know-how and algorithms licensed from Lake Technology Limited, Australia, as described in patents, including US Patent 5,502,747

The Impulse Responses that Audio Ease BV supplies with Altiverb™ are intended for use only in Altiverb™ and may not be used for any other purpose. (Re-)Sampling of the Impulse Responses that Audio Ease BV has supplied with Altiverb™ is expressly prohibited.

Copyrights may apply when you sell, lend, hire or give away sampled Impulse Responses from hardware (reverb) units. Check the documentation of the unit that you want to sample when you intend to do so.

Venue rights may apply when you sell, lend, hire or give away sampled Impulse Responses from real acoustic spaces. Consult the owner of the venue when you intend to do so.

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## 1

*Introduction*

## 1. Welcome.

Audio Ease is very proud to introduce to you the first sampled acoustics reverb that runs in real-time as a plug-in.

Altiverb's underlying principals are not new, but only with the introduction of the Apple G4 has the processing power become available to create top quality sampled reverb, in real-time, inside your computer.

Due to the massive amounts of calculations necessary to apply real acoustics to your audio, be aware that Altiverb™ can use up a substantial amount of your RAM and processing power.

However, when you listen to the extraordinary quality and realism of the reverbs Altiverb™ is capable of creating, you'll recognize that sampled acoustics is here to stay.

## 2. What does “Sampled Acoustics Processor” mean ?

When you clap your hands in a church, you are listening to the church's response to the audio impulse your palms made.

The shortest impulse in a digital sound environment is a single sample 'spike'. That's what you get when you use your audio editor's pencil tool and pull one single sample up to maximum level in an otherwise silent sound file. Playback of this spike in a church would create a response very similar to that of a hand clap.

Think of a sampled waveform as a stream of spikes. Replace every spike in the dry input sound with the full church impulse response recording, and it will sound as if the dry audio was played back in the church. The process of replacing samples with scaled impulse responses (IR's) is called *convolution*.

Altiverb™ is a convolution engine. It combines your dry input sound with an impulse response created in a real acoustic environment. The included Altiverb™ Impulse Response Pre-Processor software allows you to create your own impulse responses.

The two applications together allow you to sample any acoustic environment and apply its sonic signature to the audio of your choice.



## *The Altiverb documentation*

This manual covers the functions and controls of Altiverb™. Wherever there is a difference between Mac OS 9 versions and Mac OS X versions of Altiverb it will be indicated.

Some topics concerning Altiverb™ outdate quicker than others, or are of interest to a small subset of Altiverb users. These topics are not available in printed form and are covered in several PDF files that can be found in the “Altiverb™” folder after installation. There is little chance that you cannot open these files, but if you run into trouble you can download your free copy of *Acrobat Reader* from [www.adobe.com](http://www.adobe.com).

In the folder “*Host specific descriptions*” there are several PDF files that describe the peculiarities of Altiverb for a given host application such as ProTools™ 5.2 for Mac OS 9, or Cubase SX for Mac OSX. They cover system requirements, functionality and optimization of Altiverb™. Sometimes they describe exactly how to set up a quadraphonic Altiverb.

The file called *Creating Impulse Responses.pdf* describes step by step how to create your own Impulse Responses in several given situations and it covers the use of the Sweep Generator, and the Impulse Reopens Pre Processor applications.



## 3

## *Altiverb™ at a glance*

### *A quick tour*

Altiverb™ uses samples of real acoustic spaces to create reverb. These samples are called *impulse responses (or IRs for short)*. All the complexity of the real acoustic space is captured within the impulse responses, so very few controls are needed to build the reverb that you need. This makes Altiverb very easy to operate, as you'll learn from this brief overview.

For installation instructions for Altiverb™, the Altiverb™ Impulse Responses and the Altiverb™ Impulse Pre-Processor please refer to the instructions text file on the CDROM or in the download.

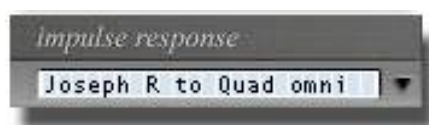
*Locate the folder containing the impulse responses.*

When you launch your sequencer or audio editor for the first time after Altiverb's installation, you are asked to locate the impulse responses folder. At this stage you should select the folder called "Altiverb™ Impulse Responses" that was installed by the Altiverb™ Installer.

*Insert Altiverb™*

Insert an Altiverb in the signal chain. In Cubase and Nuendo you have to click 'edit' to see the user interface. You can refer to your host application's manual to find out how to insert a plug-in.

*Select an impulse response*



Now use this pop-up menu to select an impulse response. The contents of this pop-up depend on the contents of the folder “Altiverb™ Impulse Responses”, and on which channel configuration you have inserted. For example, there are probably more mono-to-stereo than stereo-to-four-channel (or *quadraphonic*) impulse responses present.

Once you have selected an impulse response, a corresponding picture will appear in the *Monitor*, which is Altiverb’s information center. You can then hear the sampled acoustics when you play back some dry audio through the plug-in.



Step through the various pictures associated with the chosen impulse response with the forward and backward navigation buttons in the top middle of the Monitor. In addition to interior and exterior pictures of the recording venue there are also layout pictures that show how the impulse response was recorded.



The layout pictures present a ‘bird’s eye’ view of the acoustic space. It shows a diagram of how the speakers and mics were set up when the acoustics were sampled.

Running audio through Altiverb will sound as if the source sound was played back through the speakers and recorded with the microphones.

In addition, there are pictures containing technical details regarding reverb decay length, sample rate, and exact latency (if any).

Double click on a picture, or use the zoom box in the top right corner of the Monitor to view the picture at its original size.

After you have selected the impulse response, the remaining controls can be used for further refinements.

*Adjust the wet/dry level of Altiverb's output*



Click and drag a knob to adjust a value, or type values directly in the corresponding readouts (In Altiverb VST you cannot type in the readouts).

*Balance front and rear outputs*



If you have selected an Altiverb impulse response with a quadraphonic (4-channel) output, you can adjust the balance between the front and rear (or surround) outputs with these controls.

*Shorten the reverb tail if necessary*



The large knob adjusts the length of the decay. It does this by applying an exponentially decaying envelope to the impulse response. It is not possible to lengthen the tail, you can only shorten it. When you turn the reverb time knob, Altiverb needs to calculate the new decay shape. While it does that it flashes a red light in the knob's indicator. Once the indicator has turned green again the reverb time recalculation is completed.

*Adjust the pre-delay if necessary*



Pre-delay is a delay that you can add between the dry sound and the wet sound. When the knob points upward (12 o'clock), there is no delay between the two. When you turn it to the right, you will delay the wet sound so that the dry sound will become less 'attached' to the reverb. When you turn the knob to the left, the dry sound will be delayed, possibly placing it in, or behind, the early reflection pattern of the wet sound. This can create a better stereo image and more realistic positioning of the dry sound in some cases.

*Mute the direct sound if necessary*



The direct sound, the sound that hits the microphones first, can be muted using this control. Doing this will make the sound of an impulse response wetter, it will create more contrast between dry and wet, and it will get rid of any 'flamming' effects that may occur when a low latency Altiverb is used as a send effect. (See the notes on 'mute direct sound' in the reference section of this manual.)

*Determine if you need "low processor load" or lowest possible latency*



The "high latency" mode uses a minimum of processing power but can produce a delay of up to a second between input and output. Click on the forward or backward buttons in the top middle of the Monitor until the technical data page appears to determine the precise delay.

In "no latency" mode (available in MAS and VST versions), there is no delay between input and output of Altiverb™, but at the expense of increased processing power demand.

HTDM and RTAS users will have a "low latency" mode instead of a "no latency" mode. Due to the nature of the HTDM and RTAS formats a short delay is inevitable. Click on the forward or backward buttons in the top middle of the Monitor until the technical data page appears to determine the precise delay. If, due to the delay you get 'flamming' effects, check 'mute direct sound' as described above.

*On screen help*



Click this button to switch to the Monitor's help channel. The help function displays information as you move your mouse over a control.

## 4

*Altiverb's channel configurations*

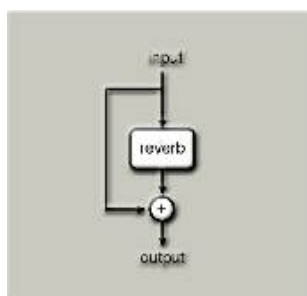
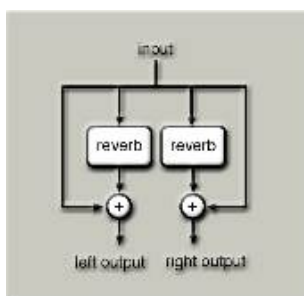
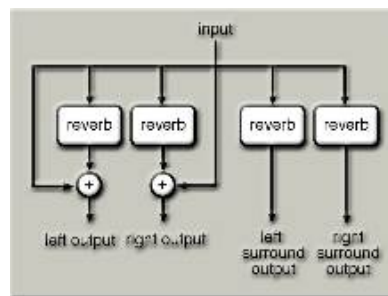
This chapter describes Altiverb's internal signal routing with the help of diagrams. Please read the appropriate PDF file in the folder “*Host specific descriptions*” to verify whether a specific configuration is available in your host application and when it is, if all outputs will actually be audible.

The ‘plus’ signs at the bottom of the diagrams are the mixing points for the *dry* signal (untreated audio), and the *wet* signal (the reverbed signal). Note that in quadraphonic output configurations, the dry signal is only mixed to the front outputs.

No gain controls are depicted in the diagrams. There are however separate gains for the dry signal and the wet signal. In the case of a 4-channel quadraphonic output Altiverb, two more gains can be controlled. One for both front channels together, and one for both surround (rear) channels.

*Mono Input to Four-channel Output*

This configuration (abbreviated as *mono-to-quadraphonic*) uses a single audio feed and generates four channels of reverb. A typical use would be for mono sources such as vocals. The dry signal is available in the front channels only.

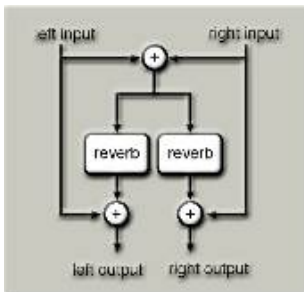
*mono-to-mono**mono-to-stereo**mono-to-quadraphonic*

## *Stereo Input Summed to Mono with a Stereo Output*

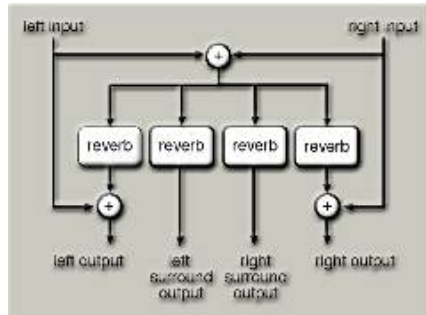
A two-channel (stereo) input is summed before entering Altiverbs reverb processor, similar to how many digital effects processors work. The signal controlled by the *Dry* control remains stereo. Use this in cases where you need lower processor load, for example. In many cases the sound of a true stereo input reverb and a summed mono input reverb are very similar, especially when *mute direct sound* is checked. This configuration appears abbreviated as *stereo-mix to stereo* in Altiverb.

## *Stereo Input Summed to Mono with a Four Channel Output*

Similar to the two-channel version described above, this configuration sums a two-channel audio input to one channel prior to processing. The output is four channels of reverb (quadraphonic). The abbreviated *stereo-mix to quadraphonic* is used when selecting this configuration.



*stereo-mix to stereo*



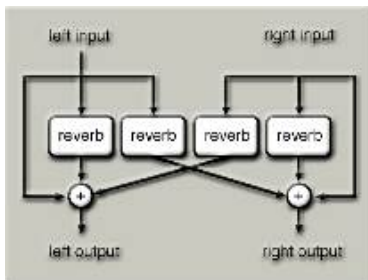
*stereo-mix to quadraphonic*

## *Stereo Input to Stereo Output*

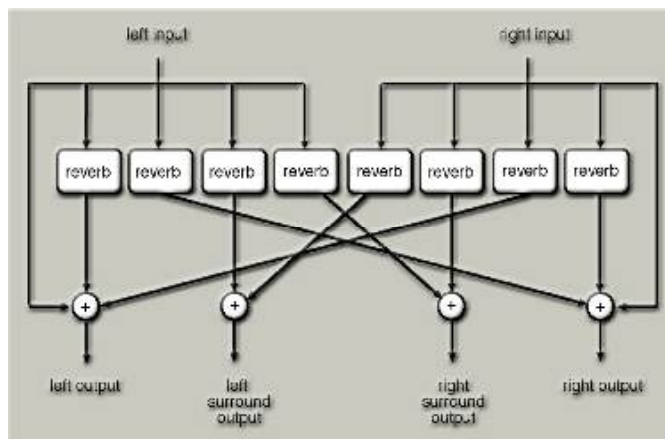
This configuration (abbreviated as *stereo-to-stereo*) uses two independent input channels. Each input channel feeds a separate left/right Altiverb processor to create extremely realistic imaging.

## *Stereo Input with a Four Channel Output*

Two independent input channels are fed separately into four stereo channels of reverb to create a surround ambiance. The dry signal is available in the front channels only. This configuration is abbreviated as *stereo-to-quadraphonic*.



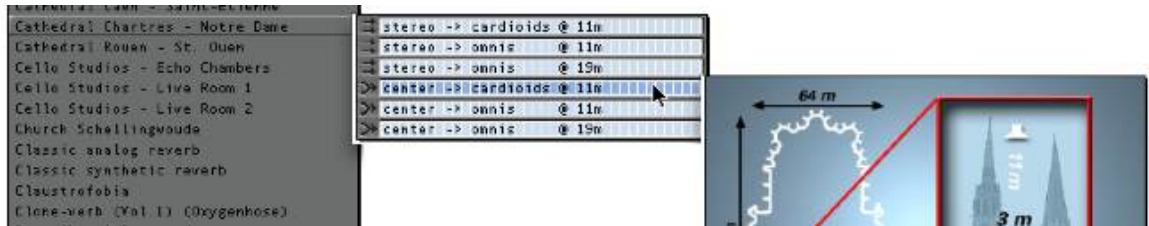
*stereo-to-stereo*



*stereo-to-quadraphonic*

## *Automatic switching between stereo and stereo-mix input under Mac OSX*

Only in Mac OSX, Altiverb™ will show both mono input and stereo input Impulse Responses when it receives two channels at its input. In the Impulse Response Selector popup, a small icon in front of the name of the Impulse Response indicates whether the Impulse Response is mono or stereo input.





## 5

*Using Altiverb  
for purposes other  
than reverb*

Although Altiverb was designed as a convolution engine for reverb type impulse responses, its applications are not limited to reverb. Every *linear* and *time invariant* system can be captured as an impulse response. And, Altiverb can convolve the input audio with any impulse response. Let's define this terminology with an example:

If you play back a sound twice through a linear, time invariant system, the second time twice as loud as the first time, you will get responses that are identical except for one aspect – the second response is twice as loud as the first.

In real life, few systems are truly linear and time invariant, but many come close. The obvious examples are acoustic spaces, but most transducers also meet these requirements, provided they are not overloaded.

Below are more examples of systems that could be emulated with Altiverb, assuming an impulse response is available. In most cases you can sample these yourself using the Altiverb™ IR Pre-Processor.

Some examples to illustrate applications for (in some cases the *mono-to-mono*) Altiverb:

- loudspeakers and PA's
- microphones
- hardware and software equalizers, and other frequency filters
- tape-based delays
- spring reverbs
- plate reverbs
- a large number of digital reverb presets (as long as they do not use LFO's or chaotic modulators that make them time variant)

- piano strings with the sustain pedal down
- the body of a guitar
- a telephone
- a wall or a ceiling
- human vowel formant filters

## Experimental Impulse Responses

Of course your experiments do not have to remain limited to sampling linear and time invariant systems. Altiverb can read any sound file (saved as a Sound Designer 2 format file) as an impulse response, so why not try a recording of overhead thunder as your IR. Unless you run a single sample spike through the system as your input sound, the result will be nothing like overhead thunder, but you might like the effect anyway.

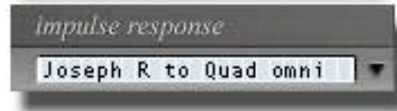
Some other examples: A section of white noise as your impulse response smears your input sound without changing its frequency content. Try a crackling fire, a guitar strum, a speech file, or an explosion recorded at a distance as an impulse response. Each will create a unique and interesting sound.

# 6

## *Altiverb reference*

This chapter discusses each user interface control of Altiverb in detail, and expands upon the inner workings of Altiverb in projects with sample rates of 88.2 kHz or higher.

## The Impulse Response Selector Pop-up Menu



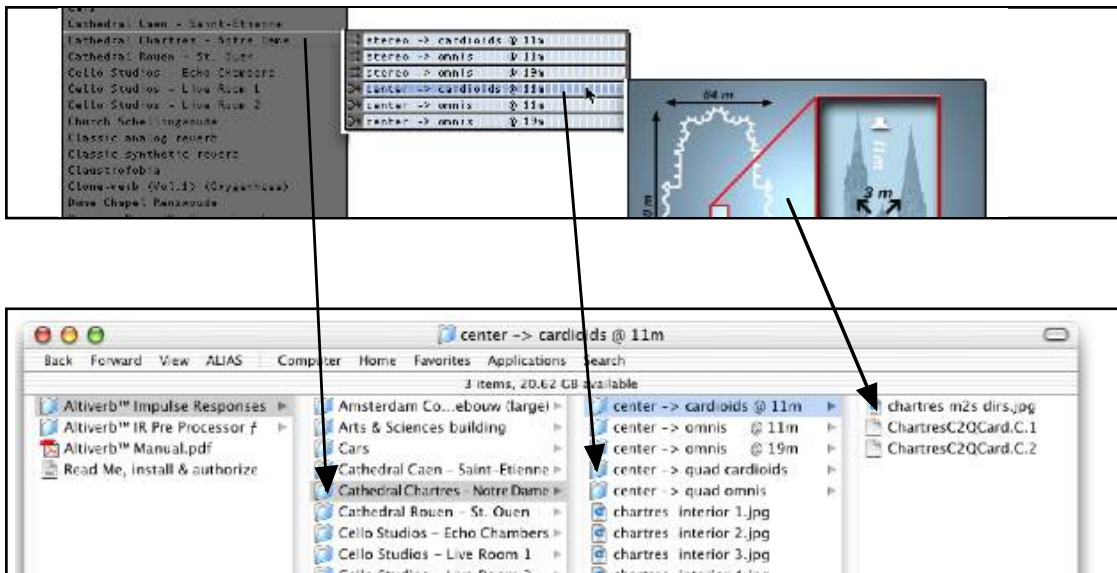
Altiverb uses recordings of the acoustics of real-life locations to create reverb. These recorded measurements are called *impulse responses*. You can select a reverb by choosing from the impulse response selector pop-up menu.

Altiverb comes with a variety of impulse responses. They are installed in the “Altiverb™ Impulse Responses” folder. In addition, more impulse responses can be made with the aid of the included “Altiverb IR Pre-processor” application, or they may be downloaded via <http://www.audioease.com>.

An impulse response can be created from a stereo recording of a starter pistol shot in a church, for example. That recording will result in two mono sound files, a left and a right file. A mono input to stereo output impulse response can be generated from those with some post processing in the Altiverb™ IR Pre-Processor.

The picture below shows the contents of an “Altiverb™ Impulse Responses” folder (in Mac OS X), and how the folder’s contents relate to the impulse response selector pop-up. In this case we can see the actual Impulse Response files in a folder named “center -> quad cardioids”. The folder called ‘Cathedral Chartres - Notre Dame’ is a container for all folders that hold the impulse response variations of that specific hall venue.

The name “Cathedral Chartres - Notre Dame” is displayed in the Altiverb pop-up menu, but you cannot select it directly. Exactly which of the sub-folders display depends on the channel configuration of the Altiverb plug-in that you have inserted. For more information regarding channel configurations, consult Chapter 4. Chapter 7 expands upon the structure of the “Altiverb™ Impulse Responses” folder.



The way the contents of the “Altiverb™ Impulse Responses folder” relate to the Impulse Responses selector pop-up (in Mac OS X).



## The Monitor



The Monitor can display a variety of data. When an impulse response is selected a number of pictures that are associated with it can be accessed via the forward and backward navigation buttons shown above.



When the zoom box is pressed, or when you double click the picture in the Monitor, a separate window will appear, showing the picture at its original size.

Following is a description of the most common data that can be viewed using the Monitor.


### 1. Layout Picture




Many Audio Ease Impulse Responses are accompanied by a Layout Picture that displays how the microphones were set up and where the speakers were at the time the impulse response was recorded.

The layout pictures also provide a simplified 'bird's eye view' of the recording venue. The speakers are your inputs, the mics are your outputs. The wet signal will sound as if it was played through the speakers and recorded through the mics.

This is the speaker symbol: 

This is the symbol for an omnidirectional microphone: 

This symbol indicates a cardioid (directional) microphone: 

### 2. Various photographs of the recording location



Any number of photographs of the recording venue may be accessed through the Monitor. You can include your own pictures of acoustic spaces you sample by placing

them in the folders you create for your own impulse responses.

### 3. Recording statistics



Most of the Audio Ease Impulse Responses are accompanied by a recording statistics picture. To display it at its original size in a separate window you should double-click this picture or use the blow-up rectangle, as the information may be illegible in the Monitor. This picture provides information about recording date, the recording and playback gear that was used etc.



### 4. Impulse Response statistics

This screen shows, amongst other data, the length of the impulse response, and the sample rate of the impulse response file. When you use a different sample rate than the one displayed, Altiverb will convert the sample rate of the Impulse Response upon reading it from disk.

The impulse response stats are created on the fly by Altiverb. The recording stats, photographs of the recording location and layout picture are all .jpg, gif, TIFF, or pict files that have been placed in the *Altiverb™ Impulse responses* folder. (See Chapter 7 for details.)

### 5. On-screen help



The question mark in the top left of Altiverb will switch the Monitor to the on-line help channel. The Monitor will then display information about any control you roll the mouse pointer over. You can use the forward and backward buttons in the top middle of the Monitor to get out of the on-line help channel. You can also switch to the help channel via the forward and backward button in the top middle of the Monitor.

## The Reverb Time Knob



This knob can shorten the reverb time by applying an exponential decay to the selected impulse response. When set to 100 %, you will hear the reverb generated by the entire impulse response. You can type values in the display below the knob (except in Altiverb VST). Because of its size, the decay knob behaves like a physical knob – you need to run your mouse along the circumference to operate it.

When you turn the reverb time knob, Altiverb needs to calculate the new decay shape. While it does that it flashes a red light in the knob's indicator. Once the indicator has turned green again the reverb time recalculation is completed.

## The Wet and Dry Knobs



The wet signal is the signal generated by the reverb. The wet signal is derived solely from the recorded impulse response and is therefore likely to generate the most lifelike auditory image. The wet signal's strength is controlled by the Wet knob. It can be turned down to

-144 dB, which is silence in the 24 bit audio domain.

The dry signal is the signal as it is input to Altiverb. You can add dry signal if you need more clarity, more definition, or a wider stereo image. However, if you overdo it, you run the risk of losing the character of the original impulse response. You can mitigate this risk by using negative pre-delay as discussed in the following paragraph.

When the Wet and Dry knobs point upward (at the 12 o'clock position) they are at 0 dB, no attenuation or amplification occurs.

## Mute Direct Sound



The direct sound, the sound that hits the microphones first, can be muted using this control. It will make the sound of an impulse response wetter, it will create more contrast between dry and wet, and it will get rid of any 'flamming'.

If you run Altiverb RTAS or HTDM in low latency mode there is a delay of about 25 msec. between input and output of Altiverb. (Check the appropriate PDF files in the folder "*Host Specific Descriptions*" for more info)

This delay can become a problem if you insert Altiverb in an aux, and send it audio from a track. If you hear both the track and Altiverb, the amount of direct sound in the impulse response may be heard as an early reflection (echo) of the track's audio. This is called 'flamming'. If you check 'mute direct sound' the

flam will disappear.

## The Front and Rear Knobs



If you have inserted a quadraphonic output Altiverb, the above two knobs will appear, allowing you to adjust the front and rear channel gains separately. Not all host applications will allow you to use quadraphonic output (Check the appropriate PDF files in the folder “*Host Specific Descriptions*” for more info)

## Pre-delay



Pre-delay is a delay that you can add between the dry sound and the wet sound. When the knob points upward (12 o’clock position), there is no delay between the two. When you turn it clockwise, the wet signal is delayed so that the dry signal will become less ‘attached’ to the reverb. When you turn the knob counterclockwise the dry sound is delayed, possibly placing it in or behind the early reflection pattern of the wet sound. This can create a better stereo image and more realistic positioning of the dry sound.

## The Latency Selector



The “high latency” mode uses a minimum of processing power but can produce a delay of up to 1.5 seconds between input and output. Click on the forward or backward buttons in the top middle of the Monitor until the technical data page appears to determine the precise delay. In “no latency” mode (available in MAS and VST versions), there is no delay between input and output of Altiverb™, but at the expense of increased processing power demand.

HTDM and RTAS users will have a “low latency” mode instead of a “no latency” mode. Due to the nature of these formats a short delay is inevitable. Click on the forward or backward buttons in the top middle of the Monitor until the technical data page appears to determine the precise delay. If, due to the delay you get ‘flamming’ effects, check ‘mute direct sound’ to eliminate the flam.

More about host dependent latency can be found in chapter 5.

## On-screen Help



Click this button to switch directly to the Monitor’s help channel. The help function displays information about a control when you roll your mouse pointer over it.

## About



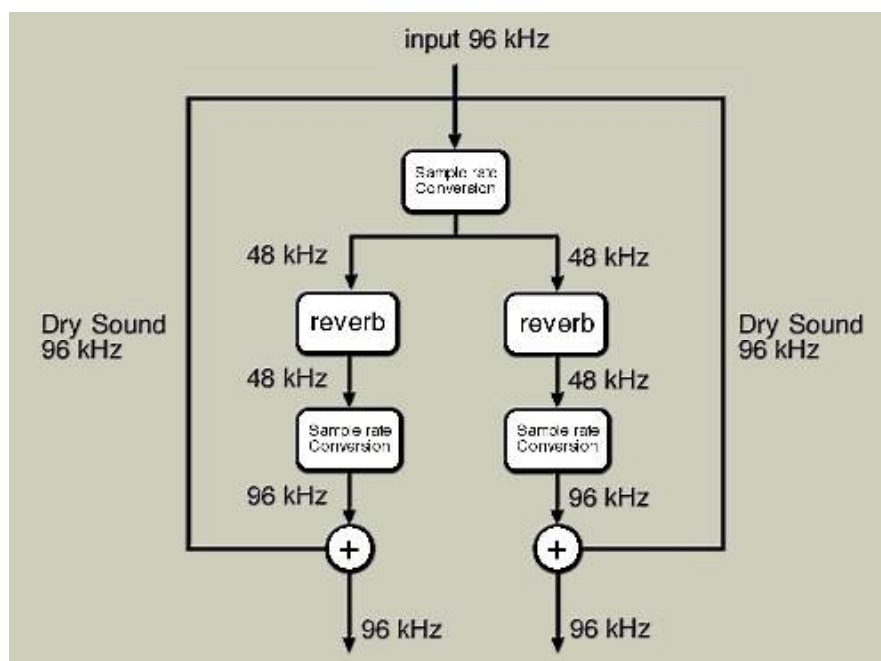
Click the Audio Ease logo to switch to the Monitor’s ‘about’ channel. This page shows

## Altiverb and Sample Rates of 88.2 kHz and Higher

Altiverb has been tested in projects running at the following ‘high’ sample rates: 88.2 kHz, 96 kHz, 176.4 kHz and 192 kHz. Running the reverb engine at these sample rates would place an extremely heavy load on the processor. At the time of the writing of this manual, there were no impulse responses available for Altiverb that were recorded at a sample rate higher than 48 kHz. There is no quality advantage of running the reverb engine at 96 kHz when a 48 kHz Impulse Response is selected. In such a case it makes sense to keep the reverb engine running at 48 kHz, so processor load stays at a reasonable level.

### *An Example*

When a 48 kHz impulse response is used in a 96 kHz project, the reverb engine will run at 48 kHz, while the dry sound will stay at 96 kHz. This is shown in the diagram below for a mono-to-stereo Altiverb. The sample rate conversions performed are of very high quality and are extremely accurate. They introduce a slight delay (typically 64 samples) into the signal path. The exact amount of delay is displayed in the Monitor window (see page 28).



*The dry sound stays at 96 kHz, while the reverb engine runs at 48 kHz*

It is possible that 96 kHz impulse responses will eventually become available. With a 96 kHz impulse response being used in a 96 kHz project, none of the sample rate conversions described above would need to be performed. The reverb engine will run at 96 kHz, resulting in very heavy processor load.

The sample rate converters can only function when your hardware buffer size is set to 512, 1024, 2048, 4096, 8192, or 16384 samples. (Check the appropriate PDF files in the folder “Host Specific Descriptions” for more info) If such a buffer size is not available, Altiverb will warn you that it will run its reverb engine at a high sample rate, resulting in very heavy processor load.



# 7

## *The Altiverb™ Impulse Responses folder*

This chapter expands on the information about the structure and contents of the *Altiverb™ Impulse Responses* folder.

When your sequencer launches, Altiverb scans the *Altiverb™ Impulse Responses* folder for files that it can use to make reverb with, and adds items to the Impulse Responses selector pop-up accordingly. It will only add suitable combinations of files for the selected channel configuration.

For instance, if you choose stereo input to stereo output, only the stereo-to-stereo Impulse responses that were found during the scan of Altiverb™ Impulse Responses folder will be displayed.

The folder structure is as follows:

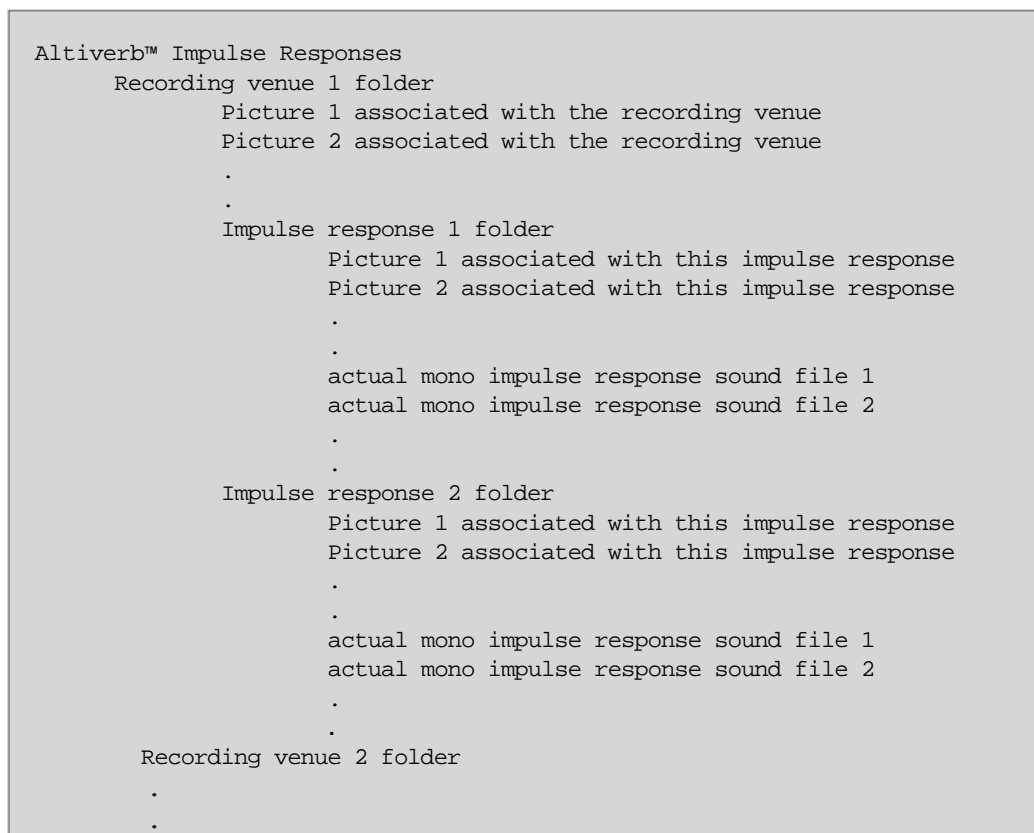


figure 8.1 - The Altiverb™ Impulse Responses folder structure

Figure 8.2 shows a simplified example of a very small impulse response folder in Mac OS 9.

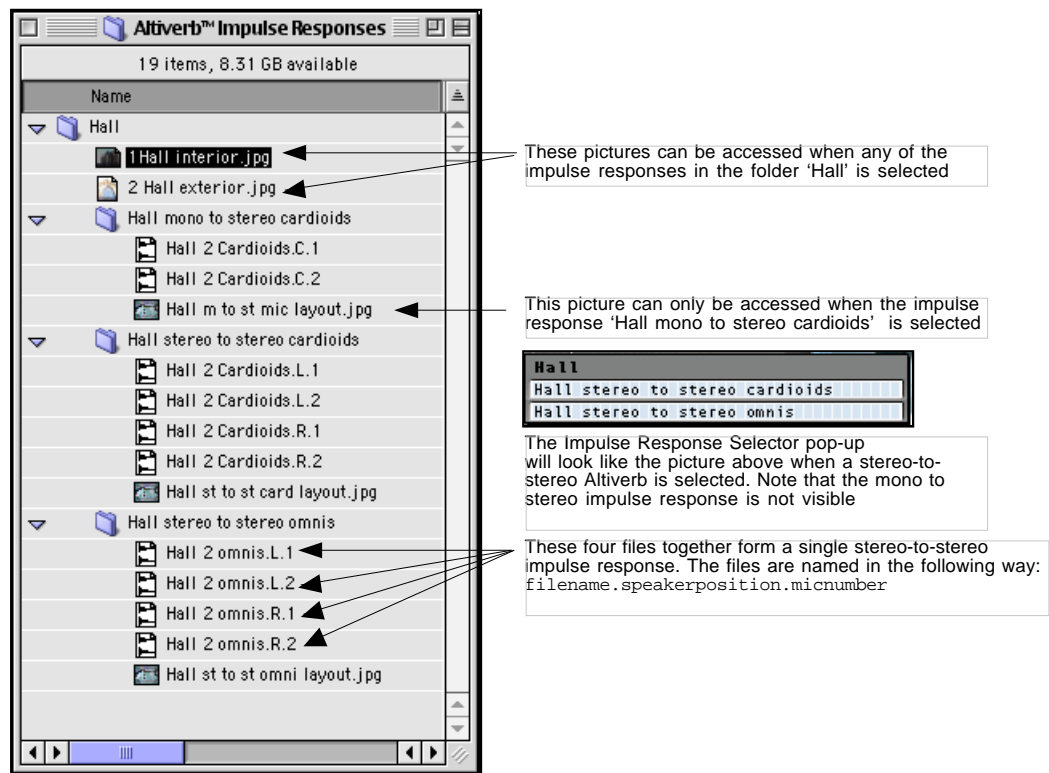


figure 8.2 - Example of a small Altiverb Impulse Responses folder

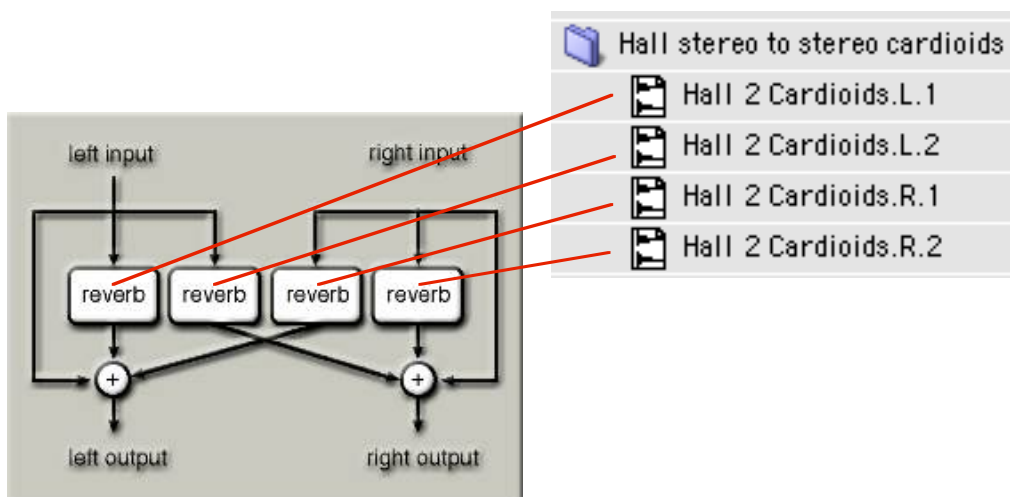


figure 8.3 - The actual impulse response sound files are distributed over an Altiverb™ stereo-to-stereo structure as shown.

## Format of the Actual Sound Files

The sound files in figure 8.2 are Sound Designer 2 files which can be opened in most sound file editors. They can have any sample rate, and they can be 16 or 24 bits. All files that are output from the Altiverb IR Pre-Processor are Altiverb Proprietary files.

The Audio Ease impulse responses distributed with Altiverb are all in this proprietary format that cannot be opened in a sound file editor. The Altiverb License Agreement explicitly prohibits copying or resampling Altiverb's proprietary Impulse Responses.

## Format of the Graphics Files

Altiverb can display Graphics in the following formats:

- JPEG (.jpg)
- GIF (.gif)
- Pict
- TIFF

Figure 8.2 shows which graphics will be displayed when an impulse response is selected.

## Selecting Another Impulse Responses Folder

It may be advantageous to maintain more than one impulse response folder. You can select another impulse responses folder by activating 'caps lock' with the caps lock key before your sequencer launches. When you do this, your sequencer application will ask you to locate the Altiverb Impulse Responses folder, just like it did when you first installed Altiverb. Navigate to the desired alternate IR directory, select it, and continue launching your sequencer. You can change your active impulse responses folder as often as needed.

## Changing the Location of the Impulse Responses Folder

You can move the folder containing your impulse responses from its original location. The next time your sequencer launches, you will be asked to locate the impulse responses folder, unless you have moved it around on the same disk. When asked to, simply navigate to the new IR directory and select it to make it active.

## About the Use of Aliases Inside the Impulse Responses Folder

You can make aliases of both impulse response sound files and picture files within the Impulse Responses folder. This can be helpful when you want to make two mono-to-stereo impulse responses from a set forming a single stereo-to-stereo impulse response.

## An Alternative to the Structure of the Impulse Responses Folder

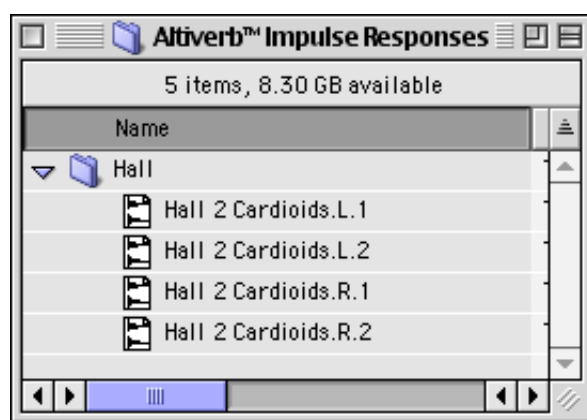
So far we have we have combined the sound files of a single impulse response in a single folder. An example is the folder 'Hall stereo to stereo cardioids' in figure 8.2. That folder goes into the folder 'Hall', which in turn goes in to the 'Altiverb™ Impulse Responses folder'. Altiverb will go into the folder 'Hall stereo to stereo cardioids' and construct a single stereo-to-stereo impulse response from the sound files it encounters.

It is possible to construct more impulse responses from the same four sound files. This stereo-to-stereo impulse response could be considered two mono-to-stereo impulse responses: a *left-to-stereo* and a *right-to-stereo* impulse response.

You can have Altiverb figure out itself which sound file combinations can yield valid impulse responses by dropping all sound files immediately in the folder 'Hall', without making sub-folders for them.

In the example in figure 8.4, the files from a stereo-to-stereo impulse response are placed directly in the folder 'Hall'. This is shown at the left. From this set of four files Altiverb is able to construct the impulse responses shown at the right. The names are constructed on the fly using this format:

filename [sources] -> [microphones]



A mono to stereo or stereo-mix to stereo  
Altiverb will show these:

Hall	
Hall 2 Cardioids [L] -> [1, 2]	
Hall 2 Cardioids [R] -> [1, 2]	

a mono-to-mono Altiverb will show these:

Hall	
Hall 2 Cardioids [L] -> [1]	
Hall 2 Cardioids [L] -> [2]	
Hall 2 Cardioids [R] -> [1]	
Hall 2 Cardioids [R] -> [2]	

A stereo-to-stereo Altiverb will show this:

Hall	
Hall 2 Cardioids [L, R] -> [1, 2]	

figure 8.4 - The result of Altiverb assembling impulse response sets automatically.

Finally, Altiverb can use these combining techniques simultaneously. This means that when you select the files in the 'Hall stereo to stereo cardioids' folder and *copy* them one level up (to the folder 'Hall') instead of moving them, the impulse response selector will show the items you are used to, but it will add the impulse responses that it has combined itself.

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