



MultiPlayer V 2

Technical Documentation

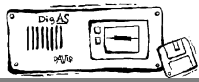


Table of Contents

1. INTRODUCTION.....	3
2. SYSTEM REQUIREMENTS	4
3. FEATURES.....	5
4. INSTALLATION	6
5. PARAMETER CONFIGURATION	14
5.1 Registry-Mode	14
5.2 Ini-File-Mode	15
6. MULTIPLAYER SOFTWARE OPERATION	17
6.1 Command Line Parameters.....	17
6.2 Starting the Program	17
6.4 Program Version Inquiry	18
6.5 Registering MultiPlayer	19
6.6 Status Monitoring.....	20
6.7 Operation	21
6.8 Exiting the Program.....	22



1. INTRODUCTION

MultiPlayer Version 2 is the successor to D.A.V.I.D.'s well known on-air playback engine MultiPlayer. MultiPlayer Version 2 is widely configurable and can handle one or multiple (up to 16) stereo audio channels (linear 8, 16, 24 bit up to 96 kHz, ISO MPEG1, Layer 2/3). MultiPlayer runs on Microsoft Windows NT based operating systems exclusively.

MultiPlayer can playback on any of up to 16 stereo audio channels, assuming sufficient audio playback cards are installed in the system. It's also possible to run several (up to 10) MultiPlayer applications on one PC, once again assuming the appropriate number of playback cards are installed and the PC offers enough processing and PCI performance.



Digital



Audio



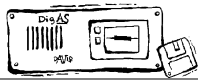
Video



Integration



Development



2. SYSTEM REQUIREMENTS

The suggested minimum requirements for the operation of MultiPlayer Version 2 is a system including the following components:

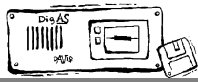
Processor:	Pentium® 4 / 2 GHz or Athlon XP 2000+
RAM:	512 MB
Port:	1 x free serial port (only in Serial-Mode)
Operating System:	Windows NT based





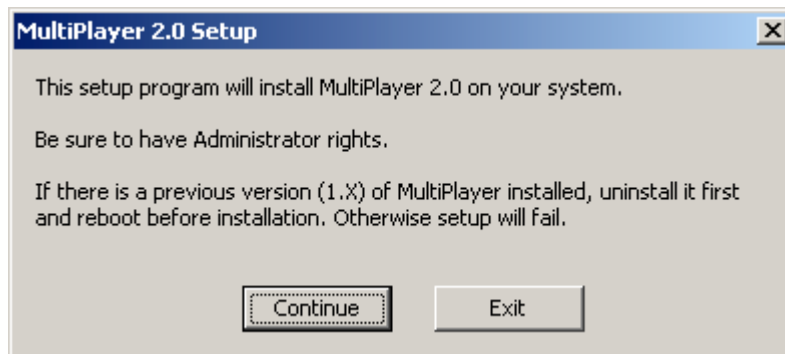
3. FEATURES

- Plays out linear audio takes with 8, 16 or 24 bits resolution and 32, 44.1, 48, 88.2 or 96 kHz sampling rate.
- Plays ISO-MPEG1 Layer 2/3 audio takes.
- Does on the fly (while playing out) high quality sampling rate conversion (if necessary) and resolution adaption (if necessary) with triangular dithering. This makes it possible to play out any supported audio format at any time without the limitation of the chosen audio format of the playing channel. Example: Channel 1 is configured to operate with 16 Bit and 48 kHz. You still can playback an audi file with 24 Bits and 88.2 kHz.
- Control over serial port (RS-232 or RS-422) or Named Pipe.
- Simultaneous operation of MultiPlayer and audio application (e.g. CartPlayer4, NewsPlayerX, DigaRoc or TurboPlayer) on the same PC or different PC's is possible.
- Administration of 1 up to 16 independent stereo audio channels (depends on licensed version).
- Recommended audio card is Sydec Soundscape Mixtreme 192 Broadcast.
- Playback through analog outputs and/or AES/EBU digital depending on the chosen breakout box. Combined operation is possible.
- Sampling frequencies can be internally (from the PC) or externally (house clock) synced.
- Management of up to 99 pre-load buffers with up to 10 seconds buffer storage bridging short-term network overloads (drop-outs); the pre-load values are configurable.
- Supports new D.A.V.I.D. TurboPlayer automation software.
- Resolves local shares. If playback of a file residing on the MultiPlayer PC is ordered, but the filename is a networked filename ([\\MultiPlayerPC\\Sound\\Test\\Audiofile.wav](#) or S:\\Test\\Audiofile.wav that points to C:\\Sound\\Test\\Audiofile.wav) then MultiPlayer Version 2 will resolve this filename to the local filename. That prevents the PC from accessing the network to firstly ask the name server to tell it, on which PC in the network the file resides.
- Flawless (inaudible) failover to backup audio path(s) (if existing). Example: If reading of file [\\Server1\\File.wav](#) is timing out, reading will continue on file [\\Server2\\File.wav](#). If this one also runs into a timeout reading will continue on file [\\Server3\\File.wav](#) and so on (limited only by the number of existing backup servers/directories).
- Integrated monitor and control program to check status and to function checking.
- Integrated settings dialog to change configuration online (no reinstall necessary).
- Extensive protocol reference through levelled log file generation. Trace levels can be changed online.

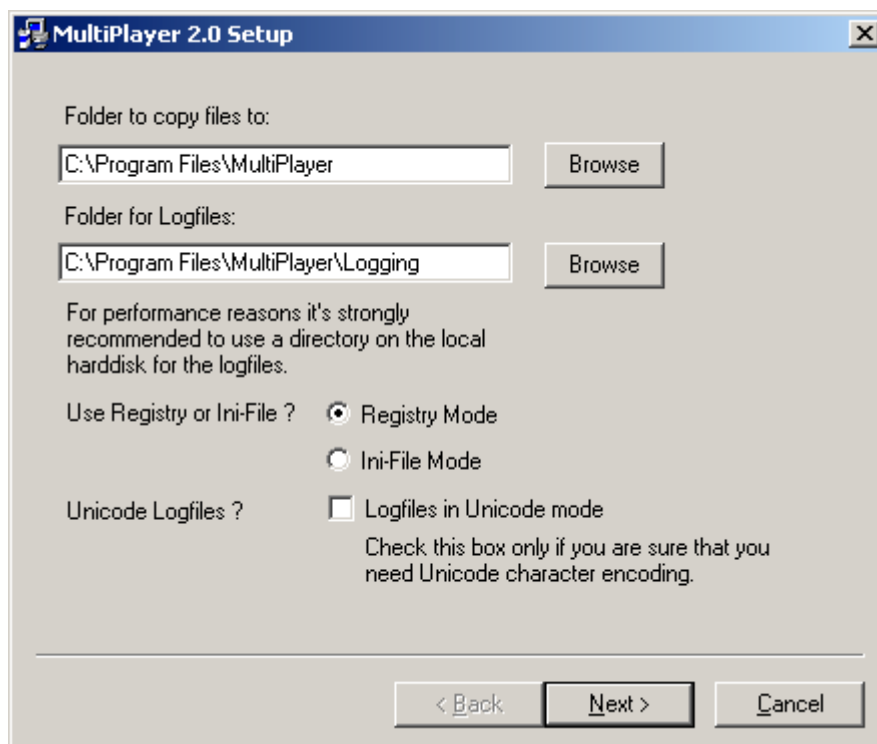


4. INSTALLATION

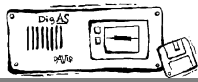
The installation of MultiPlayer Version 2 is started with the setup.exe program from the application installation diskette. Beware that you need to have administrative rights.



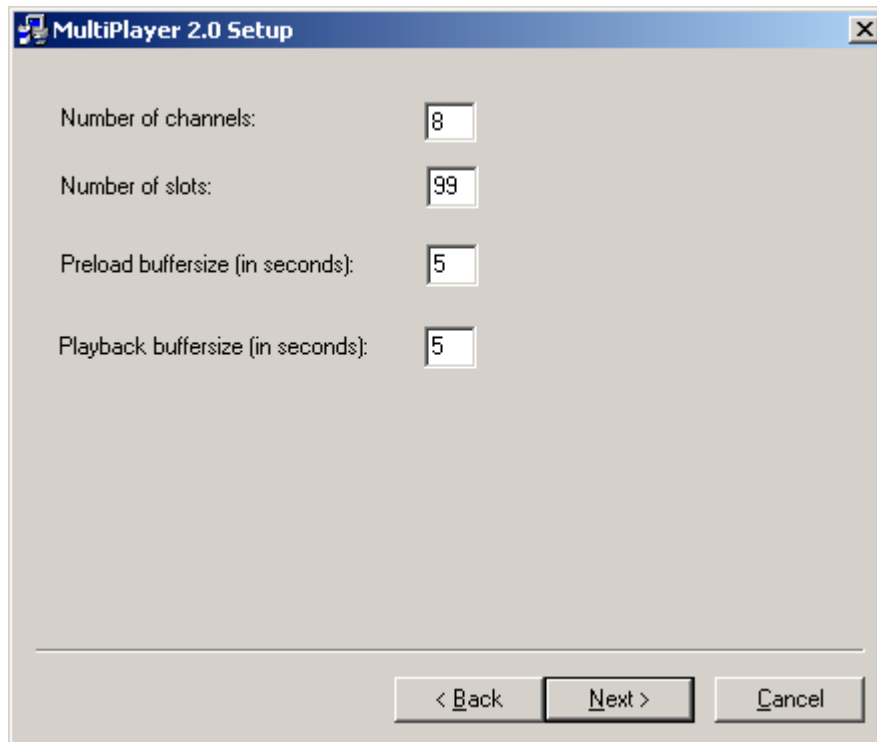
After clicking on *NContinue* the following screen will appear:



- **Folder to copy files to:** The program directory where the MultiPlayer program files will be copied.
- **Folder for Logfiles:** The directory where MultiPlayer's generated log files will be written. Two log files per day will be written. After seven days the two oldest files will be overwritten.
- **Use Registry or Ini-File:** Choosing Registry Mode will write the configuration settings to Windows' registry database. Ini-File Mode saves the settings to an .ini file. Registry Mode is suggested.
- **Unicode Logfiles:** Only necessary in non latin character set countries. Enabling this option leads to logfiles that are twice as big and might not be read with standard editors.



After clicking *Next*, the following dialog box appears:



- **Number of channels:** This is the number of channels that the MultiPlayer software should manage. This number can exceed the available real multimedia devices as long as several channels use the same multimedia device (MixDown operation).
- **Only MPEG:** Checking this option will optimize the pre-load buffer for MPEG. Choosing this option can possibly lead to the likelihood of linear audio drop-outs because the pre-load buffer will be in some cases too small. This option should only be chosen then if it is certain that linear audio will not be played.
- **Number of slots:** Set the number of pre-load buffers. In a pre-load buffer one sound file (take) can be preloaded. Pre-loading a take in the system memory (RAM) allows the playback of audio files without the 'stuttering' often associated with streaming data. Values of 1 up to 100 can be input here.
- **Preload buffer size:** This is the setting for the time (in seconds) that a pre-load buffer stores in advance. This chosen value can range from 2 to 10 seconds. A pre-load buffer serves to playback audio immediately upon receipt of the playback command. The audio data is transferred then directly from the pre-load buffer to the playback buffer from which it is then played back.
- **Playback buffer size:** This is the setting for the time (in seconds) that a playback buffer stores in advance. This chosen value can range from 2 to 10 seconds and must be the same or larger than the Pre-load buffer size. Every channel of the MultiPlayer plays back from a playback buffer. This playback buffer serves to offset any short-term network failure (from network overload). In spite of this, the network used must have the capacity to deliver the necessary audio data in order to maintain the real-time stream. Even a very large buffer time can not offset an insufficient network.

The given time values for 'Pre-load buffer size' and 'Playback buffer size' refer to a linear stereo audio file with 96 kHz sampling rate. If audio files with lesser sampling or data rate are preloaded or played back, then the actual buffer time is correspondingly larger.

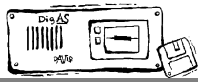




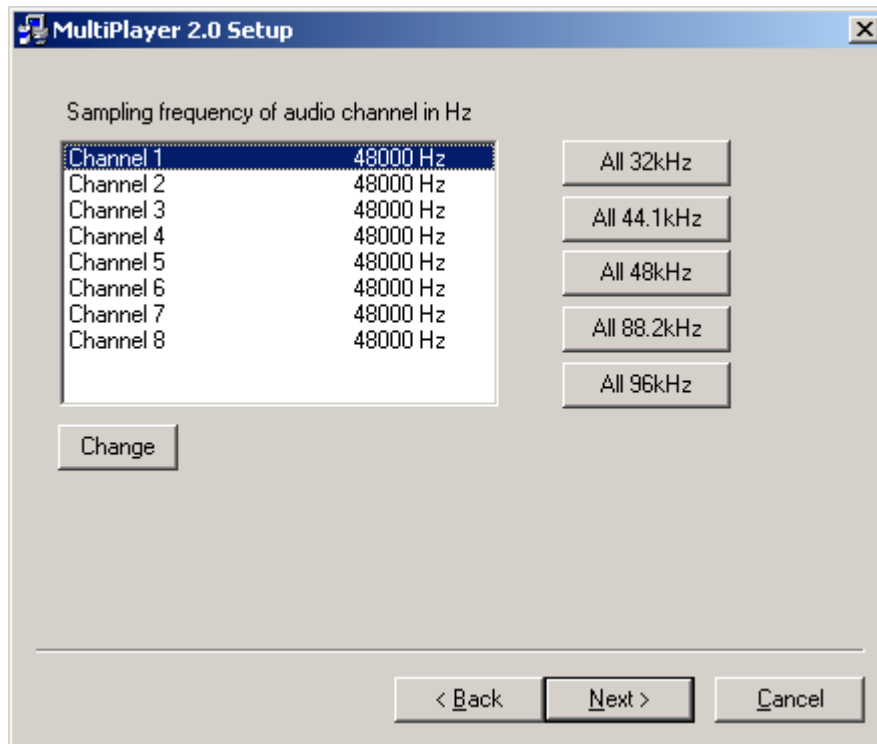
To avoid possible playback failure, it makes sense to choose a Playback Buffer Size larger than the Pre-Load Buffer Size. Under certain circumstances it's possible that choosing too large a Pre-Load Buffer Size will lead to longer waiting times in pre-loading audio files. Choosing the appropriate setting should take into consideration the implemented network and it's transfer capacity and/or latency.

Should the chosen configuration demand more system memory than is available in real physical RAM, MultiPlayer will end immediately with an error message.





After clicking *Next*, the following dialog box appears:

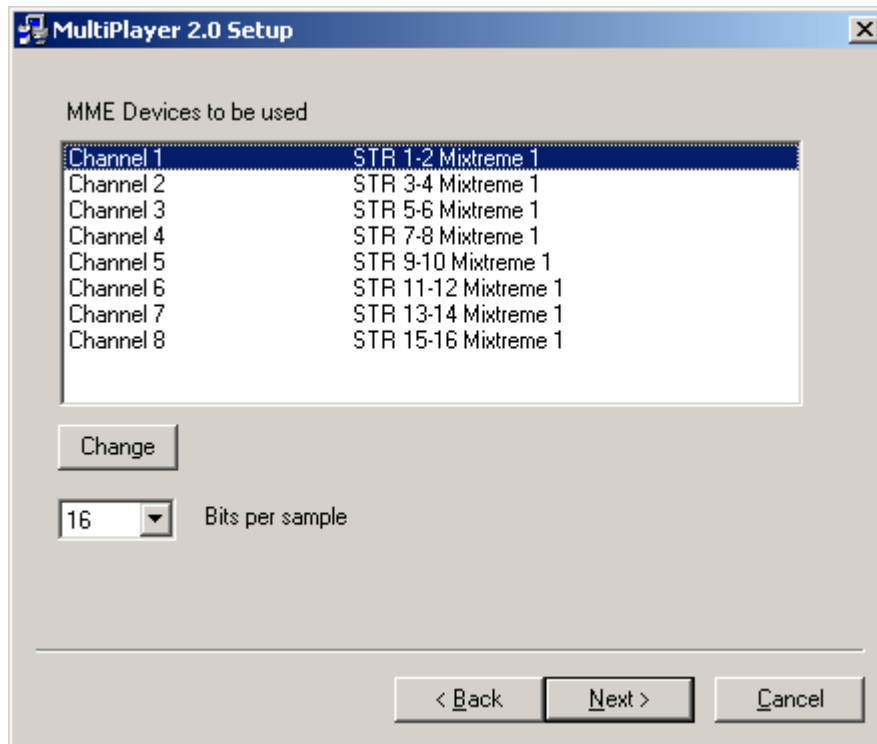


- **Sampling Frequency:** The sampling frequency at which each of the channels will playback. If an audio take is to be played whose sampling frequency does not correspond to that channel's sampling frequency, an online conversion will be carried out.



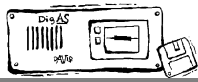


After clicking *Next*, the following dialog box appears:

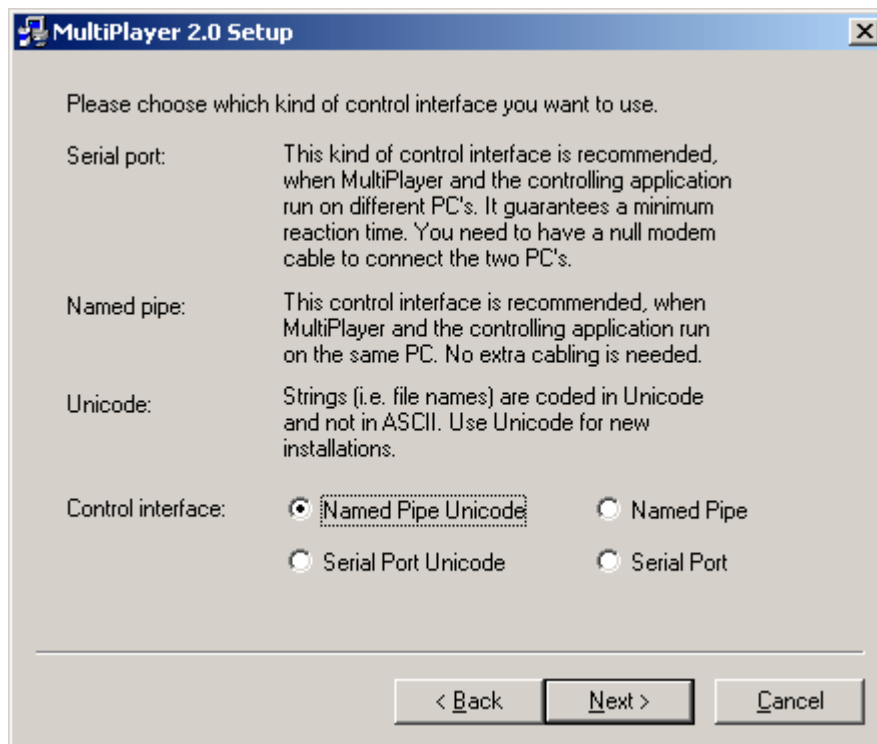


- **MME Devices to be used:** The Multimedia Device with which each channel will be driven. The Index refers to the order of the multimedia output devices in the list of the Audio/Multimedia Control Applet in the Windows control panel. Under Windows 2000 multiple channels may use the same MME Device.
- **Bits per sample:** Defines the resolution of all playout channels. Possible values: 16 or 24 Bit.

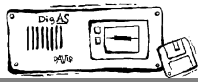




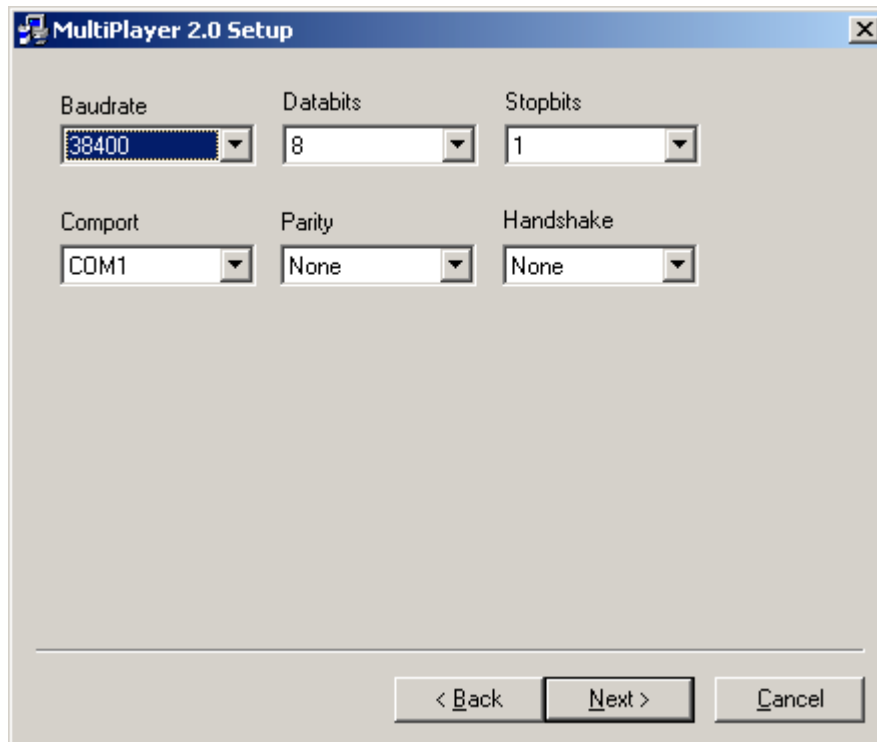
After clicking *Next*, the following dialog box appears:



The MultiPlayer Software can be controlled over either the serial port or a Named Pipe port. Choose the preferred port type and then click *Next* .

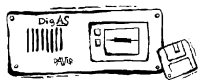


The following dialog box appears only when serial port has been selected:

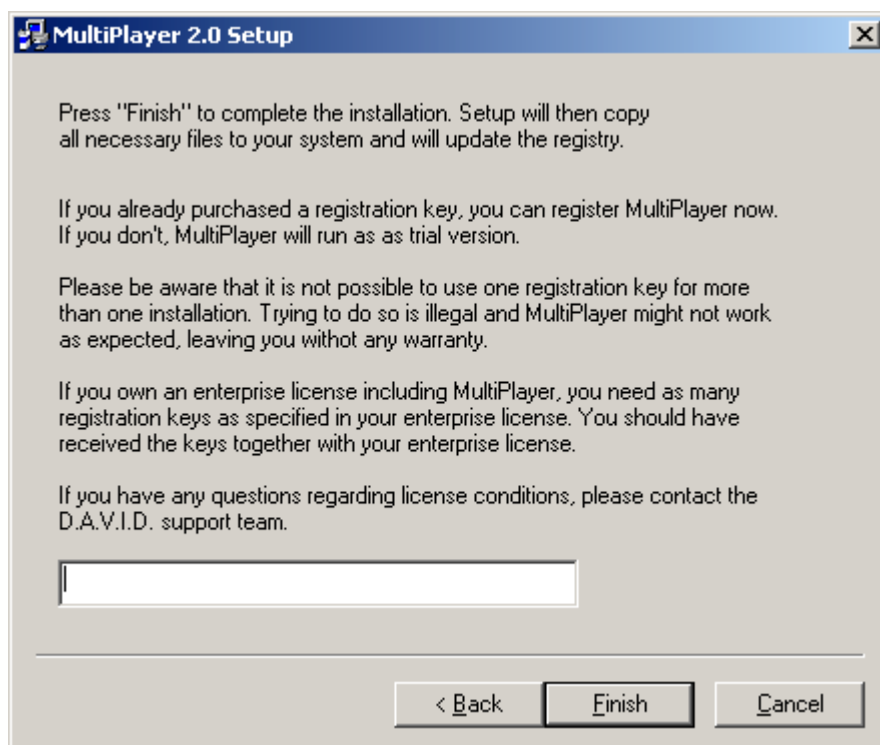


The following settings describe the serial port:

- **Baudrate:** Baud rate
- **Databits:** Number of the Data bits to be used.
- **Stopbits:** Number of the Stop bits to be used.
- **Comport:** The serial port to be addressed.
- **Parity:** Type of parity check to be used.
- **Handshake:** Type of Handshake method to be used.



After clicking *Next*, the following dialog box appears:



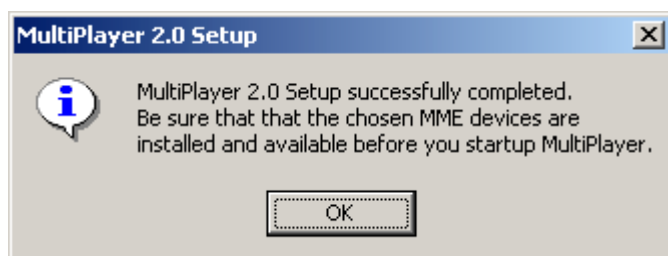
If you already purchased a registration key, you can enter it in the edit field. If not, MultiPlayer will be installed in demonstration mode. You can register it any time later from within the running MultiPlayer application (more information on this below).

Please be aware that it is not possible to use one registration key for more than one installation. Trying to do so is illegal and MultiPlayer might not work as expected, leaving you without any warranty.

If you already own an enterprise license including MultiPlayer Version 2, you need as many registration keys as specified in your enterprise license. You should have received the keys together with your enterprise license.

If you have any questions regarding license conditions, please contact the D.A.V.I.D. support team.

Clicking *Finish*, the installation of MultiPlayer Version 2 is complete.



A final message that the installation of MultiPlayer Version 2 was successful.





5. PARAMETER CONFIGURATION

According to preference, the settings parameters will be stored in the Windows Registry database or in an Ini-File.

5.1 Registry-Mode

The parameters will be exclusively saved to the key: *HKEY_LOCAL_MACHINE\SOFTWARE\David\MultiPlayer\PlayerX*, whereas X refers to the number (starting with 0) of the MultiPlayer in the system.

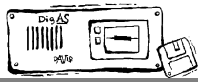
5.1.1 Sub-key System

- **InputMode** String *Serial*: serial port in ASCII mode is to be used
SerialUnicode: serial port in Unicode mode is to be used
Pipe: Named Pipe Port in ASCII mode is to be used
PipeUnicode: Named Pipe Port in ASCII mode is to be used
- **MaximumServerDelay:** DWORD Timeout in ms for a file operation; e.g.: *1000*
If a file operation takes more time than this amount, a log entry is printed in the technical logfile.
- **NinimumDataRate:** DWORD Minimum data rate for file operations in bytes per second
e.g.: *100000*
If reading audio data leads to a datarate smaller than this value a log entry is printed to the technical logfile.
- **NrOfChannels:** DWORD number of channels to be used; e.g.: *4*
- **NrOfSlots:** DWORD Number of pre-load buffers; e.g.: *99*
- **NrOfChannelSeconds:** DWORD Size of the Playback buffer (in seconds); e.g.: *5*
- **NrOfPreloadSeconds:** DWORD Size of the Pre-load buffer (in seconds); e.g.: *5*

5.1.2 Sub-key ComPort

- **Port:** String Applicable serial port; e.g.: *Com1*
- **BaudRate:** String Applicable Baud rate; e.g.: *9600*
- **Parity:** String Parity check; e.g.: *Even*
- **DataBits:** String Number of data bits; e.g.: *8*
- **StopBits:** String Number of the applicable stop bits; e.g.: *1*
- **Handshake:** String Applicable Handshake mode; e.g.: *Hardware*





5.1.3 Sub-key Channels

X refers to the appropriate channel.

- **SamplerateConversionX:** String Optimize SRC for channel X for Speed or Quality
e.g.: HighSpeed, HighQuality
- **StandardClockRateX:** DWORD Sampling frequency for channel X; e.g.: 44100
- **WaveOutDeviceX:** String MME device for channel X; e.g.: *Mixtreme 1 STR 1-2*

5.1.4 Sub-key Logging

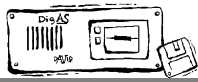
- **TechLogPath:** String Directory to write the technical log file to; e.g.:
C:\Program Files\MultiPlyr\Logging
- **CommandLogPath:** String Directory to write the command log file to; e.g.:
C:\Program Files\MultiPlyr\Logging
- **ForceAnsiLogs:** String *True:* Logfiles in ANSI mode
False: Logfiles in Unicode mode
- **TechLogId:** String Id for the file name of the technical logs (4 Character);
e.g.: *PL_T*
- **CommandLogId:** String Id for the file name of the command logs (4 Character);
e.g.: *PL_C*

5.2 Ini-File-Mode

The parameters will be written to the file; *MultiPlyr.ini* in the MultiPlayer program directory.

5.2.1 Section System

- **InputMode** String *Serial:* serial port in ASCII mode is to be used
SerialUnicode: serial port in Unicode mode is to be used
Pipe: Named Pipe Port in ASCII mode is to be used
PipeUnicode: Named Pipe Port in ASCII mode is to be used
- **MaximumServerDelay:** Integer Timeout in ms for a file operation; e.g.: 1000
If a file operation takes more time than this amount, a log entry is printed in the technical logfile.
- **NinimumDataRate:** Integer Minimum data rate for file operations in bytes per second
e.g.: 100000
If reading audio data leads to a datarate smaller than this value a log entry is printed to the technical logfile.
- **NrOfChannels:** Integer number of channels to be used; e.g.: 4
- **NrOfSlots:** Integer Number of pre-load buffers; e.g.: 99
- **NrOfChannelSeconds:** Integer Size of the Playback buffer (in seconds); e.g.: 5
- **NrOfPreloadSeconds:** Integer Size of the Pre-load buffer (in seconds); e.g.: 5



5.2.2 Section ComPort

- **Port:** String *Serial:* serial port is to be used
Pipe: Named Pipe Port is to be used
- **BaudRate:** String number of channels to be used; e.g.: 4
- **Parity:** String number of pre-load buffers; e.g.: 40
- **DataBits:** String Size of the Playback buffer (in seconds); e.g.: 5
- **StopBits:** String Size of the Pre-load buffer (in seconds); e.g.: 2
- **Handshake:** String *True:* Pre-load buffer optimized for MPEG audio
False: Pre-load buffer optimized for linear audio

5.2.3 Section Channels

X refers to the appropriate channel.

- **SamplerateConversionX:** String Optimize SRC for channel X for Speed or Quality
e.g.: HighSpeed, HighQuality
- **StandardClockRateX:** DWORD Sampling frequency for channel X; e.g.: 44100
- **WaveOutDeviceX:** String MME device for channel X; e.g.: *Mixtreme 1 STR 1-2*

5.2.4 Section Logging

- **TechLogPath:** String Directory to write the technical log file to; e.g.:
C:\Program Files\MultiPlyr\Logging
- **CommandLogPath:** String Directory to write the command log file to; e.g.:
C:\Program Files\MultiPlyr\Logging
- **ForceAnsiLogs:** String *True:* Logfiles in ANSI mode
False: Logfiles in Unicode mode
- **TechLogId:** String Id for the file name of the technical logs (4 Character);
e.g.: *PL_T*
- **CommandLogId:** String Id for the file name of the command logs (4 Character);
e.g.: *PL_C*





6. MULTIPLAYER SOFTWARE OPERATION

6.1 Command Line Parameters

The different operation modes (Registry-Mode or Ini-File-Mode, see Section 5.1 or 5.2) and the applicable instances are entered with command line parameters:

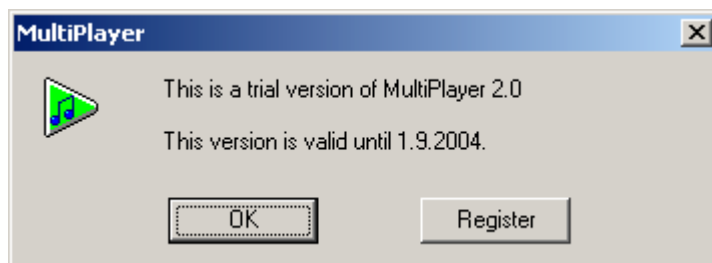
- **/DX:** X refers to the applicable instance; e.g.: */D0* (Device 0: first MultiPlayer instance) if */DX* is left out, Device 0 (MultiPlayer 1) will be used
- **/R:** Registry-Mode; without this parameter: Ini-File-Mode is assumed
- **/Q:** Quiet-Mode; the "Evaluation-Dialog" does not appear; this parameter can be input so that an AutoStart is possible even with an Evaluation version.

6.2 Starting the Program

Start Multiplayer Version 2 with *Start->Programs->MultiPlayer->MultiPlayer #X*, whereby X defines the number of the MultiPlayer installed on this PC. If there is only one MultiPlayer Version 2 installed no #1 will be shown.

The program can also be started automatically at system start by including it in the AutoStart directory. The best way to achieve this is to copy a shortcut from the Windows Start Menu into the AutoStart directory.

If there was no registration key entered on setup, MultiPlayer Version 2 will startup in evaluation mode. The following box will appear:



Clicking on *Register* allows input of the registration key. The registration key is given to the user after purchasing the software from D.A.V.I.D. GmbH or any authorized reseller or system integrator.

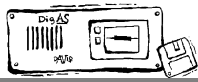


6.4 Program Version Inquiry

The program version and registration key can be called up by clicking with the right mouse button on the MultiPlayer icon* in the taskbar and choosing: *About MultiPlayer*.

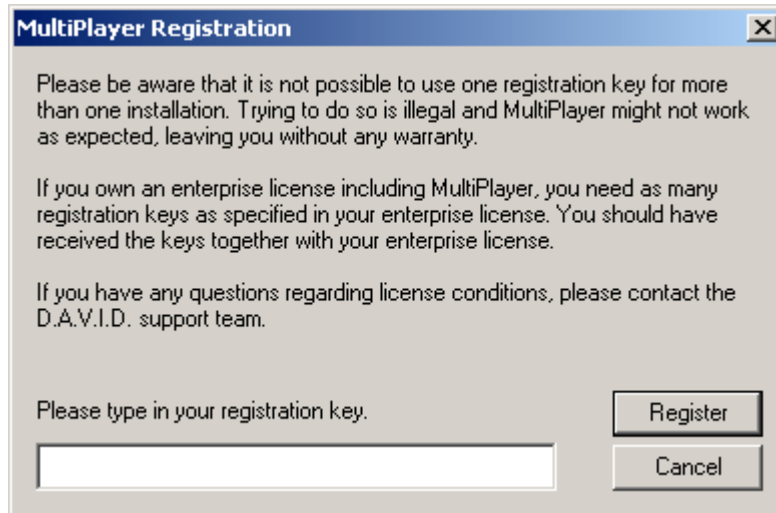
*The new MultiPlayer Version 2 icon:





6.5 Registering MultiPlayer

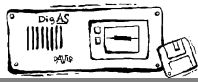
If you are running MultiPlayer Version 2 in evaluation mode and have already purchased a registration key, you can enter the key by clicking the right mouse button on the MultiPlayer icon in the taskbar and choosing: *Register*.



Please be aware that it is not possible to use one registration key for more than one installation. Trying to do so is illegal and MultiPlayer might not work as expected, leaving you without any warranty.

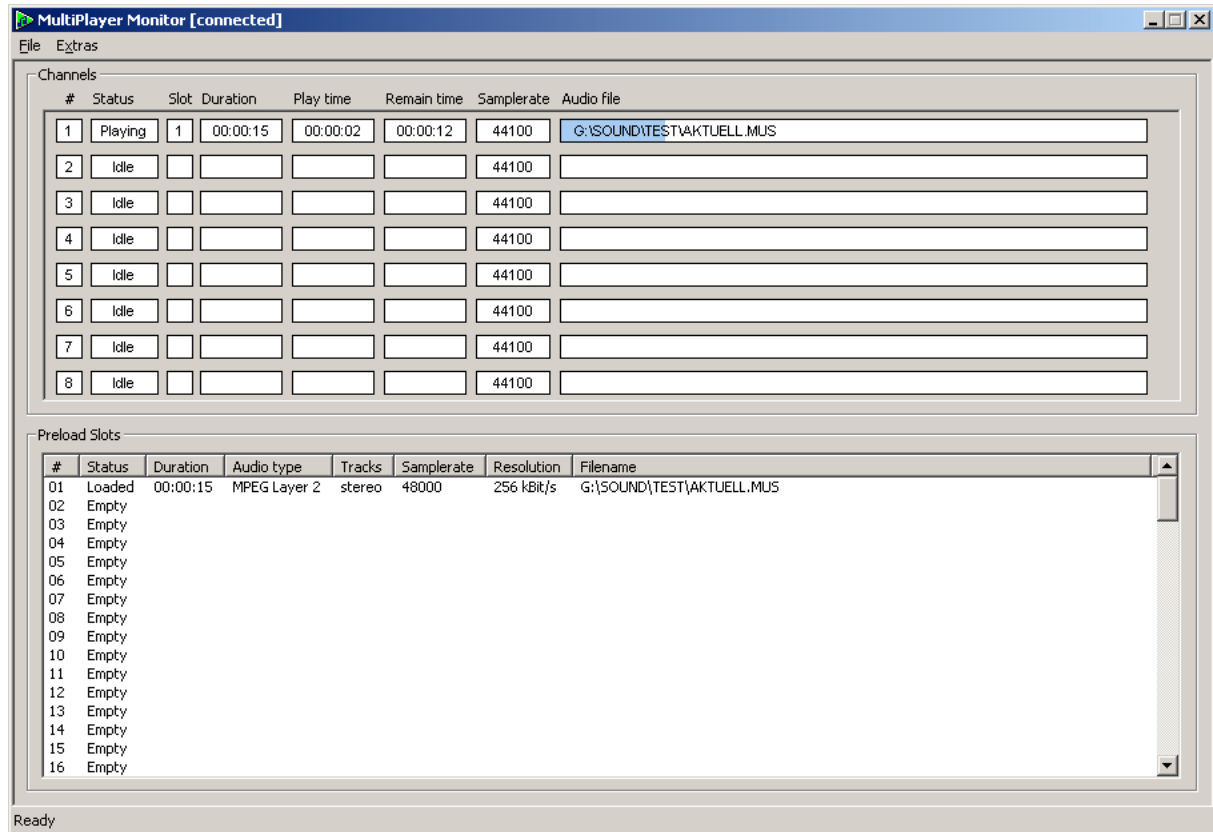
If you already own an enterprise license including MultiPlayer Version 2, you need as many registration keys as specified in your enterprise license. You should have received the keys together with your enterprise license.

If you have any questions regarding license conditions, please contact the D.A.V.I.D. support team.



6.6 Status Monitoring

The status monitor is activated by clicking the right mouse button on the MultiPlayer icon in the taskbar and choosing: *Monitor*. The following window appears:

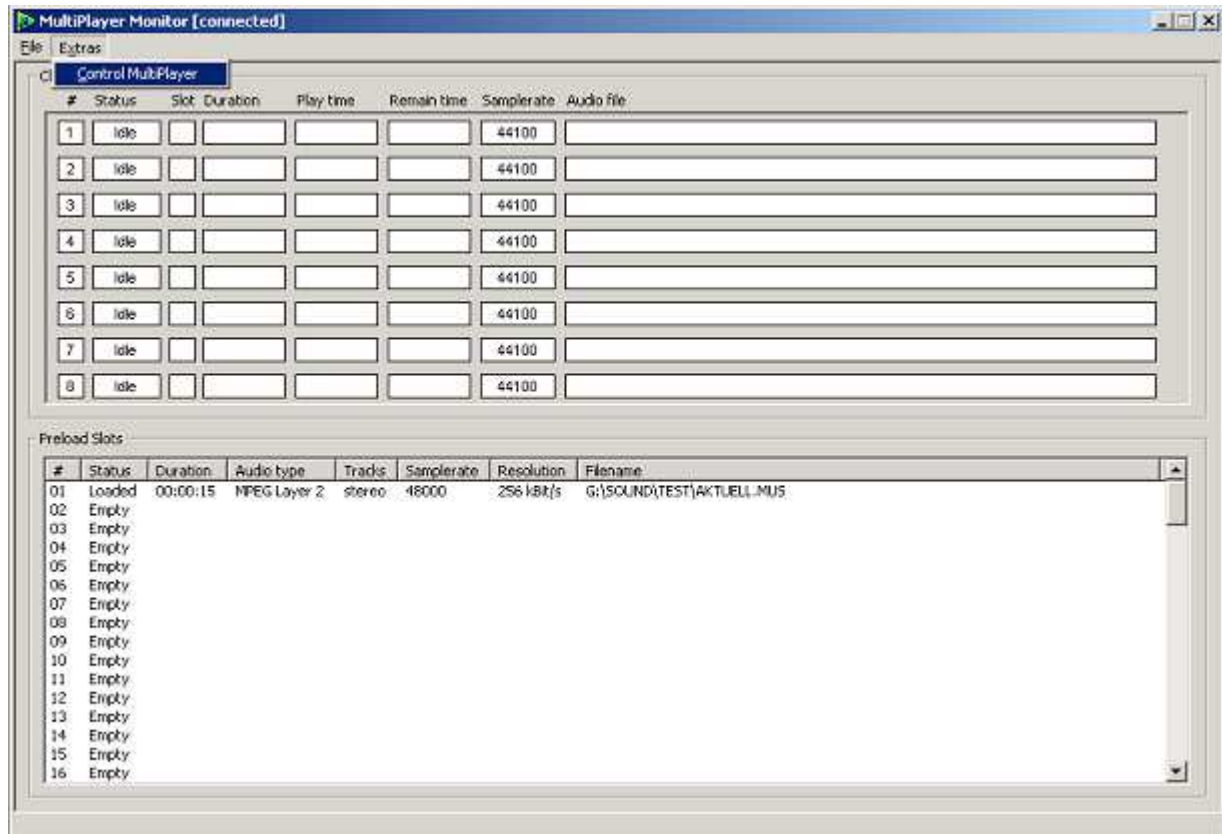




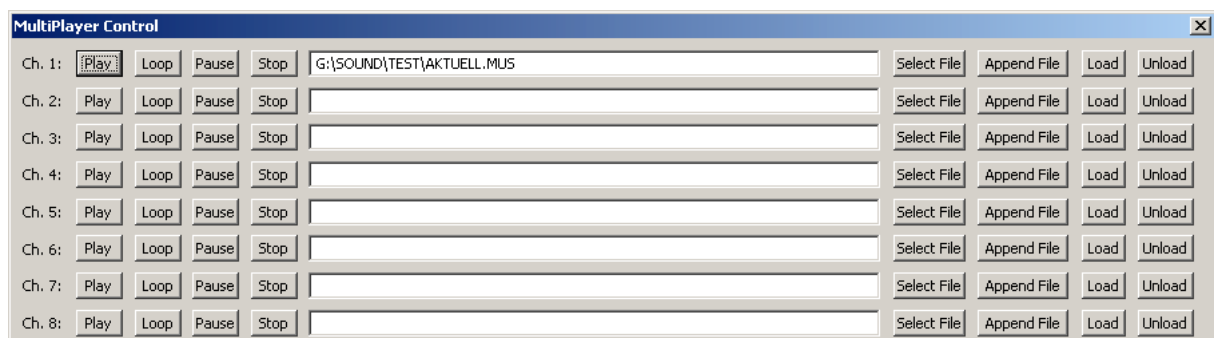
6.7 Operation

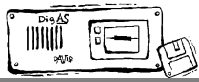
MultiPlayer Control offers rudimentary control functions in order to test MultiPlayer without having to use other programs.

To open the Control dialog, choose *Control MultiPlayer* from the Extras menu.



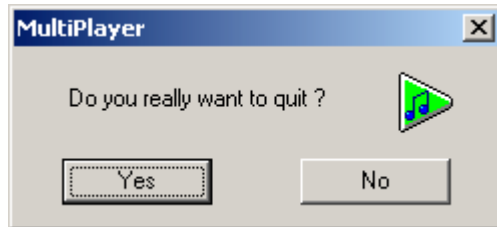
With the Control dialog slots can be pre-loaded and audio takes may be played back. The slots and channels are permanently assigned. Therefore Slot 1 will playback on Channel 1, Slot 2 on Channel 2, and so forth.

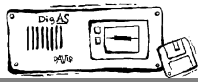




6.8 Exiting the Program

The program can be ended by clicking the right mouse button on the MultiPlayer icon in the taskbar and choosing: *Close MultiPlayer*.





Ridlerstraße 31b
D-80339 Munich
Germany

Telephone: +49 89 540 139 - 0
Fax: +49 89 540 139 - 50

Author: Axel Holzinger
File name: F:\Doc\MultiPlayer V2.0\MultiPlayerV2Eng.doc
Last Changes: 15.07.04



Digital



Audio



Video



Integration



Development