SOUND4 BIGVOICE.CL Library [2.0.0]

Generated by Doxygen 1.9.8

1 SOUND4 BIGVOICE.CL Library 1

1.1 General library information . . . 1

1.2 General C usage . . . 1

2 Generic C++ access to SOUND4 .CL librairies 3

2.1 General usage . . . 3

2.2 Communicating with the instance . . . 3

2.3 Metadata . . . 4

2.4 Advanced tasks . . . 4

2.4.1 Custom storage . . . 4

2.4.2 Using a bus . . . 4

2.4.3 Convert helpers . . . 4

2.4.4 Adding a health point in the web server . . . 4

3 JSON syntax 5

3.1 Commands . . . 5

3.2 Answers . . . 6

3.3 Examples . . . 6

3.3.1 Get status . . . 6

3.3.2 Get all changes since last request . . . 6

3.3.3 Check license . . . 7

3.3.4 Set Processor name . . . 7

3.3.5 Get presetlist . . . 7

3.3.6 Load a preset . . . 7

3.3.7 Get information on preset on air . . . 7

3.3.8 Set input gain . . . 7

3.3.9 Set bypass . . . 7

3.3.10 Export a preset . . . 8

3.3.11 Import a preset . . . 8

4 JSON syntax for internal setup 9

4.1 Get process and modules information . . . 9

4.2 Authentication management . . . 9

4.2.1 Difference between setup and admin account . . . 9

4.2.2 Access encoding . . . 10

4.2.3 Change setup account . . . 10

4.2.3.1 Set the setup/admin account . . . 10

4.2.3.2 Set the setup/admin account with clear password . . . 10

4.2.3.3 Remove the setup/admin account . . . 10

4.2.4 Get user info . . . 10

4.2.5 Add or modify a user . . . 10

4.2.6 Removes a user . . . 11

4.2.7 List users . . . 11

4.2.8 Get/set unlogged access . . . 11
4.2.9 Get realm . . . 11
4.2.10 Get API version . . . 11
4.2.11 Get setup is admin . . . 11
4.2.12 Get/set setup account . . . 11
4.2.13 Get/set custom storage . . . 11
4.3 Get process' interface description . . . 12
4.3.1 Get XML decription . . . 12
4.3.2 Get Process Image . . . 12
4.3.3 Get Process Ico . . . 12

5 Environment variables and parameters **13**
5.1 Parameters defaulting from environment . . . 13
5.1.1 Webserver authentification setup : . . . 13
5.1.2 Webserver secure : . . . 14
5.1.3 Network access : . . . 14
5.2 Parameters . . . 14
5.2.1 Run mode: . . . 14
5.2.2 Web server options: . . . 15
5.3 Preset sharing . . . 15
5.4 Workaround for known problems . . . 15
5.4.1 .NET (C#) . . . 15

6 Deprecated List **17**

7 Topic Index **19**
7.1 Topics . . . 19

8 Namespace Index **21**
8.1 Namespace List . . . 21

9 Hierarchical Index **23**
9.1 Class Hierarchy . . . 23

10 Class Index **25**
10.1 Class List . . . 25

11 File Index **27**
11.1 File List . . . 27

12 Topic Documentation **29**
12.1 Audio convert helpers . . . 29
12.1.1 Detailed Description . . . 30
12.1.2 Enumeration Type Documentation . . . 30
12.1.2.1 bigvoice_ConverterTargetMode . . . 30

12.1.3 Function Documentation . . . 30
12.1.3.1 bigvoice_AudioConverter_From() . . . 30
12.1.3.2 bigvoice_AudioConverter_To() . . . 30
12.1.3.3 bigvoice_AudioConvertFrom() . . . 31
12.1.3.4 bigvoice_AudioConvertTo() . . . 31
12.1.3.5 bigvoice_AudioMonoFromLiveStereo() . . . 32
12.1.3.6 bigvoice_AudioMonoToLiveStereo() . . . 32
12.1.3.7 bigvoice_FreeAudioConverter() . . . 32
12.1.3.8 bigvoice_GetAudioConverter() . . . 32
12.1.3.9 bigvoice_MonoToStereo() . . . 33
12.1.3.10 bigvoice_MonoToStereo_Planar() . . . 34
12.1.3.11 bigvoice_StereoToMono() . . . 34
12.1.3.12 bigvoice_StereoToMono_Planar() . . . 34
12.2 Audio convert helpers (C++) . . . 35
12.2.1 Detailed Description . . . 35
12.2.2 Enumeration Type Documentation . . . 36
12.2.2.1 ConverterTargetMode . . . 36
12.2.3 Function Documentation . . . 36
12.2.3.1 AudioConvertFrom() . . . 36
12.2.3.2 AudioConvertTo() . . . 36
12.2.3.3 AudioMonoFromLiveStereo() . . . 37
12.2.3.4 AudioMonoToLiveStereo() . . . 37
12.2.3.5 MonoToStereo() . . . 38
12.2.3.6 MonoToStereo_Planar() . . . 38
12.2.3.7 StereoToMono() . . . 38
12.2.3.8 StereoToMono_Planar() . . . 39
12.3 Audio managing (any audio) . . . 39
12.3.1 Detailed Description . . . 40
12.3.2 Enumeration Type Documentation . . . 40
12.3.2.1 bigvoice_SampleFormat . . . 40
12.3.3 Function Documentation . . . 41
12.3.3.1 bigvoice_AddAudio() . . . 41
12.3.3.2 bigvoice_AddPadAudio() . . . 41
12.3.3.3 bigvoice_GetAudio() . . . 41
12.3.3.4 bigvoice_GetBytesFromFormat() . . . 43
12.3.3.5 bigvoice_GetFormatFromName() . . . 43
12.3.3.6 bigvoice_GetFormatName() . . . 43
12.3.3.7 bigvoice_GetMaxPacketFrame() . . . 44
12.3.3.8 bigvoice_GetOutputCount() . . . 44
12.4 Auxiliary outputs . . . 44
12.4.1 Detailed Description . . . 45
12.4.2 Function Documentation . . . 45

12.4.2.1 bigvoice_ActivateAuxiliaryAudioID() . . . 45
12.4.2.2 bigvoice_FreeAuxiliaryAudioInfos() . . . 45
12.4.2.3 bigvoice_GetAuxiliaryAudioEstimatedDelay() . . . 46
12.4.2.4 bigvoice_GetAuxiliaryAudioOutputInfos() . . . 46
12.5 Client's JSon config interfacing . . . 46
12.5.1 Detailed Description . . . 47
12.5.2 Function Documentation . . . 47
12.5.2.1 bigvoice_DeleteClient() . . . 47
12.5.2.2 bigvoice_FreeJsonAnswer() . . . 47
12.5.2.3 bigvoice_NewClient() . . . 47
12.5.2.4 bigvoice_ProcessJson() . . . 48
12.5.2.5 bigvoice_SaveState() . . . 48
12.6 Custom preset managagement . . . 49
12.6.1 Detailed Description . . . 50
12.6.2 Typedef Documentation . . . 50
12.6.2.1 bigvoice_storage_exists . . . 50
12.6.2.2 bigvoice_storage_getall . . . 50
12.6.2.3 bigvoice_storage_getall_free . . . 51
12.6.2.4 bigvoice_storage_reader . . . 51
12.6.2.5 bigvoice_storage_reader_free . . . 51
12.6.2.6 bigvoice_storage_remove . . . 52
12.6.2.7 bigvoice_storage_rename . . . 52
12.6.2.8 bigvoice_storage_writer . . . 52
12.6.2.9 fs_char . . . 53
12.6.3 Enumeration Type Documentation . . . 53
12.6.3.1 bigvoice_PresetChange_Kind . . . 53
12.6.4 Function Documentation . . . 53
12.6.4.1 bigvoice_PresetManager_InformChange() . . . 53
12.6.4.2 bigvoice_SetPresetManager() . . . 54
12.7 Direct processing . . . 54
12.7.1 Detailed Description . . . 55
12.7.2 Function Documentation . . . 55
12.7.2.1 bigvoice_GetBufferIn() . . . 55
12.7.2.2 bigvoice_GetBufferOut() . . . 55
12.7.2.3 bigvoice_GetEstimatedDelay() . . . 56
12.7.2.4 bigvoice_ProcessAudio() . . . 56
12.7.2.5 bigvoice_ProcessAudio_Planar() . . . 57
12.8 Examples . . . 57
12.9 Global setup . . . 58
12.9.1 Detailed Description . . . 58
12.9.2 Macro Definition Documentation . . . 59
12.9.2.1 BIGVOICE_AUDIO_INPUT_COUNT . . . 59

12.9.2.2 BIGVOICE_AUDIO_OUTPUT_COUNT . . . 59
12.9.2.3 BIGVOICE_AUDIOFRAME_COUNT . . . 59
12.9.2.4 BIGVOICE_CHANNEL_COUNT . . . 59
12.9.2.5 BIGVOICE_SAMPLE_RATE . . . 60
12.9.3 Typedef Documentation . . . 60
12.9.3.1 bigvoice_loggerfn . . . 60
12.9.4 Enumeration Type Documentation . . . 60
12.9.4.1 bigvoice_LogSeverity . . . 60
12.9.5 Function Documentation . . . 61
12.9.5.1 bigvoice_GetAudioInputCount() . . . 61
12.9.5.2 bigvoice_GetAudioOutputCount() . . . 61
12.9.5.3 bigvoice_GetChannelCount() . . . 61
12.9.5.4 bigvoice_GetChunkSizeInFrames() . . . 62
12.9.5.5 bigvoice_GetPossibleChunkSizeInFrames() . . . 62
12.9.5.6 bigvoice_GetSampleRate() . . . 62
12.9.5.7 bigvoice_GetVersion() . . . 63
12.9.5.8 bigvoice_SetLoggerCallback() . . . 63
12.9.5.9 bigvoice_SetLogSeverity() . . . 63
12.9.5.10 SOUND4_GetProcessInfo() . . . 63
12.10 Instance tracing (Windows only) . . . 64
12.10.1 Detailed Description . . . 64
12.10.2 Function Documentation . . . 64
12.10.2.1 bigvoice_SetInstanceTracing() . . . 64
12.10.2.2 bigvoice_SetInstanceTracingProcessActivity() . . . 64
12.11 Instance's bus . . . 65
12.11.1 Detailed Description . . . 65
12.11.2 Function Documentation . . . 65
12.11.2.1 bigvoice_FreeBus() . . . 65
12.11.2.2 bigvoice_NewBus() . . . 65
12.11.2.3 bigvoice_SetInstanceBus() . . . 66
12.12 Metadata Management . . . 66
12.12.1 Detailed Description . . . 66
12.12.2 Function Documentation . . . 66
12.12.2.1 bigvoice_FreeMetadataInfos() . . . 66
12.12.2.2 bigvoice_GetMetadataInfos() . . . 67
12.12.2.3 bigvoice_SetMetadata() . . . 67
12.12.2.4 bigvoice_SetMetadataMulti() . . . 67
12.13 Process creation/destruction . . . 68
12.13.1 Detailed Description . . . 68
12.13.2 Function Documentation . . . 68
12.13.2.1 bigvoice_ExitProcess() . . . 68
12.13.2.2 bigvoice_FreeParameters() . . . 69

12.13.2.3 bigvoice_FreeParameterValue() . . . 69
12.13.2.4 bigvoice_GetParameter() . . . 69
12.13.2.5 bigvoice_GetProcessChunkFrames() . . . 69
12.13.2.6 bigvoice_InitProcess() . . . 70
12.13.2.7 bigvoice_InitProcess2() . . . 70
12.13.2.8 bigvoice_InitProcess3() . . . 71
12.13.2.9 bigvoice_NewParameters() . . . 71
12.13.2.10 bigvoice_SetParameter() . . . 72
12.13.2.11 bigvoice_TerminateProcess() . . . 72
12.14 Sample using C interface . . . 72
12.14.1 Sample to create the processing instance . . . 72
12.14.2 Sample processing loop . . . 73
12.14.3 Sample to stop the processing instance . . . 74
12.15 Sample using C++ interface wrapper . . . 74
12.15.1 Setup and sanity checks . . . 74
12.15.2 Sample to create the processing instance . . . 74
12.15.3 Communicating with the instance . . . 74
12.15.4 Starting a web-server . . . 75
12.15.5 Sample processing loop . . . 75
12.16 Sample using C++ interface wrapper with dynamic library loading . . . 75
12.16.1 Dynamic loading . . . 75
12.16.2 Setup and sanity checks . . . 75
12.16.3 Sample to create the processing instance . . . 75
12.16.4 Communicating with the instance . . . 75
12.16.5 Starting a web-server . . . 76
12.16.6 Sample processing loop . . . 76
12.16.7 Custom preset manager . . . 76
12.16.8 Custom preset manager loading . . . 77
12.17 Sample using Generic C++ interface (multi-process compatible) . . . 77
12.17.1 Loading the library . . . 77
12.17.2 Setup and configure . . . 77
12.17.3 Create the processing instance . . . 78
12.17.4 Processing loop . . . 78
12.17.5 Starting a web-server . . . 78
12.17.6 Communicating with the instance . . . 78
12.17.7 Custom preset manager example . . . 78
12.17.8 Custom preset manager loading . . . 79
12.18 Update Management . . . 79
12.18.1 Detailed Description . . . 80
12.18.2 Function Documentation . . . 80
12.18.2.1 bigvoice_StartUpdateThread() . . . 80
12.18.2.2 bigvoice_StopUpdateThread() . . . 80

12.18.2.3 bigvoice_WaitUpdateThreadReady() . . . 80
12.19 Web server . . . 81
12.19.1 Detailed Description . . . 81
12.19.2 Macro Definition Documentation . . . 81
12.19.2.1 SOUND4_INVALID_WEBSERVER_ID . . . 81
12.19.2.2 SOUND4_WEBSERVER_HTTP_OK . . . 82
12.19.2.3 SOUND4_WEBSERVER_HTTPS_OK . . . 82
12.19.3 Function Documentation . . . 82
12.19.3.1 bigvoice_Webserver() . . . 82
12.19.3.2 bigvoice_Webserver_FreeString() . . . 83
12.19.3.3 bigvoice_Webserver_GetAppHealth() . . . 83
12.19.3.4 bigvoice_Webserver_SetAppHealth() . . . 83
12.19.3.5 bigvoice_Webserver_Status() . . . 84
12.19.3.6 bigvoice_Webserver_Stop() . . . 84
12.19.3.7 bigvoice_Webserver_tcp() . . . 84
12.19.3.8 bigvoice_Webserver_tcp2() . . . 85

13 Namespace Documentation **87**
13.1 sound4 Namespace Reference . . . 87
13.1.1 Detailed Description . . . 88
13.1.2 Typedef Documentation . . . 88
13.1.2.1 log_cb_t . . . 88
13.1.3 Enumeration Type Documentation . . . 88
13.1.3.1 LogSeverity . . . 88
13.1.3.2 PresetChange_Kind . . . 89
13.1.3.3 SampleFormat . . . 89
13.1.4 Function Documentation . . . 89
13.1.4.1 _log_cb_c() . . . 89
13.1.5 Variable Documentation . . . 90
13.1.5.1 _log_cb . . . 90
13.2 sound4::bigvoice Namespace Reference . . . 90
13.2.1 Detailed Description . . . 91
13.2.2 Typedef Documentation . . . 91
13.2.2.1 log_cb_t . . . 91
13.2.2.2 LogSeverity . . . 91
13.2.2.3 PresetChange_Kind . . . 91
13.2.2.4 SampleFormat . . . 91
13.2.3 Function Documentation . . . 92
13.2.3.1 _log_cb_c() . . . 92
13.2.3.2 GetAudioInputCount() . . . 92
13.2.3.3 GetAudioOutputCount() . . . 92
13.2.3.4 GetBytesFromFormat() . . . 92

13.2.3.5 GetChannelCount() . . . 93
13.2.3.6 GetChunkSizeInFrames() . . . 93
13.2.3.7 GetFormatFromName() . . . 93
13.2.3.8 GetFormatName() . . . 94
13.2.3.9 GetPossibleChunkSizeInFrames() . . . 94
13.2.3.10 GetSampleRate() . . . 95
13.2.3.11 GetVersion() . . . 95
13.2.3.12 SanityCheck() . . . 95
13.2.3.13 SetLoggerCallback() . . . 95
13.2.3.14 SetLogSeverity() . . . 96
13.2.4 Variable Documentation . . . 96
13.2.4.1 _log_cb . . . 96
13.2.4.2 ChunkFrames . . . 96
13.2.4.3 InputChannels . . . 96
13.2.4.4 InputSampleSize . . . 96
13.2.4.5 OutputChannels . . . 97
13.2.4.6 OutputSampleSize . . . 97
13.2.4.7 process_name . . . 97
13.2.4.8 process_shortname . . . 97
13.2.4.9 SampleRate . . . 97
13.3 sound4::bigvoice::dyn Namespace Reference . . . 98
13.3.1 Detailed Description . . . 99
13.3.2 Typedef Documentation . . . 99
13.3.2.1 log_cb_t . . . 99
13.3.2.2 LogSeverity . . . 99
13.3.2.3 PresetChange_Kind . . . 99
13.3.2.4 SampleFormat . . . 99
13.3.3 Function Documentation . . . 99
13.3.3.1 _log_cb_c() . . . 99
13.3.3.2 GetAudioInputCount() . . . 99
13.3.3.3 GetAudioOutputCount() . . . 100
13.3.3.4 GetBytesFromFormat() . . . 100
13.3.3.5 GetChannelCount() . . . 101
13.3.3.6 GetChunkSizeInFrames() . . . 101
13.3.3.7 GetFormatFromName() . . . 101
13.3.3.8 GetFormatName() . . . 102
13.3.3.9 GetPossibleChunkSizeInFrames() . . . 102
13.3.3.10 GetSampleRate() . . . 103
13.3.3.11 GetVersion() . . . 103
13.3.3.12 SanityCheck() . . . 103
13.3.3.13 SetLoggerCallback() . . . 105
13.3.3.14 SetLogSeverity() . . . 105

13.3.4 Variable Documentation . . . 105
13.3.4.1 _log_cb . . . 105
13.3.4.2 ChunkFrames . . . 105
13.3.4.3 InputChannels . . . 106
13.3.4.4 InputSampleSize . . . 106
13.3.4.5 OutputChannels . . . 106
13.3.4.6 OutputSampleSize . . . 106
13.3.4.7 process_name . . . 106
13.3.4.8 process_shortname . . . 107
13.3.4.9 SampleRate . . . 107
13.4 sound4::bigvoice::dyn::helper Namespace Reference . . . 107
13.4.1 Detailed Description . . . 108
13.4.2 Function Documentation . . . 108
13.4.2.1 AudioConvertFrom() . . . 108
13.4.2.2 AudioConvertTo() . . . 108
13.4.2.3 AudioMonoFromLiveStereo() . . . 109
13.4.2.4 AudioMonoToLiveStereo() . . . 109
13.4.2.5 MonoToStereo() . . . 109
13.4.2.6 MonoToStereo_Planar() . . . 110
13.4.2.7 StereoToMono() . . . 110
13.4.2.8 StereoToMono_Planar() . . . 111
13.4.2.9 UTF8ToWString() . . . 111
13.4.2.10 WStringToUTF8() . . . 112
13.5 sound4::bigvoice::helper Namespace Reference . . . 112
13.5.1 Detailed Description . . . 112
13.5.2 Function Documentation . . . 113
13.5.2.1 AudioConvertFrom() . . . 113
13.5.2.2 AudioConvertTo() . . . 113
13.5.2.3 AudioMonoFromLiveStereo() . . . 114
13.5.2.4 AudioMonoToLiveStereo() . . . 114
13.5.2.5 MonoToStereo() . . . 114
13.5.2.6 MonoToStereo_Planar() . . . 115
13.5.2.7 StereoToMono() . . . 115
13.5.2.8 StereoToMono_Planar() . . . 116
13.5.2.9 UTF8ToWString() . . . 116
13.5.2.10 WStringToUTF8() . . . 116
13.6 sound4::helper Namespace Reference . . . 117
13.6.1 Detailed Description . . . 117
13.6.2 Function Documentation . . . 117
13.6.2.1 UTF8ToWString() . . . 117
13.6.2.2 WStringToUTF8() . . . 117

14 Class Documentation 119
14.1 sound4::AuxiliaryOutputInfos Struct Reference . . . 119
14.1.1 Detailed Description . . . 119
14.1.2 Member Data Documentation . . . 119
14.1.2.1 buffer . . . 119
14.1.2.2 channel_count . . . 120
14.1.2.3 description . . . 120
14.1.2.4 id . . . 120
14.1.2.5 sample_rate . . . 120
14.2 bigvoice_CAudioConverter Struct Reference . . . 120
14.2.1 Detailed Description . . . 120
14.3 bigvoice_CBus Struct Reference . . . 121
14.3.1 Detailed Description . . . 121
14.4 bigvoice_CClientInstance Struct Reference . . . 121
14.4.1 Detailed Description . . . 121
14.5 bigvoice_CInstance Struct Reference . . . 121
14.5.1 Detailed Description . . . 121
14.6 bigvoice_CParameters Struct Reference . . . 121
14.6.1 Detailed Description . . . 122
14.7 sound4::bigvoice::CAudioConverter Class Reference . . . 122
14.7.1 Detailed Description . . . 122
14.7.2 Constructor & Destructor Documentation . . . 122
14.7.2.1 CAudioConverter() . . . 122
14.7.2.2 ∼CAudioConverter() . . . 122
14.7.3 Member Function Documentation . . . 123
14.7.3.1 Configure() . . . 123
14.7.3.2 ConvertFrom() . . . 123
14.7.3.3 ConvertTo() . . . 124
14.7.3.4 Delete() . . . 124
14.7.3.5 IsOK() . . . 124
14.8 sound4::bigvoice::dyn::CAudioConverter Class Reference . . . 124
14.8.1 Detailed Description . . . 125
14.8.2 Constructor & Destructor Documentation . . . 125
14.8.2.1 CAudioConverter() . . . 125
14.8.2.2 ∼CAudioConverter() . . . 125
14.8.3 Member Function Documentation . . . 125
14.8.3.1 Configure() . . . 125
14.8.3.2 ConvertFrom() . . . 127
14.8.3.3 ConvertTo() . . . 127
14.8.3.4 Delete() . . . 128
14.8.3.5 IsOK() . . . 128
14.9 sound4::CAudioConverter Class Reference . . . 128

14.9.1 Detailed Description . . . 128
14.9.2 Constructor & Destructor Documentation . . . 128
14.9.2.1 CAudioConverter() . . . 128
14.9.2.2 ~CAudioConverter() . . . 129
14.9.3 Member Function Documentation . . . 129
14.9.3.1 Configure() . . . 129
14.9.3.2 ConvertFrom() . . . 130
14.9.3.3 ConvertTo() . . . 130
14.9.3.4 Delete() . . . 130
14.9.3.5 IsOK() . . . 131
14.10 sound4::bigvoice::CBus Class Reference . . . 131
14.10.1 Detailed Description . . . 131
14.10.2 Constructor & Destructor Documentation . . . 131
14.10.2.1 CBus() . . . 131
14.10.2.2 ~CBus() . . . 131
14.10.3 Member Function Documentation . . . 132
14.10.3.1 Get() . . . 132
14.11 sound4::bigvoice::dyn::CBus Class Reference . . . 132
14.11.1 Detailed Description . . . 132
14.11.2 Constructor & Destructor Documentation . . . 132
14.11.2.1 CBus() . . . 132
14.11.2.2 ~CBus() . . . 132
14.11.3 Member Function Documentation . . . 133
14.11.3.1 Get() . . . 133
14.12 sound4::CBus Class Reference . . . 133
14.12.1 Detailed Description . . . 133
14.12.2 Constructor & Destructor Documentation . . . 133
14.12.2.1 CBus() . . . 133
14.12.2.2 ~CBus() . . . 134
14.12.3 Member Function Documentation . . . 134
14.12.3.1 Get() . . . 134
14.12.4 Friends And Related Symbol Documentation . . . 134
14.12.4.1 CInstance . . . 134
14.13 sound4::bigvoice::CInstance::CClient Class Reference . . . 134
14.13.1 Detailed Description . . . 134
14.13.2 Constructor & Destructor Documentation . . . 135
14.13.2.1 CClient() [1/2] . . . 135
14.13.2.2 CClient() [2/2] . . . 135
14.13.2.3 ~CClient() . . . 135
14.13.3 Member Function Documentation . . . 135
14.13.3.1 operator=() . . . 135
14.13.3.2 ProcessJson() . . . 135

14.14 sound4::bigvoice::dyn::CInstance::CClient Class Reference . . . 136
14.14.1 Detailed Description . . . 136
14.14.2 Constructor & Destructor Documentation . . . 136
14.14.2.1 CClient() [1/2] . . . 136
14.14.2.2 CClient() [2/2] . . . 136
14.14.2.3 ~CClient() . . . 136
14.14.3 Member Function Documentation . . . 136
14.14.3.1 operator=() . . . 136
14.14.3.2 ProcessJson() . . . 136
14.15 sound4::CInstance::CClient Class Reference . . . 137
14.15.1 Detailed Description . . . 137
14.15.2 Constructor & Destructor Documentation . . . 137
14.15.2.1 CClient() [1/2] . . . 137
14.15.2.2 CClient() [2/2] . . . 138
14.15.2.3 ~CClient() . . . 138
14.15.3 Member Function Documentation . . . 138
14.15.3.1 operator=() . . . 138
14.15.3.2 ProcessJson() . . . 138
14.16 sound4::bigvoice::dyn::CDynLib Class Reference . . . 138
14.16.1 Detailed Description . . . 140
14.16.2 Constructor & Destructor Documentation . . . 140
14.16.2.1 CDynLib() . . . 140
14.16.3 Member Function Documentation . . . 140
14.16.3.1 IsOk() . . . 140
14.16.3.2 Load() . . . 141
14.16.4 Member Data Documentation . . . 141
14.16.4.1 AddAudio . . . 141
14.16.4.2 AddPadAudio . . . 141
14.16.4.3 AudioConverter_From . . . 141
14.16.4.4 AudioConverter_To . . . 141
14.16.4.5 AudioConvertFrom . . . 142
14.16.4.6 AudioConvertTo . . . 142
14.16.4.7 AudioMonoFromLiveStereo . . . 142
14.16.4.8 AudioMonoToLiveStereo . . . 142
14.16.4.9 DeleteClient . . . 142
14.16.4.10 ExitProcess . . . 142
14.16.4.11 FreeAudioConverter . . . 142
14.16.4.12 FreeBus . . . 143
14.16.4.13 FreeJsonAnswer . . . 143
14.16.4.14 FreeMetadataInfos . . . 143
14.16.4.15 FreeParameters . . . 143
14.16.4.16 FreeParameterValue . . . 143

14.16.4.17 GetAudio . . . 143
14.16.4.18 GetAudioConverter . . . 143
14.16.4.19 GetAudioInputCount . . . 144
14.16.4.20 GetAudioOutputCount . . . 144
14.16.4.21 GetBufferIn . . . 144
14.16.4.22 GetBufferOut . . . 144
14.16.4.23 GetBytesFromFormat . . . 144
14.16.4.24 GetChannelCount . . . 144
14.16.4.25 GetChunkSizeInFrames . . . 144
14.16.4.26 GetEstimatedDelay . . . 145
14.16.4.27 GetFormatFromName . . . 145
14.16.4.28 GetFormatName . . . 145
14.16.4.29 GetMaxPacketFrame . . . 145
14.16.4.30 GetMetadataInfos . . . 145
14.16.4.31 GetOutputCount . . . 145
14.16.4.32 GetParameter . . . 145
14.16.4.33 GetPossibleChunkSizeInFrames . . . 146
14.16.4.34 GetProcessChunkFrames . . . 146
14.16.4.35 GetSampleRate . . . 146
14.16.4.36 GetVersion . . . 146
14.16.4.37 InitProcess . . . 146
14.16.4.38 InitProcess2 . . . 146
14.16.4.39 InitProcess3 . . . 146
14.16.4.40 MonoToStereo . . . 147
14.16.4.41 MonoToStereo_Planar . . . 147
14.16.4.42 NewBus . . . 147
14.16.4.43 NewClient . . . 147
14.16.4.44 NewParameters . . . 147
14.16.4.45 PresetManager_InformChange . . . 147
14.16.4.46 ProcessAudio . . . 147
14.16.4.47 ProcessAudio_Planar . . . 148
14.16.4.48 ProcessJson . . . 148
14.16.4.49 SaveState . . . 148
14.16.4.50 SetInstanceBus . . . 148
14.16.4.51 SetInstanceTracing . . . 148
14.16.4.52 SetInstanceTracingProcessActivity . . . 148
14.16.4.53 SetLoggerCallback . . . 148
14.16.4.54 SetLogSeverity . . . 149
14.16.4.55 SetMetadata . . . 149
14.16.4.56 SetMetadataMulti . . . 149
14.16.4.57 SetParameter . . . 149
14.16.4.58 SetPresetManager . . . 149

14.16.4.59 StartUpdateThread . . . 149
14.16.4.60 StereoToMono . . . 149
14.16.4.61 StereoToMono_Planar . . . 150
14.16.4.62 StopUpdateThread . . . 150
14.16.4.63 TerminateProcess . . . 150
14.16.4.64 WaitUpdateThreadReady . . . 150
14.16.4.65 Webserver . . . 150
14.16.4.66 Webserver_FreeString . . . 150
14.16.4.67 Webserver_GetAppHealth . . . 150
14.16.4.68 Webserver_SetAppHealth . . . 151
14.16.4.69 Webserver_Status . . . 151
14.16.4.70 Webserver_Stop . . . 151
14.16.4.71 Webserver_tcp . . . 151
14.16.4.72 Webserver_tcp2 . . . 151
14.17 sound4::bigvoice::dyn::helper::CDynLoader Class Reference . . . 151
14.17.1 Detailed Description . . . 152
14.17.2 Constructor & Destructor Documentation . . . 152
14.17.2.1 CDynLoader() [1/3] . . . 152
14.17.2.2 CDynLoader() [2/3] . . . 152
14.17.2.3 CDynLoader() [3/3] . . . 152
14.17.2.4 ~CDynLoader() . . . 152
14.17.3 Member Function Documentation . . . 153
14.17.3.1 Close() . . . 153
14.17.3.2 GetSymbol() . . . 153
14.17.3.3 GetSymbol_safe() . . . 153
14.17.3.4 GetThisLibraryPath() . . . 153
14.17.3.5 IsOk() . . . 153
14.17.3.6 Load() . . . 153
14.17.3.7 operator bool() . . . 154
14.17.3.8 operator=() [1/2] . . . 154
14.17.3.9 operator=() [2/2] . . . 154
14.18 sound4::helper::CDynLoader Class Reference . . . 154
14.18.1 Detailed Description . . . 155
14.18.2 Constructor & Destructor Documentation . . . 155
14.18.2.1 CDynLoader() [1/3] . . . 155
14.18.2.2 CDynLoader() [2/3] . . . 155
14.18.2.3 CDynLoader() [3/3] . . . 155
14.18.2.4 ~CDynLoader() . . . 155
14.18.3 Member Function Documentation . . . 155
14.18.3.1 Close() . . . 155
14.18.3.2 GetSymbol() . . . 155
14.18.3.3 GetSymbol_safe() . . . 156

14.18.3.4 GetThisLibraryPath() . . . 156
14.18.3.5 IsOk() . . . 156
14.18.3.6 Load() . . . 156
14.18.3.7 operator bool() . . . 156
14.18.3.8 operator=() [1/2] . . . 156
14.18.3.9 operator=() [2/2] . . . 157
14.19 sound4::bigvoice::CInstance Class Reference . . . 157
14.19.1 Detailed Description . . . 158
14.19.2 Constructor & Destructor Documentation . . . 158
14.19.2.1 CInstance() [1/2] . . . 158
14.19.2.2 CInstance() [2/2] . . . 158
14.19.2.3 ~CInstance() . . . 158
14.19.3 Member Function Documentation . . . 159
14.19.3.1 ActivateAuxiliaryAudioID() . . . 159
14.19.3.2 AddAudio() . . . 159
14.19.3.3 Create() . . . 159
14.19.3.4 GetAudio() . . . 160
14.19.3.5 GetAuxiliaryAudioOutputInfos() . . . 160
14.19.3.6 GetBufferIn() . . . 160
14.19.3.7 GetBufferOut() . . . 161
14.19.3.8 GetChunkFrames() . . . 161
14.19.3.9 GetEstimatedDelay() . . . 161
14.19.3.10 GetMetadataInfos() . . . 162
14.19.3.11 GetParam() . . . 162
14.19.3.12 GetWebServerAppHealth() . . . 162
14.19.3.13 IsOk() . . . 162
14.19.3.14 NewClient() . . . 163
14.19.3.15 OnUpdateThreadStart() . . . 163
14.19.3.16 OnUpdateThreadStop() . . . 163
14.19.3.17 operator=() . . . 163
14.19.3.18 PresetManager_InformChange() . . . 163
14.19.3.19 ProcessAnyAudio() . . . 164
14.19.3.20 ProcessAudio() . . . 164
14.19.3.21 ProcessAudio_Planar() . . . 164
14.19.3.22 SaveState() . . . 165
14.19.3.23 SetBus() . . . 165
14.19.3.24 SetInstanceTracing() . . . 165
14.19.3.25 SetInstanceTracingProcessActivity() . . . 166
14.19.3.26 SetMetadata() . . . 166
14.19.3.27 SetMetadataMulti() . . . 166
14.19.3.28 SetParam() . . . 167
14.19.3.29 SetPresetManager() . . . 167

14.19.3.30 SetWebServerAppHealth() . . . 167
14.19.3.31 StartWebServer() . . . 168
14.19.3.32 Stop() . . . 168
14.19.3.33 StopWebServer() . . . 168
14.19.3.34 Terminate() . . . 169
14.20 sound4::bigvoice::dyn::CInstance Class Reference . . . 169
14.20.1 Detailed Description . . . 170
14.20.2 Constructor & Destructor Documentation . . . 171
14.20.2.1 CInstance() [1/2] . . . 171
14.20.2.2 CInstance() [2/2] . . . 171
14.20.2.3 ~CInstance() . . . 171
14.20.3 Member Function Documentation . . . 171
14.20.3.1 AddAudio() . . . 171
14.20.3.2 Create() . . . 171
14.20.3.3 GetAudio() . . . 172
14.20.3.4 GetBufferIn() . . . 172
14.20.3.5 GetBufferOut() . . . 173
14.20.3.6 GetChunkFrames() . . . 173
14.20.3.7 GetEstimatedDelay() . . . 173
14.20.3.8 GetMetadataInfos() . . . 174
14.20.3.9 GetParam() . . . 174
14.20.3.10 GetWebServerAppHealth() . . . 174
14.20.3.11 IsOk() . . . 174
14.20.3.12 NewClient() . . . 175
14.20.3.13 OnUpdateThreadStart() . . . 175
14.20.3.14 OnUpdateThreadStop() . . . 175
14.20.3.15 operator=() . . . 175
14.20.3.16 PresetManager_InformChange() . . . 175
14.20.3.17 ProcessAnyAudio() . . . 176
14.20.3.18 ProcessAudio() . . . 176
14.20.3.19 ProcessAudio_Planar() . . . 176
14.20.3.20 SaveState() . . . 177
14.20.3.21 SetBus() . . . 177
14.20.3.22 SetInstanceTracing() . . . 177
14.20.3.23 SetInstanceTracingProcessActivity() . . . 178
14.20.3.24 SetMetadata() . . . 178
14.20.3.25 SetMetadataMulti() . . . 178
14.20.3.26 SetParam() . . . 179
14.20.3.27 SetPresetManager() . . . 179
14.20.3.28 SetWebServerAppHealth() . . . 179
14.20.3.29 StartWebServer() . . . 180
14.20.3.30 Stop() . . . 180

14.20.3.31 StopWebServer() . . . 180
14.20.3.32 Terminate() . . . 181
14.21 sound4::CInstance Class Reference . . . 181
14.21.1 Detailed Description . . . 182
14.21.2 Constructor & Destructor Documentation . . . 183
14.21.2.1 CInstance() [1/3] . . . 183
14.21.2.2 CInstance() [2/3] . . . 183
14.21.2.3 CInstance() [3/3] . . . 183
14.21.2.4 ~CInstance() . . . 183
14.21.3 Member Function Documentation . . . 184
14.21.3.1 AddAudio() . . . 184
14.21.3.2 Create() . . . 184
14.21.3.3 GetAudio() . . . 185
14.21.3.4 GetBufferIn() . . . 185
14.21.3.5 GetBufferOut() . . . 185
14.21.3.6 GetChunkFrames() . . . 186
14.21.3.7 GetEstimatedDelay() . . . 186
14.21.3.8 GetMetadataInfos() . . . 186
14.21.3.9 GetParam() . . . 186
14.21.3.10 GetWebServerAppHealth() . . . 187
14.21.3.11 IsOk() . . . 187
14.21.3.12 NewClient() . . . 187
14.21.3.13 OnUpdateThreadStart() . . . 187
14.21.3.14 OnUpdateThreadStop() . . . 188
14.21.3.15 operator=() . . . 188
14.21.3.16 PresetManager_InformChange() . . . 188
14.21.3.17 ProcessAnyAudio() . . . 188
14.21.3.18 ProcessAudio() . . . 189
14.21.3.19 ProcessAudio_Planar() . . . 189
14.21.3.20 SaveState() . . . 189
14.21.3.21 SetBus() . . . 190
14.21.3.22 SetInstanceTracing() . . . 190
14.21.3.23 SetInstanceTracingProcessActivity() . . . 190
14.21.3.24 SetMetadata() . . . 191
14.21.3.25 SetMetadataMulti() . . . 191
14.21.3.26 SetParam() . . . 191
14.21.3.27 SetPresetManager() . . . 192
14.21.3.28 SetWebServerAppHealth() . . . 192
14.21.3.29 StartWebServer() . . . 192
14.21.3.30 Stop() . . . 193
14.21.3.31 StopWebServer() . . . 193
14.21.3.32 Terminate() . . . 193

14.22 sound4::bigvoice::CPresetLoader Class Reference . . . 194
14.22.1 Detailed Description . . . 194
14.22.2 Constructor & Destructor Documentation . . . 194
14.22.2.1 CPresetLoader() . . . 194
14.22.2.2 ∼CPresetLoader() . . . 194
14.22.3 Member Function Documentation . . . 195
14.22.3.1 Exists() . . . 195
14.22.3.2 GetAll() . . . 195
14.22.3.3 IsReadOnly() . . . 195
14.22.3.4 Read() . . . 195
14.22.3.5 Remove() . . . 195
14.22.3.6 Rename() . . . 195
14.22.3.7 Write() . . . 195
14.23 sound4::bigvoice::dyn::CPresetLoader Class Reference . . . 196
14.23.1 Detailed Description . . . 196
14.23.2 Constructor & Destructor Documentation . . . 196
14.23.2.1 CPresetLoader() . . . 196
14.23.2.2 ∼CPresetLoader() . . . 196
14.23.3 Member Function Documentation . . . 196
14.23.3.1 Exists() . . . 196
14.23.3.2 GetAll() . . . 197
14.23.3.3 IsReadOnly() . . . 197
14.23.3.4 Read() . . . 197
14.23.3.5 Remove() . . . 197
14.23.3.6 Rename() . . . 197
14.23.3.7 Write() . . . 197
14.24 sound4::CPresetLoader Class Reference . . . 198
14.24.1 Detailed Description . . . 198
14.24.2 Constructor & Destructor Documentation . . . 198
14.24.2.1 CPresetLoader() . . . 198
14.24.2.2 ∼CPresetLoader() . . . 198
14.24.3 Member Function Documentation . . . 198
14.24.3.1 Exists() . . . 198
14.24.3.2 GetAll() . . . 199
14.24.3.3 IsReadOnly() . . . 199
14.24.3.4 Read() . . . 199
14.24.3.5 Remove() . . . 199
14.24.3.6 Rename() . . . 199
14.24.3.7 Write() . . . 199
14.25 sound4::CProcessor Class Reference . . . 200
14.25.1 Detailed Description . . . 200
14.25.2 Constructor & Destructor Documentation . . . 201

14.25.2.1 CProcessor() . . . 201
14.25.3 Member Function Documentation . . . 201
14.25.3.1 GetAudioInputCount() . . . 201
14.25.3.2 GetAudioOutputCount() . . . 201
14.25.3.3 GetBytesFromFormat() . . . 201
14.25.3.4 GetChannelCount() . . . 202
14.25.3.5 GetChunkSizeInFrames() . . . 202
14.25.3.6 GetFormatFromName() . . . 202
14.25.3.7 GetFormatName() . . . 203
14.25.3.8 GetPossibleChunkSizeInFrames() . . . 203
14.25.3.9 GetPrefixSymbol() . . . 204
14.25.3.10 GetSampleRate() . . . 204
14.25.3.11 GetVersion() . . . 204
14.25.3.12 IsOk() . . . 204
14.25.3.13 Load() . . . 204
14.25.3.14 SetLoggerCallback() . . . 205
14.25.3.15 SetLogSeverity() . . . 205
14.25.4 Friends And Related Symbol Documentation . . . 205
14.25.4.1 CAudioConverter . . . 205
14.25.4.2 CBus . . . 205
14.25.4.3 CInstance . . . 206
14.26 sound4::bigvoice::dyn::helper::DynFuncHolder< T > Class Template Reference . . . 206
14.26.1 Detailed Description . . . 206
14.26.2 Constructor & Destructor Documentation . . . 206
14.26.2.1 DynFuncHolder() [1/2] . . . 206
14.26.2.2 DynFuncHolder() [2/2] . . . 207
14.26.3 Member Function Documentation . . . 207
14.26.3.1 IsOk() . . . 207
14.26.3.2 operator bool() . . . 207
14.26.3.3 operator T*() . . . 207
14.27 sound4::helper::DynFuncHolder< T > Class Template Reference . . . 207
14.27.1 Detailed Description . . . 207
14.27.2 Constructor & Destructor Documentation . . . 208
14.27.2.1 DynFuncHolder() [1/2] . . . 208
14.27.2.2 DynFuncHolder() [2/2] . . . 208
14.27.3 Member Function Documentation . . . 208
14.27.3.1 IsOk() . . . 208
14.27.3.2 operator bool() . . . 208
14.27.3.3 operator T*() . . . 208
14.28 MyPresetManager Class Reference . . . 209
14.28.1 Detailed Description . . . 209
14.28.2 Constructor & Destructor Documentation . . . 210

14.28.2.1 MyPresetManager() [1/2] . . . 210
14.28.2.2 ~MyPresetManager() [1/2] . . . 210
14.28.2.3 MyPresetManager() [2/2] . . . 210
14.28.2.4 ~MyPresetManager() [2/2] . . . 210
14.28.3 Member Function Documentation . . . 210
14.28.3.1 Exists() [1/2] . . . 210
14.28.3.2 Exists() [2/2] . . . 210
14.28.3.3 GetAll() [1/2] . . . 210
14.28.3.4 GetAll() [2/2] . . . 211
14.28.3.5 IsReadOnly() [1/2] . . . 211
14.28.3.6 IsReadOnly() [2/2] . . . 211
14.28.3.7 Read() [1/2] . . . 211
14.28.3.8 Read() [2/2] . . . 211
14.28.3.9 Remove() [1/2] . . . 211
14.28.3.10 Remove() [2/2] . . . 212
14.28.3.11 Rename() [1/2] . . . 212
14.28.3.12 Rename() [2/2] . . . 212
14.28.3.13 SetupPath() [1/2] . . . 212
14.28.3.14 SetupPath() [2/2] . . . 212
14.28.3.15 Write() [1/2] . . . 212
14.28.3.16 Write() [2/2] . . . 213
14.29 sound4::bigvoice::dyn::helper::SampleFormat< T > Struct Template Reference . . . 213
14.29.1 Detailed Description . . . 213
14.30 sound4::bigvoice::helper::SampleFormat< T > Struct Template Reference . . . 213
14.30.1 Detailed Description . . . 214
14.31 sound4::helper::SampleFormat< T > Struct Template Reference . . . 215
14.31.1 Detailed Description . . . 215
14.32 SOUND4_AuxiliaryOutputInfos Struct Reference . . . 215
14.32.1 Detailed Description . . . 216
14.32.2 Member Data Documentation . . . 216
14.32.2.1 buffer . . . 216
14.32.2.2 channel_count . . . 216
14.32.2.3 description . . . 216
14.32.2.4 id . . . 216
14.32.2.5 sample_rate . . . 216
14.33 SOUND4_ProcessInfo Struct Reference . . . 216
14.33.1 Detailed Description . . . 217
14.33.2 Member Data Documentation . . . 217
14.33.2.1 name . . . 217
14.33.2.2 prefix . . . 217
14.33.2.3 shortname . . . 217
14.33.2.4 struct_size . . . 217

14.33.2.5 version . . . 217

15 File Documentation **219**

15.1 doc_examples.h File Reference . . . 219
15.2 doc_examples.h . . . 219
15.3 doc_gencpp.h File Reference . . . 219
15.4 doc_gencpp.h . . . 219
15.5 doc_json.h File Reference . . . 219
15.6 doc_json.h . . . 219
15.7 doc_main.h File Reference . . . 220
15.8 doc_main.h . . . 220
15.9 doc_params.h File Reference . . . 220
15.10 doc_params.h . . . 220
15.11 doc_only/documentation.h File Reference . . . 220
15.12 doc_only/documentation.h . . . 220
15.13 documentation.h File Reference . . . 220
15.14 documentation.h . . . 220
15.15 sound4.bigvoice.cl-pipe-cxx.cpp File Reference . . . 220
15.15.1 Function Documentation . . . 221
15.15.1.1 GetEnv() . . . 221
15.15.1.2 main() . . . 221
15.15.1.3 MyLogger() . . . 221
15.15.1.4 ProcessLoop() . . . 221
15.15.1.5 Usage() . . . 222
15.16 sound4.bigvoice.cl-pipe-cxx.cpp . . . 222
15.17 sound4.bigvoice.cl-pipe-dyn.cpp File Reference . . . 224
15.17.1 Function Documentation . . . 224
15.17.1.1 GetEnv() . . . 224
15.17.1.2 main() . . . 225
15.17.1.3 MyLogger() . . . 225
15.17.1.4 ProcessLoop() . . . 225
15.17.1.5 Usage() . . . 225
15.18 sound4.bigvoice.cl-pipe-dyn.cpp . . . 226
15.19 sound4.bigvoice.cl-pipe.cpp File Reference . . . 229
15.19.1 Macro Definition Documentation . . . 229
15.19.1.1 CHANNEL_COUNT . . . 229
15.19.1.2 CHUNK_SIZE . . . 229
15.19.1.3 SAMPLE_RATE . . . 230
15.19.2 Function Documentation . . . 230
15.19.2.1 main() . . . 230
15.19.2.2 MyLogger() . . . 230
15.19.2.3 ProcessLoop() . . . 230

15.19.2.4 Usage() . . . 230
15.20 sound4.bigvoice.cl-pipe.cpp . . . 231
15.21 sound4cl-pipe.cpp File Reference . . . 234
15.21.1 Function Documentation . . . 234
15.21.1.1 GetEnv() . . . 234
15.21.1.2 main() . . . 235
15.21.1.3 ProcessLoop() . . . 235
15.22 sound4cl-pipe.cpp . . . 236
15.23 sound4.bigvoice.cl.h File Reference . . . 239
15.23.1 Macro Definition Documentation . . . 242
15.23.1.1 BIGVOICE_DECL . . . 242
15.23.1.2 BIGVOICE_HAS_CLOUDBUS . . . 242
15.23.1.3 BIGVOICE_HAS_WEBSERVER . . . 242
15.23.2 Typedef Documentation . . . 242
15.23.2.1 TraceLoggingHProvider . . . 242
15.24 sound4.bigvoice.cl.h . . . 243
15.25 sound4.bigvoice.cl.hpp File Reference . . . 247
15.25.1 Function Documentation . . . 249
15.25.1.1 bigvoice_custom_exists() . . . 249
15.25.1.2 bigvoice_custom_getall() . . . 250
15.25.1.3 bigvoice_custom_getall_free() . . . 250
15.25.1.4 bigvoice_custom_reader() . . . 250
15.25.1.5 bigvoice_custom_reader_free() . . . 250
15.25.1.6 bigvoice_custom_remove() . . . 250
15.25.1.7 bigvoice_custom_rename() . . . 250
15.25.1.8 bigvoice_custom_writer() . . . 251
15.26 sound4.bigvoice.cl.hpp . . . 251
15.27 sound4.bigvoice.cl_dyn.hpp File Reference . . . 259
15.27.1 Detailed Description . . . 262
15.27.2 Macro Definition Documentation . . . 262
15.27.2.1 UNIXLIKE . . . 262
15.27.3 Function Documentation . . . 262
15.27.3.1 bigvoice_custom_exists() . . . 262
15.27.3.2 bigvoice_custom_getall() . . . 262
15.27.3.3 bigvoice_custom_getall_free() . . . 262
15.27.3.4 bigvoice_custom_reader() . . . 262
15.27.3.5 bigvoice_custom_reader_free() . . . 263
15.27.3.6 bigvoice_custom_remove() . . . 263
15.27.3.7 bigvoice_custom_rename() . . . 263
15.27.3.8 bigvoice_custom_writer() . . . 263
15.28 sound4.bigvoice.cl_dyn.hpp . . . 263
15.29 sound4cl.hpp File Reference . . . 278

15.29.1 Detailed Description 280
15.29.2 Macro Definition Documentation 280
15.29.2.1 UNIXLIKE 280
15.30 sound4cl.hpp 280
15.31 sound4cl_cdef.h File Reference 295
15.31.1 Detailed Description 295
15.31.2 Macro Definition Documentation 295
15.31.2.1 SOUND4_INVALID_WEBSERVER_ID 295
15.31.2.2 SOUND4_WEBSERVER_HTTP_OK 295
15.31.2.3 SOUND4_WEBSERVER_HTTPS_OK 296
15.31.3 Typedef Documentation 296
15.31.3.1 fs_char 296
15.31.3.2 TraceLoggingHProvider 296
15.32 sound4cl_cdef.h 296

Index **301**

Chapter 1

SOUND4 BIGVOICE.CL Library

1.1 General library information

The library interface is in C to avoid any compatibility issue.

If you are using C++, you might be better using Generic C++ access to SOUND4 .CL librairies.

Note

In all library, all `char*` are **UTF-8** encoded

To access the presets/settings, you need to use JSON syntax.

Have a look at our Examples.

1.2 General C usage

You may check library configuration and setup logging Global setup and Environment variables and parameters

You have to create/destroy an instance Process creation/destruction.

For audio, you can either use direct optimized form with Direct processing or you can use Audio managing (any audio) to have any format. You may use Audio convert helpers.

You need to start a thread calling bigvoice_StartUpdateThread see Update Management

You can start a web server for configuration, see Web server

If it is needed, you can use metadata : see Metadata Management

If you need, you may use your own custom preset manager for saving files and presets. See Custom preset managagement

You may communicate with the instance with JSON syntax using :

- the socket opened with bigvoice_StartUpdateThread
- the direct API, see Client's JSon config interfacing.

Chapter 2

Generic C++ access to SOUND4 .CL librairies

This is the easier way to integrate, and works for all .CL engines.

2.1 General usage

See Sample using Generic C++ interface (multi-process compatible).

The main steps are the following :

1. Load the want library with CProcessor::Load
2. Configure logging with CProcessor::SetLogSeverity and CProcessor::SetLoggerCallback
3. Allocate an CInstance
4. Configure parameters with CInstance::SetParam (see Environment variables and parameters)
5. Create the instance with CInstance::Create.
6. Create a web server with CInstance::StartWebServer
7. Send the audio to the instance using CInstance::ProcessAudio

Note

All `std::string` are **UTF-8** encoded

2.2 Communicating with the instance

If you need to communicate with the instance, you can create a CInstance::NewClient and use it with JSON syntax.

2.3 Metadata

You can update the metadata by calling CInstance::SetMetadata or CInstance::SetMetadataMulti.

This may be used by plugins, like Stream.CL.

2.4 Advanced tasks

2.4.1 Custom storage

You can use your own storage implementation by deriving CPresetLoader.

You have then to select it in your instance with CInstance::SetPresetManager.

Whenever some change from storage happens, you should inform the instance with CInstance::PresetManager_InformChange

2.4.2 Using a bus

You can group instances for processes which supports it with CInstance::SetBus

2.4.3 Convert helpers

You can use helpers to convert audio from different formats using Audio convert helpers (C++).

2.4.4 Adding a health point in the web server

Your application can define exactly what will be returned by the web server on the /apphealth path. Use CInstance::SetWebServerAppHealth.

Chapter 3

JSON syntax

JSON protocol to configure the process and get its state.

See also JSON syntax for internal setup

3.1 Commands

```
{ "get" : `object` }
```

get values.
If `object` is null, get all parameters, and so show the possibilities

```
{ "set" : `object` }
```

set values.
`object` can be any subpart, only those will be changed

```
{ "change" : `object` }
```

like get, but shows only changes since last request.
If `object` is null, get all changes.
Each call resets the state for this connection to current.

Note

> In BigVoice.cl version <= 0.9.7, the state resetted also for filtered out objects. So avoid alterning `object` filter between calls, or you will miss some changes.
>
> If a property `"propname"` is an array, you can use `"propname[0]"` instead of `"propname"` for get and set to access only the first element.

```
{ "load" : "`presetname`" }
```

load the preset

```
{ "save" : "`presetname`" }
```

save the preset.
If null is given, save onair preset

```
{ "delete" : "`presetname`" }
```

delete the preset.
can also be an array of presetnames

```
{ "factoryload" : "`presetname`" }
```

Create a preset from factory and load it

```
{ "rename" : { "preset" : "`presetname`", "name": "`newname`" } }
```

Rename a preset
```
{ "import" : { "preset" : "`presetname`", "content": `presetcontent` } }
```

Import a preset
```
{ "export" : "`presetname`"  }
```

Export a preset: get preset's content so it can be imported later
```
{ "new" : { "name": "`presetname`", "factory": "`presetname`" } }
```

Create a new preset from a factory.
Can use array for multiple.
```
{ "undo" : `count`  }
```

Undo last(s) `count` preset change
```
{ "redo" : `count`  }
```

Redo last(s) `count` preset change

3.2 Answers

Answer is also a JSON object, starting with the command for `get` and `change`.
```
{ "get" : ... }
{ "change" : ... }
```

For other commands, if there is no error the answer is
```
{ "OK" : {"command" : "original command" } }
```

If the command generates warnings, the answer also lists them:
```
{ "OK" : {"command" : "import", "warnings" : ["detailed warning"] } }
```

If there is an error, answer has the syntax
```
{ "ERROR" : {"command" : "faulty command", "message" : "explaining"} }
```

and may have more properties. The message may be empty.

3.3 Examples

3.3.1 Get status

```
{"get":{"status":null}}
```

answer:
```
{"get":{"status":{"preset_changed":false,"license_valid":true,"version":"1.1.19"}}}
```

3.3.2 Get all changes since last request

```
{"change":null}
```

answer:
```
{"change":{
        "processorname":"Best Radio of the world",
        "settings":{"general":{"operate":true},...},
        "preset":{"setup": {"gate_on": true, ...},...},
        "vu":{"setup": null,"in":{...}},
        ...
        }
```

3.3.3 Check license

```
{"get":{"status":{"license_valid":null}}}
```

answer:

```
{"get":{"status":{"license_valid":true}}}
```

3.3.4 Set Processor name

```
{"set":{"processorname":"Best Radio of the world"}}
```

answer:

```
{"OK":"set"}
```

3.3.5 Get presetlist

```
{"get":{"presetlist":null}}
```

answer:

```
{"get":{"presetlist":[
          {"name":"Urban","factory_name":"Urban","create":"2020-10-15 16:19:17","modify":"2020-10-15
      16:19:17"},
          {"name":"Rock Classic","factory_name":"Rock Classic","create":"2020-10-15
      16:19:17","modify":"2020-10-15 16:19:17"},
          {"name":"Rock","factory_name":"Rock","create":"2020-10-15 16:19:17","modify":"2020-10-15
      16:19:17"},
          ...
       ]}}
```

3.3.6 Load a preset

```
{"load":"Rock Classic"}
```

answer:

```
{"OK":"load"}
```

3.3.7 Get information on preset on air

```
{"get":{"presetinfo":null}}
```

answer:

```
{"get":{"presetinfo":{"name":"Rock Classic","factory_name":"Rock Classic","create":"2020-10-15
      16:19:17","modify":"2020-10-15 16:19:17"}}}
```

3.3.8 Set input gain

```
{"set":{"settings":{"gain":{"in":-3.0}}}}
```

answer:

```
{"OK":"set"}
```

3.3.9 Set bypass

```
{"set":{"settings":{"general":{"operate":false}}}}
```

answer:

```
{"OK":"set"}
```

3.3.10 Export a preset

```
{"export":"MyPresetName"}
```

answer:

```
{"export":{"processor":"Best Radio of the world","presets":{
            "MyPresetName":{
                "presetinfo":{"name":"MyPresetName","factory_name":"Open Sound","create":"2020-10-16
      06:53:20","modify":"2020-10-16 06:53:26"},
                "preset":{"setup":{"gate":-39.0}},
                "undoredo":{"undo":[{"time":"2020-10-16
      06:53:23","action":{"preset":{"setup":{"gate":-30.0}}}}],"redo":[],"has_undo":true,"has_redo":false}
                }
            }}}
```

Note

the object *export.presets["MyPresetName"]* in the answer is the one to use as *content* in Import a preset

3.3.11 Import a preset

```
{"import":{"preset":"MyNewPreset","content":{
            "presetinfo":{"name":"MyPresetName","factory_name":"Open Sound","create":"2020-10-16
      06:53:20","modify":"2020-10-16 06:53:26"},
            "preset":{"setup":{"gate":-39.0}},
            "undoredo":{"undo":[{"time":"2020-10-16
      06:53:23","action":{"preset":{"setup":{"gate":-30.0}}}}],"redo":[],"has_undo":true,"has_redo":false}
            }
        }}
```

answer:

```
{"OK":"import"}
```

Chapter 4

JSON syntax for internal setup

JSON commands for internal setup and information.

This is used internally for the web server.

This API might change in the future.

Those commands can be used when directly interfacing to the process (see Client's JSon config interfacing). They are blocked web going through web server (`http://.../json`)

The Authentication is effective only through the web server. The direct JSON commands are not filtered.

4.1 Get process and modules information

```
{"_info": null}
```

answer:

```
{"_info":{"product":"SOUND4 x1.CLOUD","version": "1.3.7","title": "x1
      .CLOUD","preset_extension":"clx1","use_presets":true,"use_undoredo":true,
       "_modules_":["","wm"],
       "_modules_infos_":{
            "wm":{"product":"SOUND4 WM","version": "0.1.0","title":"SOUND4
      WM","use_presets":false,"use_undoredo":false}
       }}}
```

4.2 Authentication management

Some API are available only if there is a setup/admin account.

Secret stored is
`MD5(username+":"+realm+":"+password)`

4.2.1 Difference between setup and admin account

There are 2 modes:

1. Setup mode: you define a setup account, which can then create an administrator account.
   The setup account always keeps the access and can delete the administrator.
2. Admin mode: you define the administrator, which will be the single administrator.

From JSON, changing setup_is_admin can change the mode.

4.2.2 Access encoding

Access is a combinaison of letters.

- **'S'** Setup account : Allow Admin and delete admin
- **'A'** Admin access : Access to all overrides any other except setup
- **'x'** eXecute : change preset, list presets and preset infos and access settings.general fields
- **'v'** View : read preset and settings values
- **'w'** Write : change preset/settings (and undo/redo)
- **'s'** Save : create/save/delete/rename/import preset
- **'p'** Password : change own password
- **'-'** inactive : account is inactive

4.2.3 Change setup account

Allows to setup a setup account (even when is was not configured) or to remove it

4.2.3.1 Set the setup/admin account

```
{"_auth":{"init":{"setup_account":{"user":"admin","secret":"be666f22c03f199e05d3805430d69599"},"setup_is_admin":true,"unlogge
```

answer:
```
{"OK":{"command":"_auth"}}
```

4.2.3.2 Set the setup/admin account with clear password

```
{"_auth":{"init":{"setup_account":{"user":"admin","secret_clear":"admin"},"setup_is_admin":true,"unlogged_access":"rx"}}}
```

answer:
```
{"OK":{"command":"_auth"}}
```

4.2.3.3 Remove the setup/admin account

```
{"_auth":{"init":{"setup_account":null}}}
```

answer:
```
{"OK":{"command":"_auth"}}
```

4.2.4 Get user info

```
{"_auth":{"get":{"user":"username"}}}
```

answer:
```
{"_auth":{"get":{"user":"username","secret":"secrethash","access":"rwx"}}}
```

4.2.5 Add or modify a user

```
{"_auth":{"add":{"user":"username","secret":"secrethash","access":"rwx"}}}
```

answer:
```
{"_auth":{"add":{"user":"username","secret":"secrethash","access":"rwx"}}}
```

4.2.6 Removes a user

```
{"_auth":{"remove":{"user":"username"}}}
```

answer:
```
{"_auth":{"remove":{"user":"username"}}}
```

4.2.7 List users

```
{"_auth":{"list":null}}
```

answer:
```
{"_auth":{"list":["user1","user2",...]}}
```

4.2.8 Get/set unlogged access

```
{"_auth":{"get":{"unlogged_access":null}}}
```

answer:
```
{"_auth":{"get":{"unlogged_access":"rwx"}}}
```

4.2.9 Get realm

```
{"_auth":{"get":{"realm":null}}}
```

answer:
```
{"_auth":{"get":{"realm":"Authentification is required"}}}
```

4.2.10 Get API version

```
{"_auth":{"get":{"api_version":null}}}
```

answer:
```
{"_auth":{"get":{"api_version":2}}}
```

4.2.11 Get setup is admin

```
{"_auth":{"get":{"setup_is_admin":null}}}
```

answer:
```
{"_auth":{"get":{"setup_is_admin":true}}}
```

4.2.12 Get/set setup account

```
{"_auth":{"get":{"setup_account":null}}}
```

answer:
```
{"_auth":{"get":{"setup_account":{"user":"setup","secret":"secrethash","access":"sarwx"}}}}
```

4.2.13 Get/set custom storage

Implementation defined extra storage, stored in auth.json
```
{"_auth":{"get":{"storage":null}}}
```

answer:
```
{"_auth":{"get":{"storage":whateverjson...}}}
```

4.3 Get process' interface description

4.3.1 Get XML decription

```
{"_vars_xml": null}
```

answer:

```
<?xml version="1.0"?>
<Process title="x1 .CLOUD" default_name="" preset_extension="clx1">
...
</Process>
```

Attention

The answer is XML, not JSON !

4.3.2 Get Process Image

```
{"_image": null}
```

answer:

```
{"_image":"iVBORw0KGgoAA..." }
```

The string is the base64 encoding of the image (png format)

4.3.3 Get Process Ico

```
{"_ico": null}
```

answer:

```
{"_ico":"AAABAAUAEBAAAAEAIABo..." }
```

The string is the base64 encoding of the icon (ico format)

Chapter 5

Environment variables and parameters

5.1 Parameters defaulting from environment

The following environment variables are used by software library:

Note

Those variables can be passed as parameters when creating the instance.

Note

boolvalue are (case insensitive):

- 0,false,no,n : disable
- 1,true,yes,y,(empty),(any) : enable

5.1.1 Webserver authentification setup :

- `SETUP_USER` : The setup user name
- `SETUP_SECRET` : The setup user password
- `ADMIN_USER` : The admin user name
- `ADMIN_SECRET` : The admin user password

Web login initialization

If the storage is not yet initialized, you can choose how to protect the web access.
There are 2 modes:

1. Setup mode: you define a setup account, which can then create an administrator account.
   The setup account always keeps the access and can delete the administrator.
2. Admin mode: you define the administrator, which will be the single administrator.

To select the mode, you have to put in the parameters

1. `SETUP_USER` (and optionally `SETUP_SECRET`) to select Setup mode
2. `ADMIN_USER` (and optionally `ADMIN_SECRET`) to select Admin mode
3. none: the web access is opened, no login will be asked

If you do not set the `xxx_SECRET`, then the setuppassword will be randomly generated and print in logs (at info severity).

You can also use the JSON api to change this after the storage is created : see Change setup account

5.1.2 Webserver secure :

- `SSL_CERTIFICATE_PATH` : path to the SSL public certificate
- `SSL_PRIVATE_PATH` : path to the SSL private certificate

5.1.3 Network access :

- `LICENSE_SERVER` : the SOUND4 license server's URL
- `LICENSE_SERVER_PROXY` : proxy server to use for licenses [user:pass@]host:port
- `LICENSE_CERT_DIR` : optional certificates dirs for HTTPS verification
- `LICENSE_CERT_BUNDLE` : optional certificates bundle for HTTPS verification
- `LICENSE_CERT_CHECK` : if "false", do not check HTTPS certificates

5.2 Parameters

The following parameters can be set before creating instance, but are never taken from environment.

5.2.1 Run mode:

- `FILE_MODE=seconds` : force file mode, settings the maximum estimated audio duration (non realtime, wait license ok to process)
- `STATE_FILENAME=filename` : force this instance to store its state in file named `filename.json` (instead of `state.json`)
- `STATE_ONAIR=filename` : force this instance to store its on air preset name in file named `filename.onair` (instead of none). Used for sharing between instances.
- `STORAGE_RO=boolvalue` : force the storage in read-only mode
- `STATE_RO=boolvalue` : force the state in read-only mode (but can save presets/auth)
- `WAIT_LICENSE=boolvalue` : force to wait the license load before starting (always in file mode)
- `FAST_START=boolvalue` : do not to try loading the license before starting (never in file mode)
- `LOG_HEADER=string` : use string as header for logs in instance as much as possible

5.2.2 Web server options:

- `COOKIE_DOMAIN=domain` : Force login cookie's domain
- `COOKIE_PATH=path` : Force login cookie's path
- `COOKIE_SECURE=mode` : Force login cookie's secure mode [true|false]
- `COOKIE_SAMESITE=mode` : Force login cookie's SameSite mode [default|strict|lax|none]
- `TRUSTED_ORIGINS=origins` : Extra origins allowed to send requests and open websockets, as `scheme://host`[:port], separated by commas or spaces (e.g. a reverse proxy public URL, when the proxy sends neither `X-Forwarded-Host` nor `Forwarded`)
- `JSON_DIGEST=boolvalue` : if "false", do not accept HTTP Digest authentication on `/json` (default: accepted, e.g. `curl --digest -u user:password` http://host/json/get/presetlist)
- `CSRF_CHECK=boolvalue` : if "false", disable the cross-origin check of requests, websockets and `/json` GET commands (last resort, logged)

5.3 Preset sharing

You can use the same folder for multiple instances so they share their presets.

In this case, you should use a different `STATE_FILENAME` per instance so they keep their settings and on air presets separated. If not, each time settings or onair preset are changed, the changes will be reflected to the other intances using same `STATE_FILENAME`.

You may use the same `STATE_ONAIR` for multiple instances sharing the folder, so that changing the on air preset on one immediatly changes the on air preset on other instances using the same `STATE_ONAIR`. If the instance has pending unsaved changes in the on air preset, it will not be updated automatically to avoid loosing changes.

5.4 Workaround for known problems

5.4.1 .NET (C#)

If you are using the library in a .NET program, you may trigger a SEGV due to .NET incompatibility with Go, referenced in dotnet issue 110368 (present at least up to .NET 10.0.107).

This library has a mitigation to avoid the crash. You need to set the variable `SOUND4_DOTNET_MITIGATION=1` in environment before loading the library to activate it. You can check it is activated by setting `SOUND4_DOTNET↩_MITIGATION_VERBOSE=1` the same way, which should output information on stderr.

If you intend to attach a debugger (managed or native) to the host, set `SOUND4_DOTNET_MITIGATION_↩DEBUGGER=1` instead. It supersedes `SOUND4_DOTNET_MITIGATION` (no need to set both) and additionally clears `SA_ONSTACK` on `SIGTRAP` so the debugger attach does not kill the process.

Note

calling `Environment.SetEnvironmentVariable` from C# is not sufficient on Linux, you need to call `setenv` from libc.

Chapter 6

Deprecated List

Member BIGVOICE_AUDIO_INPUT_COUNT

For binary compatibility, this should be runtime checked to be the same as bigvoice_GetAudioInputCount()

Member BIGVOICE_AUDIO_OUTPUT_COUNT

For binary compatibility, this should be runtime checked to be the same as bigvoice_GetAudioOutputCount()

Member BIGVOICE_AUDIOFRAME_COUNT

For binary compatibility, this should be runtime checked to be the same as bigvoice_GetChunkSizeInFrames()

Member BIGVOICE_CHANNEL_COUNT

For binary compatibility, this should be runtime checked to be the same as bigvoice_GetChannelCount()

Member bigvoice_GetChunkSizeInFrames ()

Use bigvoice_GetPossibleChunkSizeInFrames

Member bigvoice_InitProcess (const char ∗LoginKey, const char ∗RadioName, const char ∗Access_Key_ID, const char ∗Access_Key_Secret, const char ∗save_path)

Use bigvoice_InitProcess3

Member bigvoice_InitProcess2 (const char ∗LoginKey, const char ∗RadioName, const char ∗Access_↩ Key_ID, const char ∗Access_Key_Secret, const char ∗save_path, const struct bigvoice_CParameters ∗parameters)

Use bigvoice_InitProcess3

Member BIGVOICE_SAMPLE_RATE

For binary compatibility, this should be runtime checked to be the same as bigvoice_GetSampleRate()

Member bigvoice_Webserver_tcp (unsigned int listenport, unsigned int listenport_secure, const char ∗socket_ip, unsigned int socket_port)

Use bigvoice_Webserver_tcp2

Member sound4::bigvoice::ChunkFrames

use GetPossibleChunkSizeInFrames

Member sound4::bigvoice::dyn::ChunkFrames

use GetPossibleChunkSizeInFrames()

Member sound4::bigvoice::dyn::GetChunkSizeInFrames (CDynLib &dynlib)

Use GetPossibleChunkSizeInFrames

Member sound4::bigvoice::dyn::InputChannels

Use GetChannelCount and GetAudioInputCount

Member sound4::bigvoice::dyn::InputSampleSize

Use GetPossibleChunkSizeInFrames and GetAudioInputCount

Member sound4::bigvoice::dyn::OutputChannels

Use GetChannelCount and GetAudioOutputCount

Member sound4::bigvoice::dyn::OutputSampleSize

Use GetPossibleChunkSizeInFrames and GetAudioOutputCount

Member sound4::bigvoice::dyn::SampleRate

Use GetSampleRate

Member sound4::bigvoice::GetChunkSizeInFrames ()

Use GetPossibleChunkSizeInFrames

Member sound4::bigvoice::InputChannels

Use GetChannelCount and GetAudioInputCount

Member sound4::bigvoice::InputSampleSize

Use GetPossibleChunkSizeInFrames and GetAudioInputCount

Member sound4::bigvoice::OutputChannels

Use GetChannelCount and GetAudioOutputCount

Member sound4::bigvoice::OutputSampleSize

Use GetPossibleChunkSizeInFrames and GetAudioOutputCount

Member sound4::bigvoice::SampleRate

Use GetSampleRate

Member sound4::CProcessor::GetChunkSizeInFrames ()

Use GetPossibleChunkSizeInFrames

Chapter 7

Topic Index

7.1 Topics

Here is a list of all topics with brief descriptions:

Audio convert helpers . . . 29
Audio convert helpers (C++) . . . 35
Audio managing (any audio) . . . 39
Auxiliary outputs . . . 44
Client's JSon config interfacing . . . 46
Custom preset managagement . . . 49
Direct processing . . . 54
Examples . . . 57
Global setup . . . 58
Instance tracing (Windows only) . . . 64
Instance's bus . . . 65
Metadata Management . . . 66
Process creation/destruction . . . 68
Sample using C interface . . . 72
Sample using C++ interface wrapper . . . 74
Sample using C++ interface wrapper with dynamic library loading . . . 75
Sample using Generic C++ interface (multi-process compatible) . . . 77
Update Management . . . 79
Web server . . . 81

Chapter 8

Namespace Index

8.1 Namespace List

Here is a list of all namespaces with brief descriptions:

sound4 87
sound4::bigvoice 90
sound4::bigvoice::dyn 98
sound4::bigvoice::dyn::helper 107
sound4::bigvoice::helper 112
sound4::helper 117

Chapter 9

Hierarchical Index

9.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

sound4::AuxiliaryOutputInfos . . . 119
bigvoice_CAudioConverter . . . 120
bigvoice_CBus . . . 121
bigvoice_CClientInstance . . . 121
bigvoice_CInstance . . . 121
bigvoice_CParameters . . . 121
sound4::bigvoice::CAudioConverter . . . 122
sound4::bigvoice::dyn::CAudioConverter . . . 124
sound4::CAudioConverter . . . 128
sound4::bigvoice::CBus . . . 131
sound4::bigvoice::dyn::CBus . . . 132
sound4::CBus . . . 133
sound4::bigvoice::CInstance::CClient . . . 134
sound4::bigvoice::dyn::CInstance::CClient . . . 136
sound4::CInstance::CClient . . . 137
sound4::bigvoice::dyn::CDynLib . . . 138
sound4::bigvoice::dyn::helper::CDynLoader . . . 151
sound4::helper::CDynLoader . . . 154
sound4::bigvoice::CInstance . . . 157
sound4::bigvoice::dyn::CInstance . . . 169
sound4::CInstance . . . 181
sound4::bigvoice::CPresetLoader . . . 194
sound4::bigvoice::dyn::CPresetLoader . . . 196
MyPresetManager . . . 209
sound4::CPresetLoader . . . 198
MyPresetManager . . . 209
sound4::CProcessor . . . 200
sound4::bigvoice::dyn::helper::DynFuncHolder< T > . . . 206
sound4::helper::DynFuncHolder< T > . . . 207
sound4::bigvoice::dyn::helper::SampleFormat< T > . . . 213
sound4::bigvoice::helper::SampleFormat< T > . . . 213
sound4::helper::SampleFormat< T > . . . 215
SOUND4_AuxiliaryOutputInfos . . . 215
SOUND4_ProcessInfo . . . 216

Chapter 10

Class Index

10.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

sound4::AuxiliaryOutputInfos . . . 119
bigvoice_CAudioConverter . . . 120
bigvoice_CBus . . . 121
bigvoice_CClientInstance . . . 121
bigvoice_CInstance . . . 121
bigvoice_CParameters . . . 121
sound4::bigvoice::CAudioConverter
Audio converter helper . . . 122
sound4::bigvoice::dyn::CAudioConverter
Audio converter helper . . . 124
sound4::CAudioConverter
Audio converter helper . . . 128
sound4::bigvoice::CBus
Shared Bus . . . 131
sound4::bigvoice::dyn::CBus
Shared Bus . . . 132
sound4::CBus
Shared Bus . . . 133
sound4::bigvoice::CInstance::CClient . . . 134
sound4::bigvoice::dyn::CInstance::CClient . . . 136
sound4::CInstance::CClient . . . 137
sound4::bigvoice::dyn::CDynLib
Dynamic library interface . . . 138
sound4::bigvoice::dyn::helper::CDynLoader
Helper to load dynamic library . . . 151
sound4::helper::CDynLoader
Helper to load dynamic library . . . 154
sound4::bigvoice::CInstance
Instance handling class . . . 157
sound4::bigvoice::dyn::CInstance
Instance handling class . . . 169
sound4::CInstance
Instance handling class . . . 181
sound4::bigvoice::CPresetLoader
Custom preset handler helper . . . 194

sound4::bigvoice::dyn::CPresetLoader
Custom preset handler helper 196
sound4::CPresetLoader
Custom preset handler helper 198
sound4::CProcessor
Dynamic library interface 200
sound4::bigvoice::dyn::helper::DynFuncHolder< T >
Helper to wrap a function pointer 206
sound4::helper::DynFuncHolder< T >
Helper to wrap a function pointer 207
MyPresetManager
[Custom preset manager] 209
sound4::bigvoice::dyn::helper::SampleFormat< T >
Helper for Sample format types 213
sound4::bigvoice::helper::SampleFormat< T >
Helper for Sample format types 213
sound4::helper::SampleFormat< T >
Helper for Sample format types 215
SOUND4_AuxiliaryOutputInfos 215
SOUND4_ProcessInfo 216

Chapter 11

File Index

11.1 File List

Here is a list of all files with brief descriptions:

doc_examples.h . . . 219
doc_gencpp.h . . . 219
doc_json.h . . . 219
doc_main.h . . . 220
doc_params.h . . . 220
doc_only/documentation.h . . . 220
documentation.h . . . 220
sound4.bigvoice.cl-pipe-cxx.cpp
C++ sample using C++ interface wrapper . . . 220
sound4.bigvoice.cl-pipe-dyn.cpp
C++ sample using C++ interface wrapper with dynamic library loading . . . 224
sound4.bigvoice.cl-pipe.cpp
C++ sample using only C interface . . . 229
sound4cl-pipe.cpp
C++ sample using C++ interface wrapper with dynamic library loading Works with any SOUND4 processor provided . . . 234
sound4.bigvoice.cl.h
C interface for library . . . 239
sound4.bigvoice.cl.hpp
C++ wrapper for library . . . 247
sound4.bigvoice.cl_dyn.hpp
C++ wrapper for dynamic loading library . . . 259
sound4cl.hpp
C++ wrapper for dynamic loading library . . . 278
sound4cl_cdef.h
C function signature definition for all sound4.cl libraries . . . 295

Chapter 12

Topic Documentation

12.1 Audio convert helpers

Helpers to convert audio.

Classes

- struct bigvoice_CAudioConverter

Enumerations

- enum bigvoice_ConverterTargetMode { ConverterTargetMode_AsInput = 0 , ConverterTargetMode_Mono , ConverterTargetMode_Stereo , ConverterTargetMode_StereoToMono , ConverterTargetMode_MonoToStereo }

Functions

- void bigvoice_AudioConvertFrom (const uint8_t ∗payload, float ∗output, size_t nSpl, enum bigvoice_SampleFormat fmt)
- void bigvoice_AudioConvertTo (const float ∗input, uint8_t ∗payload, size_t nSpl, enum bigvoice_SampleFormat fmt)
- void bigvoice_StereoToMono (const float ∗input, float ∗output, size_t nFrame)
- void bigvoice_MonoToStereo (const float ∗input, float ∗output, size_t nFrame)
- void bigvoice_StereoToMono_Planar (const float ∗inputL, const float ∗inputR, float ∗output, size_t nFrame)
- void bigvoice_MonoToStereo_Planar (const float ∗input, float ∗outputL, float ∗outputR, size_t nFrame)
- void bigvoice_AudioMonoFromLiveStereo (const uint8_t ∗payload, float ∗output)
- void bigvoice_AudioMonoToLiveStereo (const float ∗input, uint8_t ∗payload)
- struct bigvoice_CAudioConverter ∗ bigvoice_GetAudioConverter (enum bigvoice_SampleFormat fmt, size_t nFrame, size_t payl_ch, size_t payl_ch_offset, enum bigvoice_ConverterTargetMode target_mode)
- void bigvoice_FreeAudioConverter (struct bigvoice_CAudioConverter ∗converter)
- void bigvoice_AudioConverter_From (struct bigvoice_CAudioConverter ∗converter, const uint8_t ∗payload, float ∗output)
- void bigvoice_AudioConverter_To (struct bigvoice_CAudioConverter ∗converter, const float ∗input, uint8_t ∗payload)

12.1.1 Detailed Description

Helpers to convert audio in an optimized way

12.1.2 Enumeration Type Documentation

12.1.2.1 bigvoice_ConverterTargetMode

```
enum bigvoice_ConverterTargetMode
```

Kind of process-side samples for CAudioConverter

Enumerator

ConverterTargetMode_AsInput	Same channels as input (no extract/insert)
ConverterTargetMode_Mono	Mono process (using mono extract/payload)
ConverterTargetMode_Stereo	Stereo process (using stereo extract/payload)
ConverterTargetMode_StereoToMono	Mono process, using stereo extract/payload (converts stereo to mono)
ConverterTargetMode_MonoToStereo	Stereo process, using mono extract/payload (converts mono to stereo)

Definition at line 1084 of file sound4.bigvoice.cl.h.

12.1.3 Function Documentation

12.1.3.1 bigvoice_AudioConverter_From()

```
void bigvoice_AudioConverter_From (
            struct bigvoice_CAudioConverter * converter,
            const uint8_t * payload,
            float * output )
```

Convert the payload to floating-point array, using a predefined converter.

Warning

Output buffer must be 64-byte aligned

Parameters

converter	a converter created with bigvoice_GetAudioConverter
payload	the binary raw audio buffer
output	audio output buffer (64 byte aligned)

12.1.3.2 bigvoice_AudioConverter_To()

```
void bigvoice_AudioConverter_To (
```

```
struct bigvoice_CAudioConverter * converter,
const float * input,
uint8_t * payload )
```

Convert floating-point array to payload, using a predefined converter.

Warning

Input buffer must be 64-byte aligned

Parameters

converter	a converter created with bigvoice_GetAudioConverter
input	audio input buffer (64 byte aligned)
payload	the binary raw audio buffer

12.1.3.3 bigvoice_AudioConvertFrom()

```
void bigvoice_AudioConvertFrom (
            const uint8_t * payload,
            float * output,
            size_t nSpl,
            enum bigvoice_SampleFormat fmt )
```

Convert the payload to floating-point array

Warning

Output buffer must be 64-byte aligned

Parameters

payload	the binary raw audio buffer
output	audio output buffer (64 byte aligned)
nSpl	the number of samples (not frames)
fmt	the format of the payload

12.1.3.4 bigvoice_AudioConvertTo()

```
void bigvoice_AudioConvertTo (
            const float * input,
            uint8_t * payload,
            size_t nSpl,
            enum bigvoice_SampleFormat fmt )
```

Convert floating-point array to payload

Warning

Input buffer must be 64-byte aligned

Parameters

input	audio input buffer (64 byte aligned)
payload	the binary raw audio buffer
nSpl	the number of samples (not frames)
fmt	the format of the payload

12.1.3.5 bigvoice_AudioMonoFromLiveStereo()

```
void bigvoice_AudioMonoFromLiveStereo (
            const uint8_t * payload,
            float * output )
```

Convert Livewire Livestereo payload to floating-point Mono (12 samples)

Parameters

payload	Livewire Live Stereo raw buffer
output	audio output mono buffer (64 byte aligned)

12.1.3.6 bigvoice_AudioMonoToLiveStereo()

```
void bigvoice_AudioMonoToLiveStereo (
            const float * input,
            uint8_t * payload )
```

Convert floating-point Mono (12 samples) to Livewire Livestereo payload

Parameters

input	audio input mono buffer (64 byte aligned)
payload	Livewire Live Stereo raw buffer

12.1.3.7 bigvoice_FreeAudioConverter()

```
void bigvoice_FreeAudioConverter (
            struct bigvoice_CAudioConverter * converter )
```

Free the audio converter created with bigvoice_GetAudioConverter.

12.1.3.8 bigvoice_GetAudioConverter()

```
struct bigvoice_CAudioConverter * bigvoice_GetAudioConverter (
            enum bigvoice_SampleFormat fmt,
            size_t nFrame,
```

```
            size_t payl_ch,
            size_t payl_ch_offset,
            enum bigvoice_ConverterTargetMode target_mode )
```

Prepare an audio converter for extract/insert and convert.

This helps to extract/insert a subset of channels from/to the payload, and convert it to floating-point format.

The floating-point channels count depends on `target_mode`. It can be the same as payload, or fixed to mono or stereo.

It can be used with bigvoice_AudioConverter_From and bigvoice_AudioConverter_To.

The converter will have to be freed with bigvoice_FreeAudioConverter.

Parameters

fmt	the format of the payload
nFrame	the number of frames per packet
payl_ch	the number of channels in the payload
payl_ch_offset	the offset of the first channel to extract/insert in the payload [must be <= (payload_channels-output_channels)]
target_mode	defines the number of channels in process, and the number of channels to extract from payload for mono<->stereo conversion

Returns

The converter or null if not possible

Note

The converter is not multithread-safe, it uses internal cache buffers.

12.1.3.9 bigvoice_MonoToStereo()

```
void bigvoice_MonoToStereo (
            const float * input,
            float * output,
            size_t nFrame )
```

Convert floating-point Mono to Stereo (L,L)

Warning

Buffers must be 64-byte aligned

Parameters

input	audio input mono buffer (64 byte aligned)
output	audio output stereo buffer (64 byte aligned)
nFrame	the number of frames

12.1.3.10 bigvoice_MonoToStereo_Planar()

```
void bigvoice_MonoToStereo_Planar (
            const float * input,
            float * outputL,
            float * outputR,
            size_t nFrame )
```

Convert floating-point Mono to Stereo (planar) (L,L)

Warning

Buffers must be 64-byte aligned

Parameters

input	audio input mono buffer (64 byte aligned)
outputL	audio output left buffer (64 byte aligned)
outputR	audio output right buffer (64 byte aligned)
nFrame	the number of frames

12.1.3.11 bigvoice_StereoToMono()

```
void bigvoice_StereoToMono (
            const float * input,
            float * output,
            size_t nFrame )
```

Convert floating-point Stereo to Mono (L+R)/2

Warning

Buffers must be 64-byte aligned

Parameters

input	audio input stereo buffer (64 byte aligned)
output	audio output mono buffer (64 byte aligned)
nFrame	the number of frames

12.1.3.12 bigvoice_StereoToMono_Planar()

```
void bigvoice_StereoToMono_Planar (
            const float * inputL,
            const float * inputR,
            float * output,
            size_t nFrame )
```

Convert floating-point Stereo (planar) to Mono (L+R)/2

Warning

Buffers must be 64-byte aligned

Parameters

inputL	audio input left buffer (64 byte aligned)
inputR	audio input right buffer (64 byte aligned)
output	audio output mono buffer (64 byte aligned)
nFrame	the number of frames

12.2 Audio convert helpers (C++)

Helpers to convert audio (C++)

Classes

- class sound4::CAudioConverter

  Audio converter helper.

Enumerations

- enum sound4::ConverterTargetMode { sound4::ConverterTargetMode_AsInput = sound4cl_ConverterTargetMode_AsInput , sound4::ConverterTargetMode_Mono = sound4cl_ConverterTargetMode_Mono , sound4::ConverterTargetMode_Stereo = sound4cl_Converter↩ TargetMode_Stereo , sound4::ConverterTargetMode_StereoToMono = sound4cl_ConverterTargetMode_↩ StereoToMono , sound4::ConverterTargetMode_MonoToStereo = sound4cl_ConverterTargetMode_MonoToStereo }

Functions

- void sound4::CProcessor::AudioConvertFrom (const uint8_t ∗payload, float ∗output, size_t nSpl, SampleFormat fmt)
- void sound4::CProcessor::AudioConvertTo (const float ∗input, uint8_t ∗payload, size_t nSpl, SampleFormat fmt)
- void sound4::CProcessor::StereoToMono (const float ∗input, float ∗output, size_t nFrame)
- void sound4::CProcessor::MonoToStereo (const float ∗input, float ∗output, size_t nFrame)
- void sound4::CProcessor::StereoToMono_Planar (const float ∗inputL, const float ∗inputR, float ∗output, size_t nFrame)
- void sound4::CProcessor::MonoToStereo_Planar (const float ∗input, float ∗outputL, float ∗outputR, size_↩ t nFrame)
- void sound4::CProcessor::AudioMonoFromLiveStereo (const uint8_t ∗payload, float ∗output)
- void sound4::CProcessor::AudioMonoToLiveStereo (const float ∗input, uint8_t ∗payload)

12.2.1 Detailed Description

Helpers to convert audio in an optimized way

12.2.2 Enumeration Type Documentation

12.2.2.1 ConverterTargetMode

```
enum sound4::ConverterTargetMode
```

Kind of process-side samples for CAudioConverter

Enumerator

ConverterTargetMode_AsInput	Same channels as input (no extract/insert)
ConverterTargetMode_Mono	Mono process (using mono extract/payload)
ConverterTargetMode_Stereo	Stereo process (using stereo extract/payload)
ConverterTargetMode_StereoToMono	Mono process, using stereo extract/payload (converts stereo to mono)
ConverterTargetMode_MonoToStereo	Stereo process, using mono extract/payload (converts mono to stereo)

Definition at line 1576 of file sound4cl.hpp.

12.2.3 Function Documentation

12.2.3.1 AudioConvertFrom()

```
void sound4::CProcessor::AudioConvertFrom (
            const uint8_t * payload,
            float * output,
            size_t nSpl,
            SampleFormat fmt )  [inline]
```

Convert the payload to floating-point array

Warning

Output buffer must be 64-byte aligned

Parameters

payload	the binary raw audio buffer
output	audio output buffer (64 byte aligned)
nSpl	the number of samples (not frames)
fmt	the format of the payload

Definition at line 660 of file sound4cl.hpp.

12.2.3.2 AudioConvertTo()

```
void sound4::CProcessor::AudioConvertTo (
            const float * input,
```

```
            uint8_t * payload,
            size_t nSpl,
            SampleFormat fmt )  [inline]
```

Convert floating-point array to payload

Warning

Input buffer must be 64-byte aligned

Parameters

input	audio input buffer (64 byte aligned)
payload	the binary raw audio buffer
nSpl	the number of samples (not frames)
fmt	the format of the payload

Definition at line 673 of file sound4cl.hpp.

12.2.3.3 AudioMonoFromLiveStereo()

```
void sound4::CProcessor::AudioMonoFromLiveStereo (
            const uint8_t * payload,
            float * output )  [inline]
```

Convert Livewire Livestereo payload to floating-point Mono (12 samples)

Parameters

payload	Livewire Live Stereo raw buffer
output	audio output mono buffer (64 byte aligned)

Definition at line 732 of file sound4cl.hpp.

12.2.3.4 AudioMonoToLiveStereo()

```
void sound4::CProcessor::AudioMonoToLiveStereo (
            const float * input,
            uint8_t * payload )  [inline]
```

Convert floating-point Mono (12 samples) to Livewire Livestereo payload

Parameters

input	audio input mono buffer (64 byte aligned)
payload	Livewire Live Stereo raw buffer

Definition at line 741 of file sound4cl.hpp.

12.2.3.5 MonoToStereo()

```
void sound4::CProcessor::MonoToStereo (
            const float * input,
            float * output,
            size_t nFrame )  [inline]
```

Convert floating-point Mono to Stereo (L,L)

Warning

Buffers must be 64-byte aligned

Parameters

input	audio input mono buffer (64 byte aligned)
output	audio output stereo buffer (64 byte aligned)
nFrame	the number of frames

Definition at line 697 of file sound4cl.hpp.

12.2.3.6 MonoToStereo_Planar()

```
void sound4::CProcessor::MonoToStereo_Planar (
            const float * input,
            float * outputL,
            float * outputR,
            size_t nFrame )  [inline]
```

Convert floating-point Mono to Stereo (planar) (L,L)

Warning

Buffers must be 64-byte aligned

Parameters

input	audio input mono buffer (64 byte aligned)
outputL	audio output left buffer (64 byte aligned)
outputR	audio output right buffer (64 byte aligned)
nFrame	the number of frames

Definition at line 723 of file sound4cl.hpp.

12.2.3.7 StereoToMono()

```
void sound4::CProcessor::StereoToMono (
            const float * input,
```

```
            float * output,
            size_t nFrame )  [inline]
```

Convert floating-point Stereo to Mono (L+R)/2

Warning

Buffers must be 64-byte aligned

Parameters

input	audio input stereo buffer (64 byte aligned)
output	audio output mono buffer (64 byte aligned)
nFrame	the number of frames

Definition at line 685 of file sound4cl.hpp.

12.2.3.8 StereoToMono_Planar()

```
void sound4::CProcessor::StereoToMono_Planar (
            const float * inputL,
            const float * inputR,
            float * output,
            size_t nFrame )  [inline]
```

Convert floating-point Stereo (planar) to Mono (L+R)/2

Warning

Buffers must be 64-byte aligned

Parameters

inputL	audio input left buffer (64 byte aligned)
inputR	audio input right buffer (64 byte aligned)
output	audio output mono buffer (64 byte aligned)
nFrame	the number of frames

Definition at line 710 of file sound4cl.hpp.

12.3 Audio managing (any audio)

Process audio in any format and size.

Enumerations

- enum bigvoice_SampleFormat {
  INVALID_FORMAT =0 , S16_LE , S16_BE , S24_LE ,

S24_BE , S32_LE , S32_BE , F32_LE ,
F32_BE , S16_NATIVE =S16_LE , S24_NATIVE =S24_LE , S32_NATIVE =S32_LE ,
F32_NATIVE =F32_LE }

Functions

- const char ∗ bigvoice_GetFormatName (const enum bigvoice_SampleFormat fmt)
- enum bigvoice_SampleFormat bigvoice_GetFormatFromName (const char ∗name)
- unsigned int bigvoice_GetBytesFromFormat (const enum bigvoice_SampleFormat fmt)
- unsigned int bigvoice_GetMaxPacketFrame (struct bigvoice_CInstance ∗instance)
- unsigned int bigvoice_AddAudio (struct bigvoice_CInstance ∗instance, const uint8_t ∗payload, unsigned int nFrame, enum bigvoice_SampleFormat fmt)
- unsigned int bigvoice_AddPadAudio (struct bigvoice_CInstance ∗instance)
- unsigned int bigvoice_GetOutputCount (struct bigvoice_CInstance ∗instance)
- unsigned int bigvoice_GetAudio (struct bigvoice_CInstance ∗instance, uint8_t ∗payload, unsigned int max↩_nFrame, enum bigvoice_SampleFormat fmt)

12.3.1 Detailed Description

This allows various payload size and formats, at the expense of internal conversions. This can be useful when receiving audio from network.

Remarks

It is more optimized to use Direct processing.

12.3.2 Enumeration Type Documentation

12.3.2.1 bigvoice_SampleFormat

`enum bigvoice_SampleFormat`

Supported formats for audio I/O

Enumerator

INVALID_FORMAT	Invalid.
S16_LE	16-bit signed integer, little-endian
S16_BE	16-bit signed integer, big-endian
S24_LE	24-bit signed integer, little-endian
S24_BE	24-bit signed integer, big-endian
S32_LE	32-bit signed integer, little-endian
S32_BE	32-bit signed integer, big-endian
F32_LE	32-bit floating-point, little-endian
F32_BE	32-bit floating-point, big-endian
S16_NATIVE	16-bit signed integer, native
S24_NATIVE	24-bit signed integer, native
S32_NATIVE	32-bit signed integer, native
F32_NATIVE	32-bit floating-point, native

Definition at line 880 of file sound4.bigvoice.cl.h.

12.3.3 Function Documentation

12.3.3.1 bigvoice_AddAudio()

```
unsigned int bigvoice_AddAudio (
            struct bigvoice_CInstance * instance,
            const uint8_t * payload,
            unsigned int nFrame,
            enum bigvoice_SampleFormat fmt )
```

Convert and process the payload.

Parameters

instance	the processing instance
payload	the binary raw audio buffer
nFrame	the number of frames in the payload
fmt	the format of the payload

Returns

number of unprocessed frames (if can not store output) if non zero, consume output and restart where it stopped

12.3.3.2 bigvoice_AddPadAudio()

```
unsigned int bigvoice_AddPadAudio (
            struct bigvoice_CInstance * instance )
```

Add silence to finish the current audio chunk and process it

Parameters

instance	the processing instance

Returns

number of added silence frame

12.3.3.3 bigvoice_GetAudio()

```
unsigned int bigvoice_GetAudio (
            struct bigvoice_CInstance * instance,
            uint8_t * payload,
```

```
unsigned int max_nFrame,
enum bigvoice_SampleFormat fmt )
```

Consume the output

Parameters

instance	the processing instance
payload	the binary raw audio buffer to store output
max_nFrame	the maximum number of frames that can be stored in the payload
fmt	the wanted format of the payload

Returns

number of frames put in the buffer

12.3.3.4 bigvoice_GetBytesFromFormat()

```
unsigned int bigvoice_GetBytesFromFormat (
            const enum bigvoice_SampleFormat fmt )
```

Get the format byte size

Parameters

fmt	the format

Returns

the number of bytes used by this format for a single channel audio sample

12.3.3.5 bigvoice_GetFormatFromName()

```
enum bigvoice_SampleFormat bigvoice_GetFormatFromName (
            const char * name )
```

Convert string to format

Parameters

name	the format string

Returns

the matching format, or INVALID_FORMAT if invalid.

12.3.3.6 bigvoice_GetFormatName()

```
const char * bigvoice_GetFormatName (
            const enum bigvoice_SampleFormat fmt )
```

Convert format to string

Parameters

fmt	the format

Returns

the string name of the format

12.3.3.7 bigvoice_GetMaxPacketFrame()

```
unsigned int bigvoice_GetMaxPacketFrame (
            struct bigvoice_CInstance * instance )
```

Maximum packet size (in frames) that can be queued at output.

Parameters

instance	The process instance

Returns

Maximum packet size (in frames) that can be queued at output.

12.3.3.8 bigvoice_GetOutputCount()

```
unsigned int bigvoice_GetOutputCount (
            struct bigvoice_CInstance * instance )
```

Get the available output size

Parameters

instance	the processing instance

Returns

number of available frames at output

12.4 Auxiliary outputs

Classes

- struct SOUND4_AuxiliaryOutputInfos

Functions

- struct SOUND4_AuxiliaryOutputInfos ** bigvoice_GetAuxiliaryAudioOutputInfos (struct bigvoice_CInstance *instance)
- void bigvoice_FreeAuxiliaryAudioInfos (struct SOUND4_AuxiliaryOutputInfos **infos)
- int bigvoice_ActivateAuxiliaryAudioID (struct bigvoice_CInstance *instance, const char *id)
- unsigned int bigvoice_GetAuxiliaryAudioEstimatedDelay (struct bigvoice_CInstance *instance, const char *id)

12.4.1 Detailed Description

For advanced processing with multiple simultaneous outputs.

Auxiliary outputs are filled at each call to bigvoice_ProcessAudio or bigvoice_ProcessAudio_Planar.

You can use their buffer to retreive their output.

12.4.2 Function Documentation

12.4.2.1 bigvoice_ActivateAuxiliaryAudioID()

```
int bigvoice_ActivateAuxiliaryAudioID (
            struct bigvoice_CInstance * instance,
            const char * id )
```

Activate an auxiliary output.

This is required to activate the output generation

Parameters

instance	the processing instance
id	the auxiliary output ID to activate

Returns

0 is success

12.4.2.2 bigvoice_FreeAuxiliaryAudioInfos()

```
void bigvoice_FreeAuxiliaryAudioInfos (
            struct SOUND4_AuxiliaryOutputInfos ** infos )
```

Frees the information returned by bigvoice_GetAuxiliaryAudioOutputInfos.

Parameters

infos	the infos to free

12.4.2.3 bigvoice_GetAuxiliaryAudioEstimatedDelay()

```
unsigned int bigvoice_GetAuxiliaryAudioEstimatedDelay (
            struct bigvoice_CInstance * instance,
            const char * id )
```

Get the delay (estimated) of current processing algorithm for a specific auxiliary output

Remarks

This is not very accurate, it does not take into account group delays.

But it is sufficient for file processing adjustements.

Changing the preset and parameters may change the returned value.

Parameters

instance	the processing instance
id	the auxiliary output ID. Use NULL or empty string for main output delay.

Returns

Estimated delay in frames, or 0 if unknown id.

12.4.2.4 bigvoice_GetAuxiliaryAudioOutputInfos()

```
struct SOUND4_AuxiliaryOutputInfos ** bigvoice_GetAuxiliaryAudioOutputInfos (
            struct bigvoice_CInstance * instance )
```

Get the list of possible auxiliary outputs.

Parameters

instance	the processing instance

Returns

a list of SOUND4_AuxiliaryOutputInfos, null terminated, of auxiliary outputs. May be null. Should be freed with bigvoice_FreeAuxiliaryAudioInfos

12.5 Client's JSon config interfacing

Communicate with the instance.

Classes

- struct bigvoice_CClientInstance

Functions

- struct bigvoice_CClientInstance * bigvoice_NewClient (struct bigvoice_CInstance *instance)
- void bigvoice_DeleteClient (struct bigvoice_CClientInstance *client)
- const char * bigvoice_ProcessJson (struct bigvoice_CClientInstance *client, const char *json_str, int *need_save)
- void bigvoice_FreeJsonAnswer (const char *json_str)
- int bigvoice_SaveState (struct bigvoice_CInstance *instance)

12.5.1 Detailed Description

Allow low-level JSON configuration. see also JSON syntax

12.5.2 Function Documentation

12.5.2.1 bigvoice_DeleteClient()

```
void bigvoice_DeleteClient (
            struct bigvoice_CClientInstance * client )
```

Deletes a client

Parameters

client	the client instance

12.5.2.2 bigvoice_FreeJsonAnswer()

```
void bigvoice_FreeJsonAnswer (
            const char * json_str )
```

Free a JSON answer returned by bigvoice_ProcessJson

Parameters

json_str	the JSON request

12.5.2.3 bigvoice_NewClient()

```
struct bigvoice_CClientInstance * bigvoice_NewClient (
            struct bigvoice_CInstance * instance )
```

Creates a new client

Remarks

not needed if using a port for JSON socket in Update Management

Parameters

instance	the processing instance

Returns

A new client instance

12.5.2.4 bigvoice_ProcessJson()

```
const char * bigvoice_ProcessJson (
            struct bigvoice_CClientInstance * client,
            const char * json_str,
            int * need_save )
```

Process a JSON request

For syntax, see JSON syntax

Note

In all library, all `char*` are **UTF-8** encoded

Attention

the return value needs to be freed with bigvoice_FreeJsonAnswer

Parameters

client	the client instance
json_str	the JSON request
need_save	on return will be 1 is saving is required (maybe delayed)

Returns

a JSON answer (to be freed with bigvoice_FreeJsonAnswer)

12.5.2.5 bigvoice_SaveState()

```
int bigvoice_SaveState (
            struct bigvoice_CInstance * instance )
```

Save the current state

Needed when bigvoice_ProcessJson returned with need_save to 1. However it can be postponed as much as wanted.

Remarks

Works only when update thread is running

Parameters

instance	the processing instance

Returns

0 if success, <0 on error

12.6 Custom preset managagement

This allows to provide a customized preset management.

Typedefs

- typedef wchar_t fs_char
- typedef char *(* bigvoice_storage_reader) (const fs_char *filename, void *userdata)
- typedef void(* bigvoice_storage_reader_free) (char *content, void *userdata)
- typedef int(* bigvoice_storage_writer) (const fs_char *filename, const char *content, void *userdata)
- typedef int(* bigvoice_storage_exists) (const fs_char *filename, void *userdata)
- typedef fs_char **(* bigvoice_storage_getall) (void *userdata)
- typedef void(* bigvoice_storage_getall_free) (fs_char **all, void *userdata)
- typedef int(* bigvoice_storage_remove) (const fs_char *filename, void *userdata)
- typedef int(* bigvoice_storage_rename) (const fs_char *from, const fs_char *to, void *userdata)

Enumerations

- enum bigvoice_PresetChange_Kind { change_kind_created = 1 , change_kind_modified , change_kind_deleted }

Functions

- void bigvoice_SetPresetManager (struct bigvoice_CParameters *params, bigvoice_storage_reader reader, bigvoice_storage_reader_free, bigvoice_storage_writer writer, bigvoice_storage_exists exists, bigvoice_storage_getall getall, bigvoice_storage_getall_free getall_free, bigvoice_storage_remove remove, bigvoice_storage_rename rename, int IsReadOnly, void *userdata)
- void bigvoice_PresetManager_InformChange (struct bigvoice_CInstance *instance, const fs_char *relative↩_path, enum bigvoice_PresetChange_Kind change_kind)

12.6.1 Detailed Description

This allows to provide a customized storage for presets and settings.

By default, the library store data on disk or in memory (see `save_path` parameter in bigvoice_InitProcess2), but you may use these functions to store data.

It can be used for remote storage, database storage, ...

Known files:

- Files with name ending with .pst are presets
- `state.json` is the instance state file, holding settings and unsaved preset changes.
- `auth.json` is the storage for web authentication settings.
- *.onair are used for sharing preset on air name between instances (see `STATE_ONAIR` in Parameters).

Attention

state.json name can be overriden per instance with `STATE_FILENAME` in parameters, see Parameters.

File names are in OS native characters (`wchar_t` for Windows, `char` in **UTF-8** for others)

12.6.2 Typedef Documentation

12.6.2.1 bigvoice_storage_exists

```
typedef int(* bigvoice_storage_exists) (const fs_char *filename, void *userdata)
```

Function to call to test if a stored file exists.

Parameters

filename	the name of the file to test.
userdata	the userdata passed to bigvoice_SetPresetManager

Returns

-1 if not exists, 0 if it exists

Definition at line 516 of file sound4.bigvoice.cl.h.

12.6.2.2 bigvoice_storage_getall

```
typedef fs_char **(* bigvoice_storage_getall) (void *userdata)
```

Function to call to get all stored files' name. Result has to be freed with bigvoice_storage_getall_free callback

Parameters

userdata	the userdata passed to bigvoice_SetPresetManager

Returns

A NULL terminated array of file names

Definition at line 525 of file sound4.bigvoice.cl.h.

12.6.2.3 bigvoice_storage_getall_free

```
typedef void(* bigvoice_storage_getall_free) (fs_char **all, void *userdata)
```

Function to call to free the result of getall.

Parameters

all	the returned value from bigvoice_storage_getall
userdata	the userdata passed to bigvoice_SetPresetManager

Definition at line 533 of file sound4.bigvoice.cl.h.

12.6.2.4 bigvoice_storage_reader

```
typedef char *(* bigvoice_storage_reader) (const fs_char *filename, void *userdata)
```

Function to call to read a stored file, returning its content.

Parameters

filename	the name of the file to read.
userdata	the userdata passed to bigvoice_SetPresetManager

Returns

the **UTF-8** content of the file

Definition at line 489 of file sound4.bigvoice.cl.h.

12.6.2.5 bigvoice_storage_reader_free

```
typedef void(* bigvoice_storage_reader_free) (char *content, void *userdata)
```

Function to call to free the result of bigvoice_storage_reader.

Parameters

content	the returned value from bigvoice_storage_reader
userdata	the userdata passed to bigvoice_SetPresetManager

Definition at line 497 of file sound4.bigvoice.cl.h.

12.6.2.6 bigvoice_storage_remove

```
typedef int(* bigvoice_storage_remove) (const fs_char *filename, void *userdata)
```

Function to call to remove a stored file.

Parameters

filename	the name of the file to remove.
userdata	the userdata passed to bigvoice_SetPresetManager

Returns

-1 if failed, 0 if OK

Definition at line 542 of file sound4.bigvoice.cl.h.

12.6.2.7 bigvoice_storage_rename

```
typedef int(* bigvoice_storage_rename) (const fs_char *from, const fs_char *to, void *userdata)
```

Function to call to rename a stored file.

Parameters

from	The source file name (must exist)
to	The destination file name (must not exist)
userdata	the userdata passed to bigvoice_SetPresetManager

Returns

-1 if failed, 0 if OK

Definition at line 552 of file sound4.bigvoice.cl.h.

12.6.2.8 bigvoice_storage_writer

```
typedef int(* bigvoice_storage_writer) (const fs_char *filename, const char *content, void
*userdata)
```

Function to call to write a stored file.

Parameters

filename	the name of the file to write.
content	the **UTF-8** content to write to the file
userdata	the userdata passed to bigvoice_SetPresetManager

Returns

-1 if failed, 0 if OK

Definition at line 507 of file sound4.bigvoice.cl.h.

12.6.2.9 fs_char

```
typedef wchar_t fs_char
```

Definition at line 477 of file sound4.bigvoice.cl.h.

12.6.3 Enumeration Type Documentation

12.6.3.1 bigvoice_PresetChange_Kind

```
enum bigvoice_PresetChange_Kind
```

Kind of change on a storage path

Enumerator

change_kind_created	Path has been created.
change_kind_modified	Path has been modified.
change_kind_deleted	Path has been deleted.

Definition at line 585 of file sound4.bigvoice.cl.h.

12.6.4 Function Documentation

12.6.4.1 bigvoice_PresetManager_InformChange()

```
void bigvoice_PresetManager_InformChange (
            struct bigvoice_CInstance * instance,
            const fs_char * relative_path,
            enum bigvoice_PresetChange_Kind change_kind )
```

Inform that a change happened in the storage. This must be used only in conjonction with bigvoice_SetPresetManager

Parameters

instance	the processing instance
relative_path	The path which changed, relative to the root storage
change_kind	What happened to this path

12.6.4.2 bigvoice_SetPresetManager()

```
void bigvoice_SetPresetManager (
            struct bigvoice_CParameters * params,
            bigvoice_storage_reader reader,
            bigvoice_storage_reader_free ,
            bigvoice_storage_writer writer,
            bigvoice_storage_exists exists,
            bigvoice_storage_getall getall,
            bigvoice_storage_getall_free getall_free,
            bigvoice_storage_remove remove,
            bigvoice_storage_rename rename,
            int IsReadOnly,
            void * userdata )
```

Setup a custom preset manager. This overrides the save_path in bigvoice_InitProcess2

To dynamically update when storage change, see bigvoice_PresetManager_InformChange

Parameters

params	The params to set up
reader	The function to read a file
writer	The function to write a file
exists	The function to test for a file presence
getall	The function to get all files in storage
getall_free	The function to free the result from getall
remove	The function to remove a file from storage
rename	The function to rename a file
IsReadOnly	Set to 1 if storage is read-only
userdata	The userdata parameter for callbacks

12.7 Direct processing

Optimized processing with direct in->out.

Functions

- void bigvoice_ProcessAudio (struct bigvoice_CInstance ∗instance, const float ∗input, float ∗output)
- void bigvoice_ProcessAudio_Planar (struct bigvoice_CInstance ∗instance, float const ∗const ∗input, float ∗const ∗output)
- float ∗ bigvoice_GetBufferIn (struct bigvoice_CInstance ∗instance)
- float ∗ bigvoice_GetBufferOut (struct bigvoice_CInstance ∗instance)
- unsigned int bigvoice_GetEstimatedDelay (struct bigvoice_CInstance ∗instance)

12.7.1 Detailed Description

Optimized processing with direct in->out.

12.7.2 Function Documentation

12.7.2.1 bigvoice_GetBufferIn()

```
float * bigvoice_GetBufferIn (
            struct bigvoice_CInstance * instance )
```

Get preallocated aligned buffer for audio input for bigvoice_ProcessAudio

The buffer is a float[256 ∗ bigvoice_GetAudioInputCount() ∗ bigvoice_GetChannelCount()]

So for this process/version : float[256∗1∗1]

Note

The calling process can allocate the buffer itself, but it must be aligned.

Parameters

instance	the processing instance

Returns

An audio input dedicated buffer.

12.7.2.2 bigvoice_GetBufferOut()

```
float * bigvoice_GetBufferOut (
            struct bigvoice_CInstance * instance )
```

Get preallocated aligned buffer for audio output for bigvoice_ProcessAudio()

The buffer is a float[256 ∗ bigvoice_GetAudioOutputCount() ∗ bigvoice_GetChannelCount()]

So for this process/version : float[256∗1∗1]

Note

The calling process can allocate the buffer itself, but it must be aligned.

Parameters

instance	the processing instance

Returns

An audio output dedicated buffer.

12.7.2.3 bigvoice_GetEstimatedDelay()

```
unsigned int bigvoice_GetEstimatedDelay (
            struct bigvoice_CInstance * instance )
```

Get the delay (estimated) of current processing algorithm

Remarks

This is not very accurate, it does not take into account group delays.

But it is sufficient for file processing adjustements.

Changing the preset and parameters may change the returned value.

Returns

Estimated delay in frames

12.7.2.4 bigvoice_ProcessAudio()

```
void bigvoice_ProcessAudio (
            struct bigvoice_CInstance * instance,
            const float * input,
            float * output )
```

Process an audio chunk

A chunk contains bigvoice_GetProcessChunkFrames frames, set at init by frames_per_chunk in bigvoice_InitProcess3

Input has bigvoice_GetAudioInputCount() ∗ bigvoice_GetChannelCount() channels

Ouput has bigvoice_GetAudioOutputCount() ∗ bigvoice_GetChannelCount() channels

Each sample is a native 32-bit floating-point number where 1.0 is full scale. Channels are interlaced, so the buffers are [L0,R0,L1,R1,...,Ln,Rn] (L=Left, R=Right)

In case of multiple audio input/output, buffer is [aL0,aR0,bL0,bR0,...,aLn,aRn,bLn,bRn]

Warning

Buffers must be 64-byte aligned

Note

With 64 frames per chunk and 2 channels and 1 audio input, input buffer size is 64∗1∗2∗4=512 bytes

Parameters

instance	the processing instance
input	audio input buffer (64 byte aligned) or NULL to use internal buffer bigvoice_GetBufferIn
output	audio output buffer (64 byte aligned) or NULL to use internal buffer bigvoice_GetBufferOut

12.7.2.5 bigvoice_ProcessAudio_Planar()

```
void bigvoice_ProcessAudio_Planar (
            struct bigvoice_CInstance * instance,
            float const *const * input,
            float *const * output )
```

Process an audio chunk of planar audio

A chunk contains bigvoice_GetProcessChunkFrames frames, set at init by frames_per_chunk in bigvoice_InitProcess3

Input has bigvoice_GetAudioInputCount() ∗ bigvoice_GetChannelCount() channels

Ouput has bigvoice_GetAudioOutputCount() ∗ bigvoice_GetChannelCount() channels

Each sample is a native 32-bit floating-point number where 1.0 is full scale. Channels are NOT interlaced, so the buffers are arrays of planar audio : [[L0,L1,...,Ln] , [R0,R1,...,Rn]] (L=Left, R=Right)

In case of multiple audio input/output, buffer are [[aL...], [aR...], [bL...], [bR...], ...]

Parameters

instance	the processing instance
input	array of audio input buffers for each input channel (no alignment required)
output	array of audio output buffers for each input channel (no alignment required)

12.8 Examples

List all examples.

The C header is sound4.bigvoice.cl.h.

You can also use the C++ wrappers :

- sound4cl.hpp (using dynamic library loading, compatible with all .CL engines)
- sound4.bigvoice.cl.hpp
- sound4.bigvoice.cl_dyn.hpp (using dynamic library loading)

See Sample using C interface

See Sample using Generic C++ interface (multi-process compatible)

See Sample using C++ interface wrapper

See Sample using C++ interface wrapper with dynamic library loading

12.9 Global setup

Get information on the library.

Classes

- struct SOUND4_ProcessInfo

Macros

- #define BIGVOICE_AUDIOFRAME_COUNT 12
- #define BIGVOICE_CHANNEL_COUNT 1
- #define BIGVOICE_AUDIO_INPUT_COUNT 1
- #define BIGVOICE_AUDIO_OUTPUT_COUNT 1
- #define BIGVOICE_SAMPLE_RATE 48000

Typedefs

- typedef void(∗ bigvoice_loggerfn) (enum bigvoice_LogSeverity, const char ∗)

Enumerations

- enum bigvoice_LogSeverity {
  none = 0 , fatal = 1 , error = 2 , warning = 3 ,
  info = 4 , verbose = 5 , verbose2 = 6 , verbose3 = 7 ,
  verbose4 = 8 , verbose5 = 9 }

Functions

- const struct SOUND4_ProcessInfo ∗ SOUND4_GetProcessInfo ()
- const char ∗ bigvoice_GetVersion ()
- unsigned int bigvoice_GetChunkSizeInFrames ()
- unsigned int ∗ bigvoice_GetPossibleChunkSizeInFrames ()
- unsigned int bigvoice_GetChannelCount ()
- unsigned int bigvoice_GetAudioInputCount ()
- unsigned int bigvoice_GetAudioOutputCount ()
- unsigned int bigvoice_GetSampleRate ()
- void bigvoice_SetLoggerCallback (bigvoice_loggerfn logger)
- void bigvoice_SetLogSeverity (enum bigvoice_LogSeverity severity)

12.9.1 Detailed Description

Get information on the library. Set logging mode.

12.9.2 Macro Definition Documentation

12.9.2.1 BIGVOICE_AUDIO_INPUT_COUNT

```
#define BIGVOICE_AUDIO_INPUT_COUNT 1
```

This version number of inputs for this process.

Deprecated For binary compatibility, this should be runtime checked to be the same as bigvoice_GetAudioInputCount()

Definition at line 58 of file sound4.bigvoice.cl.h.

12.9.2.2 BIGVOICE_AUDIO_OUTPUT_COUNT

```
#define BIGVOICE_AUDIO_OUTPUT_COUNT 1
```

This version number of outputs for this process.

Deprecated For binary compatibility, this should be runtime checked to be the same as bigvoice_GetAudioOutputCount()

Definition at line 64 of file sound4.bigvoice.cl.h.

12.9.2.3 BIGVOICE_AUDIOFRAME_COUNT

```
#define BIGVOICE_AUDIOFRAME_COUNT 12
```

This version number of frames in a process chunk.

Deprecated For binary compatibility, this should be runtime checked to be the same as bigvoice_GetChunkSizeInFrames()

Definition at line 46 of file sound4.bigvoice.cl.h.

12.9.2.4 BIGVOICE_CHANNEL_COUNT

```
#define BIGVOICE_CHANNEL_COUNT 1
```

This version number of channels.

Deprecated For binary compatibility, this should be runtime checked to be the same as bigvoice_GetChannelCount()

Definition at line 52 of file sound4.bigvoice.cl.h.

12.9.2.5 BIGVOICE_SAMPLE_RATE

```
#define BIGVOICE_SAMPLE_RATE 48000
```

This input/output sample-rate.

Deprecated For binary compatibility, this should be runtime checked to be the same as bigvoice_GetSampleRate()

Definition at line 70 of file sound4.bigvoice.cl.h.

12.9.3 Typedef Documentation

12.9.3.1 bigvoice_loggerfn

```
typedef void(* bigvoice_loggerfn) (enum bigvoice_LogSeverity, const char *)
```

The logging callback format

Warning

Do not block/wait in the callback, it can be called from any place in code

Note

In all library, all `char*` are **UTF-8** encoded

Definition at line 185 of file sound4.bigvoice.cl.h.

12.9.4 Enumeration Type Documentation

12.9.4.1 bigvoice_LogSeverity

```
enum bigvoice_LogSeverity
```

The logging levels

Enumerator

none	Not used.
fatal	fatal error
error	error
warning	warning
info	info
verbose	verbose
verbose2	verbose2
verbose3	verbose3
verbose4	verbose4
verbose5	verbose5

Definition at line 166 of file sound4.bigvoice.cl.h.

12.9.5 Function Documentation

12.9.5.1 bigvoice_GetAudioInputCount()

```
unsigned int bigvoice_GetAudioInputCount ( )
```

Get the number of inputs for this process

Remarks

All inputs have bigvoice_GetChannelCount() channels

Fixed to 1, but should be checked for backward compatibility

Returns

The process input count

12.9.5.2 bigvoice_GetAudioOutputCount()

```
unsigned int bigvoice_GetAudioOutputCount ( )
```

Get the number of outputs for this process

Remarks

All outputs have bigvoice_GetChannelCount() channels

Fixed to 1, but should be checked for backward compatibility

Returns

The process outputs count

12.9.5.3 bigvoice_GetChannelCount()

```
unsigned int bigvoice_GetChannelCount ( )
```

Get the number of channels needed by this process

Remarks

Fixed to 1, but should be checked for backward compatibility

Returns

The process channels count

12.9.5.4 bigvoice_GetChunkSizeInFrames()

```
unsigned int bigvoice_GetChunkSizeInFrames ( )
```

Get the default number of frames in a process chunk.

The output will be available only by chunks of this size.

Note

A Frame is a set of bigvoice_GetChannelCount samples

Remarks

Fixed to 12, but should be checked for backward compatibility

Returns

The process chunk size in frame

Deprecated Use bigvoice_GetPossibleChunkSizeInFrames

12.9.5.5 bigvoice_GetPossibleChunkSizeInFrames()

```
unsigned int * bigvoice_GetPossibleChunkSizeInFrames ( )
```

Get the possibles number of frames in a process chunk.

The output will be available only by chunks of this size.

Note

A Frame is a set of bigvoice_GetChannelCount samples

Returns

An array of possible process chunk size in frame, ending with 0

12.9.5.6 bigvoice_GetSampleRate()

```
unsigned int bigvoice_GetSampleRate ( )
```

Get the processing sample-rate

Remarks

For now, always return 48000, but should be checked for backward compatibility

Returns

The process sample-rate in Hz

12.9.5.7 bigvoice_GetVersion()

```
const char * bigvoice_GetVersion ( )
```

Get the process version string

Returns

version string

12.9.5.8 bigvoice_SetLoggerCallback()

```
void bigvoice_SetLoggerCallback (
            bigvoice_loggerfn logger )
```

Set a callback for logging

If not set, a default logger prints to stderr.

Warning

Do not block/wait in the callback, it can be called from any place in code

The message pointer is only valid for the duration of the call: copy the string if you need to keep it

Parameters

logger	A C callback called for logging.

12.9.5.9 bigvoice_SetLogSeverity()

```
void bigvoice_SetLogSeverity (
            enum bigvoice_LogSeverity severity )
```

Change the global log severity

Logs above this level will not be printed.

Parameters

severity	Log severity

12.9.5.10 SOUND4_GetProcessInfo()

```
const struct SOUND4_ProcessInfo * SOUND4_GetProcessInfo ( )
```

Get this processor description

Common to all SOUND4 processors.

Returns

the process description

12.10 Instance tracing (Windows only)

This allows instances to use windows event tracing.

Functions

- void bigvoice_SetInstanceTracing (struct bigvoice_CParameters *params, TraceLoggingHProvider tracing_provider, GUID activity_guid)
- void bigvoice_SetInstanceTracingProcessActivity (struct bigvoice_CInstance *instance, GUID activity_guid)

12.10.1 Detailed Description

This allows instances to use windows event tracing

12.10.2 Function Documentation

12.10.2.1 bigvoice_SetInstanceTracing()

```
void bigvoice_SetInstanceTracing (
            struct bigvoice_CParameters * params,
            TraceLoggingHProvider tracing_provider,
            GUID activity_guid )
```

Set the instance's tracing provider before creating instance

Parameters

params	the parameters to configure
tracing_provider	the provider as created with TRACELOGGING_DEFINE_PROVIDER
activity_guid	the activity guid, used for creation, updates and destruction

12.10.2.2 bigvoice_SetInstanceTracingProcessActivity()

```
void bigvoice_SetInstanceTracingProcessActivity (
            struct bigvoice_CInstance * instance,
            GUID activity_guid )
```

Set the instance's process activity for tracing (optional). Should be called only in process's thread.

Parameters

instance	the instance to configure
activity_guid	the activity guid

12.11 Instance's bus

This allows instances to exchange real-time data.

Classes

- struct bigvoice_CBus

Functions

- struct bigvoice_CBus ∗ bigvoice_NewBus ()
- void bigvoice_FreeBus (struct bigvoice_CBus ∗bus)
- void bigvoice_SetInstanceBus (struct bigvoice_CParameters ∗params, struct bigvoice_CBus ∗bus)

12.11.1 Detailed Description

This allows instances to exchange real-time data.

The bus is used to manage Dominate-it between instances.

12.11.2 Function Documentation

12.11.2.1 bigvoice_FreeBus()

```
void bigvoice_FreeBus (
            struct bigvoice_CBus * bus )
```

Frees the bus allocated with bigvoice_NewBus

Parameters

bus	The bus to free

12.11.2.2 bigvoice_NewBus()

```
struct bigvoice_CBus * bigvoice_NewBus ( )
```

Creates a new bus

Returns

the new bus, to be freed with bigvoice_FreeBus

12.11.2.3 bigvoice_SetInstanceBus()

```
void bigvoice_SetInstanceBus (
            struct bigvoice_CParameters * params,
            struct bigvoice_CBus * bus )
```

Set the instance's bus. It can be used by instances to exchange real-time information if needed.

Attention

The bus should be created with the same library

Parameters

params	the parameters to configure
bus	the bus to use

12.12 Metadata Management

Send/update metadata.

Functions

- void bigvoice_SetMetadata (struct bigvoice_CInstance ∗instance, const char ∗key, const char ∗value)
- void bigvoice_SetMetadataMulti (struct bigvoice_CInstance ∗instance, const char ∗∗keyvalue)
- const char ∗∗ bigvoice_GetMetadataInfos (struct bigvoice_CInstance ∗instance)
- void bigvoice_FreeMetadataInfos (struct bigvoice_CInstance ∗instance, const char ∗∗infos)

12.12.1 Detailed Description

Metadata is used on-need, and might be used by extensions modules (Watermarking, Streaming, ...)

12.12.2 Function Documentation

12.12.2.1 bigvoice_FreeMetadataInfos()

```
void bigvoice_FreeMetadataInfos (
            struct bigvoice_CInstance * instance,
            const char ** infos )
```

Frees the information returned by bigvoice_GetMetadataInfos.

Parameters

instance	the instance
infos	the infos

12.12.2.2 bigvoice_GetMetadataInfos()

```
const char ** bigvoice_GetMetadataInfos (
            struct bigvoice_CInstance * instance )
```

Get information on known metadata keys.

Parameters

instance	the instance

Returns

a list of key,descriptions, null terminated, of known metadata keys used in process and extensions. May be null. Should be freed with bigvoice_FreeMetadataInfos

12.12.2.3 bigvoice_SetMetadata()

```
void bigvoice_SetMetadata (
            struct bigvoice_CInstance * instance,
            const char * key,
            const char * value )
```

Adds the specific metadata to the process.

It can come from any thread, and will be used as soon as possible.

Setting a null value erase the metadata, which is different from setting an empty string. Initial metadata might be set as soon as instance is created (and before update thread).

See also

bigvoice_SetMetadataMulti

Parameters

instance	the instance
key	the metadata key. If key contains a dot (like wm.KEY), it will be sent only to the matching plugin (ie wm here) without the prefix (ie KEY here). Use empty prefix for routing to main only.
value	the metadata value or nullptr to erase it.

12.12.2.4 bigvoice_SetMetadataMulti()

```
void bigvoice_SetMetadataMulti (
            struct bigvoice_CInstance * instance,
            const char ** keyvalue )
```

Adds multiple metadata to the process.

This works like bigvoice_SetMetadata but with multiple metadata at once.

See also

bigvoice_SetMetadata

Parameters

instance	the instance
keyvalue	a list of key/value pair, ending with null key.

12.13 Process creation/destruction

Create and destroy a process instance.

Classes

- struct bigvoice_CInstance
- struct bigvoice_CParameters

Functions

- struct bigvoice_CParameters ∗ bigvoice_NewParameters ()
- void bigvoice_FreeParameters (struct bigvoice_CParameters ∗params)
- void bigvoice_SetParameter (struct bigvoice_CParameters ∗params, const char ∗name, const char ∗value)
- const char ∗ bigvoice_GetParameter (struct bigvoice_CParameters ∗params, const char ∗name)
- void bigvoice_FreeParameterValue (const char ∗value)
- struct bigvoice_CInstance ∗ bigvoice_InitProcess (const char ∗LoginKey, const char ∗RadioName, const char ∗Access_Key_ID, const char ∗Access_Key_Secret, const char ∗save_path)
- struct bigvoice_CInstance ∗ bigvoice_InitProcess2 (const char ∗LoginKey, const char ∗RadioName, const char ∗Access_Key_ID, const char ∗Access_Key_Secret, const char ∗save_path, const struct bigvoice_CParameters ∗parameters)
- struct bigvoice_CInstance ∗ bigvoice_InitProcess3 (const char ∗LoginKey, const char ∗RadioName, const char ∗Access_Key_ID, const char ∗Access_Key_Secret, const char ∗save_path, const struct bigvoice_CParameters ∗parameters, unsigned int frames_per_chunk)
- unsigned int bigvoice_GetProcessChunkFrames (struct bigvoice_CInstance ∗instance)
- int bigvoice_TerminateProcess (struct bigvoice_CInstance ∗instance)
- void bigvoice_ExitProcess (struct bigvoice_CInstance ∗instance)

12.13.1 Detailed Description

Create and destroy a process instance, and retrieve some general information about the process.

12.13.2 Function Documentation

12.13.2.1 bigvoice_ExitProcess()

```
void bigvoice_ExitProcess (
            struct bigvoice_CInstance * instance )
```

Quit and destroy the instance

Parameters

instance	the instance to destroy

12.13.2.2 bigvoice_FreeParameters()

```
void bigvoice_FreeParameters (
            struct bigvoice_CParameters * params )
```

Free the parameters created with bigvoice_NewParameters.

12.13.2.3 bigvoice_FreeParameterValue()

```
void bigvoice_FreeParameterValue (
            const char * value )
```

Free a parameter value returned by bigvoice_GetParameter

Parameters

value	the returned value

12.13.2.4 bigvoice_GetParameter()

```
const char * bigvoice_GetParameter (
            struct bigvoice_CParameters * params,
            const char * name )
```

Get current parameter value.

Returned value must be freed with bigvoice_FreeParameterValue

12.13.2.5 bigvoice_GetProcessChunkFrames()

```
unsigned int bigvoice_GetProcessChunkFrames (
            struct bigvoice_CInstance * instance )
```

Get the number of audio frames in each chunk of processing.

The value reflects the frames_per_chunk parameter passed to bigvoice_InitProcess3

Parameters

instance	the instance to destroy

Returns

the number of audio frames in each chunk of processing

Note

A Frame is a set of bigvoice_GetChannelCount samples

12.13.2.6 bigvoice_InitProcess()

```
struct bigvoice_CInstance * bigvoice_InitProcess (
            const char * LoginKey,
            const char * RadioName,
            const char * Access_Key_ID,
            const char * Access_Key_Secret,
            const char * save_path )
```

Create a process instance with default parameters (from env)

Same as bigvoice_InitProcess2, but with default parameters (from env)

Deprecated Use bigvoice_InitProcess3

12.13.2.7 bigvoice_InitProcess2()

```
struct bigvoice_CInstance * bigvoice_InitProcess2 (
            const char * LoginKey,
            const char * RadioName,
            const char * Access_Key_ID,
            const char * Access_Key_Secret,
            const char * save_path,
            const struct bigvoice_CParameters * parameters )
```

Create a process instance with default frames_per_chunk (12)

Same as bigvoice_InitProcess3, but with default frames_per_chunk

Deprecated Use bigvoice_InitProcess3

12.13.2.8 bigvoice_InitProcess3()

```
struct bigvoice_CInstance * bigvoice_InitProcess3 (
            const char * LoginKey,
            const char * RadioName,
            const char * Access_Key_ID,
            const char * Access_Key_Secret,
            const char * save_path,
            const struct bigvoice_CParameters * parameters,
            unsigned int frames_per_chunk )
```

Create a process instance

The output will have to be freed with bigvoice_ExitProcess

Attention

The **save_path** must be an existing folder with R/W access, or be NULL (then it uses volatile memory storage)

If the save_path is NULL or the folder is empty, a default configuration with a default preset will be loaded, unless using Custom preset managagement.

If used in a container, we recommend to put a volume for this path, so it will survive updates.

License access

The licenses are retrieved via Internet and access some servers. You may use an alternate server by changing `LICENSE_SERVER` in the parameters.

See also Environment variables and parameters

Parameters

LoginKey	SOUND4 Login key (was User ID)
RadioName	SOUND4 RadioName
Access_Key_ID	SOUND4 AWS access ID
Access_Key_Secret	SOUND4 AWS access Secret
save_path	Path where we can load/save the configuration. If NULL, memory storage will be used.
parameters	Parameters
frames_per_chunk	The number of audio frames in each chunk of processing. Must be in the list returned by bigvoice_GetPossibleChunkSizeInFrames

Returns

A new process instance

12.13.2.9 bigvoice_NewParameters()

```
struct bigvoice_CParameters * bigvoice_NewParameters ( )
```

Create parameters to use with bigvoice_InitProcess2.

The output will have to be freed with bigvoice_FreeParameters

The default values are taken from environment (for compatibility).

12.13.2.10 bigvoice_SetParameter()

```
void bigvoice_SetParameter (
            struct bigvoice_CParameters * params,
            const char * name,
            const char * value )
```

Set a new parameter.

Some values are in taken from env, so see Environment variables and parameters for usable variables

See also Custom preset managagement

See also Instance's bus

12.13.2.11 bigvoice_TerminateProcess()

```
int bigvoice_TerminateProcess (
            struct bigvoice_CInstance * instance )
```

Terminate the processing

This is useful only with file processing, to get the final status. For some plugins, this is mandatory

Parameters

instance	the instance to terminate

Returns

0 is success, <0 if error, >0 if some status

12.14 Sample using C interface

C example.

See full example cpp/sound4.bigvoice.cl-pipe.cpp

12.14.1 Sample to create the processing instance

see Process creation/destruction and Update Management

```
// Setup parameters
struct bigvoice_CParameters *params = bigvoice_NewParameters();
// Optional: activate web authentication, set admin password
```

```
    // This creates the authentication only for a new storage path
    bigvoice_SetParameter(params,"ADMIN_USER", "admin");
    bigvoice_SetParameter(params,"ADMIN_SECRET", "admin");

    // Create the processing instance
    pInstance=bigvoice_InitProcess2(pLoginKey,pRadioName,pKeyId,pAccessKey,store_path.c_str(), params);
    bigvoice_FreeParameters(params);
    if (!pInstance) {
      std::cerr « "Failed to create the process instance"« std::endl;
      return 1;
    }

    // Start the update thread, without JSON server (low priority)
    std::thread updater([pInstance](){
       // will returned when stopped or destroyed
       std::cerr « "bigvoice_StartUpdateThread (no json port)" « std::endl;
       bigvoice_StartUpdateThread(pInstance, 0);
       std::cerr « "bigvoice_StartUpdateThread END" « std::endl;
     });

    // This is not mandatory, but better be sure we are ready right now
    std::cerr « "Waiting update thread" « std::endl;
    if (bigvoice_WaitUpdateThreadReady(pInstance, 5000)<0) {
        std::cerr « "Timeout to create the process instance"« std::endl;
    }
    std::cerr « "Waiting update thread DONE" « std::endl;

#if (BIGVOICE_HAS_WEBSERVER)
    // Starts a web server, listening on port http://localhost:8080, https://localhost:8443
    std::cerr « "Starting web server" « std::endl;
    int listenport= 8080;
    int listenport_secure= 8443;
    uint64_t webserver= SOUND4_INVALID_WEBSERVER_ID;
    if (listenport || listenport_secure) {
        webserver = bigvoice_Webserver(listenport,listenport_secure,pInstance);
        if (webserver==SOUND4_INVALID_WEBSERVER_ID) {
            std::cerr « "Starting web server FAILED" « std::endl;
        } else {
            int web_status=bigvoice_Webserver_Status(webserver);
            if (listenport) {
                if (web_status & SOUND4_WEBSERVER_HTTP_OK) {
                    std::cerr « "Web server listening on port " « listenport;
                } else {
                    std::cerr « "Web server failed to listen on port " « listenport;
                }
            }
            if (listenport_secure) {
                if (web_status & SOUND4_WEBSERVER_HTTPS_OK) {
                    std::cerr « "Web server listening on secure port " « listenport_secure;
                } else {
                    std::cerr « "Web server failed to listen on secure port " « listenport_secure;
                }
            }
            std::cerr « "Starting web server DONE" « std::endl;
        }
    }
#endif // (BIGVOICE_HAS_WEBSERVER)

     // Force load a factory preset now
     // Could be used instead of setting a store_path
     /*{
         bigvoice_CClientInstance *pClient=bigvoice_NewClient(pInstance);
         const char *answer=bigvoice_ProcessJson(pClient, "{ \"factoryload\": \"All Programs\" }", NULL);
         std::cerr « "Loaded factory preset answer: " « answer« std::endl;
         bigvoice_FreeJsonAnswer(answer);
         bigvoice_DeleteClient(pClient);
     }*/
```

12.14.2 Sample processing loop

see Direct processing

```
bool stopthread=false;
alignas(64) float audio_in[CHUNK_SIZE*CHANNEL_COUNT];
alignas(64) float audio_out[CHUNK_SIZE*CHANNEL_COUNT];

    #if defined(_WIN32) || defined(WIN32)
        // Windows: The stdin, stdout, and stderr streams always open in text mode by default
        _setmode(_fileno(stdin), _O_BINARY);
        _setmode(_fileno(stdout), _O_BINARY);
    #endif

    while (!stopthread)
```

```
    {
        // Read a chunk from stdin
        if (std::fread(&audio_in[0], sizeof(float), CHUNK_SIZE*CHANNEL_COUNT, stdin) !=
      CHUNK_SIZE*CHANNEL_COUNT) {
            std::cerr « "ProcessLoop: input stopped"« std::endl;
            stopthread=true;
            break;
        }
        if (stopthread) break;
        // Process it
        bigvoice_ProcessAudio(pInstance, audio_in, audio_out);
        // Write it to stdout
        if (fwrite(&audio_out[0], sizeof(float), CHUNK_SIZE*CHANNEL_COUNT, stdout) !=
      CHUNK_SIZE*CHANNEL_COUNT) {
            std::cerr « "Failed to write audio output" « std::endl;
            stopthread=true;
        }
    }
```

12.14.3 Sample to stop the processing instance

see Process creation/destruction

```
#if (BIGVOICE_HAS_WEBSERVER)
    // Stopping the webserver
    std::cerr « "Stopping web server" « std::endl;
    bigvoice_Webserver_Stop(webserver, 1000);
    std::cerr « "Stopping web server DONE" « std::endl;
#endif // (BIGVOICE_HAS_WEBSERVER)

    // Stopping the processing instance
    std::cerr « "Stopping Update thread" « std::endl;
    bigvoice_StopUpdateThread(pInstance); // this will exit the update thread
    std::cerr « "Stopping Update thread DONE" « std::endl;

    updater.join();

    bigvoice_ExitProcess(pInstance);
```

12.15 Sample using C++ interface wrapper

C++ example (static link)

See full example cpp/sound4.bigvoice.cl-pipe-cxx.cpp

12.15.1 Setup and sanity checks

```
    sound4::bigvoice::SetLogSeverity(verbose5);
    sound4::bigvoice::SetLoggerCallback(MyLogger);

    sound4::bigvoice::CInstance instance;
    instance.SetParam("ADMIN_USER","admin");
    instance.SetParam("ADMIN_SECRET","admin");
```

12.15.2 Sample to create the processing instance

```
    if (!instance.Create(LoginKey, RadioName, KeyId, AccessKey, store_path)) {
        std::cerr « "Failed to create the processing instance" « std::endl;
        return 1;
    }
```

12.15.3 Communicating with the instance

See also JSON syntax

```
        auto client = instance.NewClient();
        auto answer = client->ProcessJson(R"JSON({"get":{"processorname":null}})JSON");
        std::cerr « "Request for processor name returned "«answer«std::endl;
```

12.15.4 Starting a web-server

```
if (!instance.StartWebServer(listen_port,0)) {
    std::cerr « "Failed to create the web server on port " « listen_port « std::endl;
    return 1;
}
```

12.15.5 Sample processing loop

```
while (!stopthread)
{
    // Read a chunk from stdin
    if (std::fread(instance.GetBufferIn().data(), sizeof(float), sound4::bigvoice::InputSampleSize,
  stdin) != sound4::bigvoice::InputSampleSize) {
        std::cerr « "ProcessLoop: input stopped"« std::endl;
        stopthread=true;
        break;
    }
    if (stopthread) break;
    // Process it
    instance.ProcessAudio();
    // Write it to stdout
    if (fwrite(instance.GetBufferOut().data(), sizeof(float), sound4::bigvoice::OutputSampleSize,
  stdout) != sound4::bigvoice::OutputSampleSize) {
        std::cerr « "Failed to write audio output" « std::endl;
        stopthread=true;
    }
}
```

12.16 Sample using C++ interface wrapper with dynamic library loading

C++ example (dynamic link) See full example cpp/sound4.bigvoice.cl-pipe-dyn.cpp.

12.16.1 Dynamic loading

```
sound4::bigvoice::dyn::CDynLib dynlib;
if (!dynlib.Load()) {
    std::cerr « "Failed to load processing library" « std::endl;
    return 1;
}
```

12.16.2 Setup and sanity checks

```
sound4::bigvoice::dyn::SetLogSeverity(dynlib, verbose5);
sound4::bigvoice::dyn::SetLoggerCallback(dynlib, MyLogger);

sound4::bigvoice::dyn::CInstance instance(dynlib);
instance.SetParam("ADMIN_USER","admin");
instance.SetParam("ADMIN_SECRET","admin");
```

12.16.3 Sample to create the processing instance

```
if (!instance.Create(LoginKey, RadioName, KeyId, AccessKey, {})) {
    std::cerr « "Failed to create the processing instance" « std::endl;
    return 1;
}
```

12.16.4 Communicating with the instance

See also JSON syntax

```
    auto client = instance.NewClient();
    auto answer = client->ProcessJson(R"JSON({"get":{"processorname":null}})JSON");
    std::cerr « "Request for processor name returned "«answer«std::endl;
```

12.16.5 Starting a web-server

```
if (!instance.StartWebServer(listen_port,0)) {
    std::cerr « "Failed to create the web server on port " « listen_port « std::endl;
    return 1;
}
```

12.16.6 Sample processing loop

```
while (!stopthread)
{
    // Read a chunk from stdin
    if (std::fread(instance.GetBufferIn().data(), sizeof(float), sound4::bigvoice::dyn::InputSampleSize,
  stdin) != sound4::bigvoice::dyn::InputSampleSize) {
        std::cerr « "ProcessLoop: input stopped"« std::endl;
        stopthread=true;
        break;
    }
    if (stopthread) break;
    // Process it
    instance.ProcessAudio();
    // Write it to stdout
    if (fwrite(instance.GetBufferOut().data(), sizeof(float), sound4::bigvoice::dyn::OutputSampleSize,
  stdout) != sound4::bigvoice::dyn::OutputSampleSize) {
        std::cerr « "Failed to write audio output" « std::endl;
        stopthread=true;
    }
}
```

12.16.7 Custom preset manager

```
class MyPresetManager : public sound4::bigvoice::dyn::CPresetLoader {
public:
    MyPresetManager() = default;
    virtual ~MyPresetManager() = default;

    bool SetupPath(const std::filesystem::path& a_preset_path)
        {
            m_preset_path=a_preset_path;
            std::error_code ec;
            if ( !std::filesystem::exists(m_preset_path,ec ) ) {
                return false;
            }
            if ( !std::filesystem::is_directory(m_preset_path, ec) ) {
                return false;
            }
            return true;
        }
    virtual bool IsReadOnly() override { return false; };
    virtual bool Exists(const std::filesystem::path &name) override
        {
            std::error_code ec;
            return std::filesystem::exists(GetRealPath(name), ec);
        }
    virtual bool Remove(const std::filesystem::path &name) override
        {
            std::error_code ec;
            return std::filesystem::remove(GetRealPath(name), ec);
        }
    virtual bool Rename(const std::filesystem::path &from, const std::filesystem::path &to) override
        {
            std::error_code ec;
            std::filesystem::rename(GetRealPath(from), GetRealPath(to), ec);
            return (!ec);
        }
    virtual std::vector<std::filesystem::path> GetAll() override
        {
            std::vector<std::filesystem::path> list;
            std::error_code ec;
            for (auto it = std::filesystem::directory_iterator(m_preset_path.c_str(),
  std::filesystem::directory_options::skip_permission_denied, ec);
                !ec && it != std::filesystem::directory_iterator{};
                 it.increment(ec) )
            {
                if (it->is_regular_file(ec)) {
                    list.push_back(it->path().lexically_relative(m_preset_path));
                }
            }
            return list;
        }
    virtual std::string Read(const std::filesystem::path &filename) override
```

```
        {
            std::ifstream f(GetRealPath(filename));
            if ( f.fail() ) {
                return std::string();
            }
            std::ostringstream ss;
            ss « f.rdbuf();
            return ss.str();
        }
    virtual bool Write(const std::filesystem::path &filename, const std::string &content) override
        {
            std::ofstream f(GetRealPath(filename));
            if ( f.fail() ) {
                return false;
            }
            f « content;
            if ( f.fail() ) {
                return false;
            }
            return true;
        }
private:
    std::filesystem::path m_preset_path;
    std::filesystem::path GetRealPath(const std::filesystem::path &name)
        {
            return m_preset_path / name;
        }
};
```

12.16.8 Custom preset manager loading

```
    MyPresetManager preset_manager;
    if (!store_path.empty()) {
        if (!preset_manager.SetupPath(store_path)) {
            std::cerr « "Failed to setup the custom preset manager on path " « (const
      char*)store_path.u8string().c_str() « std::endl;
            return 1;
        }
        instance.SetPresetManager(&preset_manager);
    }
```

12.17 Sample using Generic C++ interface (multi-process compatible)

C++ example (dynamic link, any process)

This wrapper abstracts the processing specifics, working with any SOUND4 .CL process.

It uses sound4cl.hpp header.

See full example cpp/sound4cl-pipe.cpp

12.17.1 Loading the library

```
    std::string libname =  "libsound4.bigvoice.cl.so";
    sound4::CProcessor processor;
    if (!processor.Load(libname)) {
        std::cerr « "Failed to load processing library" « std::endl;
        return 1;
    }
```

12.17.2 Setup and configure

```
    processor.SetLogSeverity(sound4::verbose5);
    processor.SetLoggerCallback([](sound4::LogSeverity severity,const std::string& msg) {
            std::cerr « msg « std::endl;
        });

    sound4::CInstance instance(processor);
    instance.SetParam("ADMIN_USER","admin");
    instance.SetParam("ADMIN_SECRET","admin");
```

12.17.3 Create the processing instance

```
if (!instance.Create(LoginKey, RadioName, KeyId, AccessKey, {})) {
    std::cerr « "Failed to create the processing instance" « std::endl;
    return 1;
}
```

12.17.4 Processing loop

```
size_t input_sample_count = instance.GetChunkFrames() * processor.GetChannelCount();
size_t output_sample_count = instance.GetChunkFrames() * processor.GetChannelCount();
while (!stopthread)
{
    // Read a chunk from stdin
    if (std::fread(instance.GetBufferIn(), sizeof(float), input_sample_count, stdin) !=
  input_sample_count) {
        std::cerr « "ProcessLoop: input stopped"« std::endl;
        stopthread=true;
        break;
    }
    if (stopthread) break;
    // Process it
    instance.ProcessAudio();
    // Write it to stdout
    if (fwrite(instance.GetBufferOut(), sizeof(float), output_sample_count, stdout) !=
  output_sample_count) {
        std::cerr « "Failed to write audio output" « std::endl;
        stopthread=true;
    }
}
```

12.17.5 Starting a web-server

```
if (!instance.StartWebServer(listen_port,0)) {
    std::cerr « "Failed to create the web server on port " « listen_port « std::endl;
    return 1;
}
```

12.17.6 Communicating with the instance

See also JSON syntax

```
    auto client = instance.NewClient();
    auto answer = client->ProcessJson(R"JSON({"get":{"processorname":null}})JSON");
    std::cerr « "Request for processor name returned "«answer«std::endl;
```

12.17.7 Custom preset manager example

```
class MyPresetManager : public sound4::CPresetLoader {
public:
    MyPresetManager() = default;
    virtual ~MyPresetManager() = default;

    bool SetupPath(const std::filesystem::path& a_preset_path)
        {
            m_preset_path=a_preset_path;
            std::error_code ec;
            if ( !std::filesystem::exists(m_preset_path,ec ) ) {
                return false;
            }
            if ( !std::filesystem::is_directory(m_preset_path, ec) ) {
                return false;
            }
            return true;
        }
    virtual bool IsReadOnly() override { return false; };
    virtual bool Exists(const std::filesystem::path &name) override
        {
            std::error_code ec;
            return std::filesystem::exists(GetRealPath(name), ec);
        }
    virtual bool Remove(const std::filesystem::path &name) override
        {
            std::error_code ec;
```

```
            return std::filesystem::remove(GetRealPath(name), ec);
        }
    virtual bool Rename(const std::filesystem::path &from, const std::filesystem::path &to) override
        {
            std::error_code ec;
            std::filesystem::rename(GetRealPath(from), GetRealPath(to), ec);
            return (!ec);
        }
    virtual std::vector<std::filesystem::path> GetAll() override
        {
            std::vector<std::filesystem::path> list;
            std::error_code ec;
            for (auto it = std::filesystem::directory_iterator(m_preset_path.c_str(),
      std::filesystem::directory_options::skip_permission_denied, ec);
                !ec && it != std::filesystem::directory_iterator{};
                 it.increment(ec) )
            {
                if (it->is_regular_file(ec)) {
                    list.push_back(it->path().lexically_relative(m_preset_path));
                }
            }
            return list;
        }
    virtual std::string Read(const std::filesystem::path &filename) override
        {
            std::ifstream f(GetRealPath(filename));
            if ( f.fail() ) {
                return std::string();
            }
            std::ostringstream ss;
            ss « f.rdbuf();
            return ss.str();
        }
    virtual bool Write(const std::filesystem::path &filename, const std::string &content) override
        {
            std::ofstream f(GetRealPath(filename));
            if ( f.fail() ) {
                return false;
            }
            f « content;
            if ( f.fail() ) {
                return false;
            }
            return true;
        }
private:
    std::filesystem::path m_preset_path;
    std::filesystem::path GetRealPath(const std::filesystem::path &name)
        {
            return m_preset_path / name;
        }
};
```

12.17.8 Custom preset manager loading

```
    MyPresetManager preset_manager;
    if (!store_path.empty()) {
        if (!preset_manager.SetupPath(store_path)) {
            std::cerr « "Failed to setup the custom preset manager on path " « (const
      char*)store_path.u8string().c_str() « std::endl;
            return 1;
        }
        instance.SetPresetManager(&preset_manager);
    }
```

12.18 Update Management

Manage the process update.

Functions

- void bigvoice_StartUpdateThread (struct bigvoice_CInstance *instance, unsigned int port)
- void bigvoice_StopUpdateThread (struct bigvoice_CInstance *instance)
- int bigvoice_WaitUpdateThreadReady (struct bigvoice_CInstance *instance, int milliseconds)

12.18.1 Detailed Description

Manage the process update and communications.

12.18.2 Function Documentation

12.18.2.1 bigvoice_StartUpdateThread()

```
void bigvoice_StartUpdateThread (
            struct bigvoice_CInstance * instance,
            unsigned int port )
```

Update function

This needs to run in a thread, which can have low priority. It will also allow the JSON access via TCP.

Remarks

This function does not return until it is stopped with bigvoice_StopUpdateThread

Parameters

instance	the instance
port	the port to listen for incoming JSON connections. If 0, the JSON server is not accessible

12.18.2.2 bigvoice_StopUpdateThread()

```
void bigvoice_StopUpdateThread (
            struct bigvoice_CInstance * instance )
```

Stop the update thread

Parameters

instance	the processing instance

12.18.2.3 bigvoice_WaitUpdateThreadReady()

```
int bigvoice_WaitUpdateThreadReady (
            struct bigvoice_CInstance * instance,
            int milliseconds )
```

Wait for the update thread to be ready

Parameters

instance	the processing instance
milliseconds	maximum time to wait in milliseconds

Returns

-1 if timeout waiting for the thread, 0 if OK

12.19 Web server

Web server configuring.

Macros

- #define SOUND4_INVALID_WEBSERVER_ID ((uint64_t)-1)
- #define SOUND4_WEBSERVER_HTTP_OK (1<<0)
- #define SOUND4_WEBSERVER_HTTPS_OK (1<<1)

Functions

- uint64_t bigvoice_Webserver_tcp (unsigned int listenport, unsigned int listenport_secure, const char *socket_ip, unsigned int socket_port)
- uint64_t bigvoice_Webserver_tcp2 (unsigned int listenport, unsigned int listenport_secure, const char *socket_ip, unsigned int socket_port, const struct bigvoice_CParameters *parameters)
- uint64_t bigvoice_Webserver (unsigned int listenport, unsigned int listenport_secure, struct bigvoice_CInstance *instance)
- int bigvoice_Webserver_Stop (uint64_t id, int timeout_ms)
- int bigvoice_Webserver_Status (uint64_t id)
- void bigvoice_Webserver_SetAppHealth (struct bigvoice_CInstance *instance, int httpcode, const char *contenttype, const char *content)
- void bigvoice_Webserver_GetAppHealth (struct bigvoice_CInstance *instance, int *httpcode, char **contenttype, char **content)
- void bigvoice_Webserver_FreeString (char *str)

12.19.1 Detailed Description

Run a web server to configure the processor

The web server also expose `/health` which should always answer 200.

The web server also expose `/licvalid` which should answer 200 when license is valid, 402 when it is not valid, other standard code for other errors.

You can also use `/livalid/[module]` (where `[module]` is the name of a module) to check for validity of the [module] extension in the same way. For instance '/livalid/stream' will check the stream extension.

See also how to setup authentication with Environment variables and parameters. Their use is documented in bigvoice_InitProcess3.

12.19.2 Macro Definition Documentation

12.19.2.1 SOUND4_INVALID_WEBSERVER_ID

```
#define SOUND4_INVALID_WEBSERVER_ID ((uint64_t)-1)
```

This represents an invalid webserver id bigvoice_Webserver and bigvoice_Webserver_tcp will never return this value

Definition at line 1339 of file sound4.bigvoice.cl.h.

12.19.2.2 SOUND4_WEBSERVER_HTTP_OK

```
#define SOUND4_WEBSERVER_HTTP_OK (1<<0)
```

If this bit is set in the return value from bigvoice_Webserver_Status, then HTTP server is OK

Definition at line 1344 of file sound4.bigvoice.cl.h.

12.19.2.3 SOUND4_WEBSERVER_HTTPS_OK

```
#define SOUND4_WEBSERVER_HTTPS_OK (1<<1)
```

If this bit is set in the return value from bigvoice_Webserver_Status, then HTTPS server is OK

Definition at line 1348 of file sound4.bigvoice.cl.h.

12.19.3 Function Documentation

12.19.3.1 bigvoice_Webserver()

```
uint64_t bigvoice_Webserver (
            unsigned int listenport,
            unsigned int listenport_secure,
            struct bigvoice_CInstance * instance )
```

Run a web server, connecting to local instance internally (no expose port needed)

This function returns after connecting to the process, and continue to run in background See bigvoice_Webserver_Stop too stop it gracefully

For secure connection, it will use privatekey.pem and certificate.pem from current directory. Environment variables `SSL_PRIVATE_PATH` and `SSL_CERTIFICATE_PATH` can override those (see Environment variables and parameters). If none is valid, it will try also /etc/ssl/certs/server.key and /etc/ssl/certs/server.crt.

Warning

On Windows, calling this from Go<1.20 code will crash.

The web server keeps a reference to the instance for its whole lifetime: stop it with bigvoice_Webserver_Stop before calling ExitProcess on this instance

Parameters

listenport	The port to listen for HTTP connections (0 to disable)
listenport_secure	The port to listen for HTTPS connections (0 to disable)
instance	The process instance to connect to

Returns

id of webserver (starting at 0), to use with bigvoice_Webserver_Stop

12.19.3.2 bigvoice_Webserver_FreeString()

```
void bigvoice_Webserver_FreeString (
            char * str )
```

Free a a string returned by bigvoice_Webserver_GetAppHealth

Parameters

str	the string to free

12.19.3.3 bigvoice_Webserver_GetAppHealth()

```
void bigvoice_Webserver_GetAppHealth (
            struct bigvoice_CInstance * instance,
            int * httpcode,
            char ** contenttype,
            char ** content )
```

Get the current web server /apphealth returned http code,content-type and content

Parameters

instance	The process instance
httpcode	The http code pointer
contenttype	The http Content-Type header pointer (to be freed with bigvoice_Webserver_FreeString)
content	The http body content pointer (to be freed with bigvoice_Webserver_FreeString)

12.19.3.4 bigvoice_Webserver_SetAppHealth()

```
void bigvoice_Webserver_SetAppHealth (
            struct bigvoice_CInstance * instance,
            int httpcode,
            const char * contenttype,
            const char * content )
```

Set the web server /apphealth status info

The hosting application can use this to customize the handling of /apphealth path.

Parameters

instance	The process instance
httpcode	The http code
contenttype	The http Content-Type header
content	The http body content

12.19.3.5 bigvoice_Webserver_Status()

```
int bigvoice_Webserver_Status (
            uint64_t id )
```

Get the web server status

Warning

On Windows, calling this from Go<1.20 code will crash.

Parameters

id	The web server Id, returned by bigvoice_Webserver_tcp or bigvoice_Webserver

Returns

a combinaison of SOUND4_WEBSERVER_HTTP_OK and SOUND4_WEBSERVER_HTTPS_OK depending on the server status

12.19.3.6 bigvoice_Webserver_Stop()

```
int bigvoice_Webserver_Stop (
            uint64_t id,
            int timeout_ms )
```

Stop a web server started with bigvoice_Webserver_tcp

Warning

On Windows, calling this from Go<1.20 code will crash.

Parameters

id	The web server Id, returned by bigvoice_Webserver_tcp or bigvoice_Webserver
timeout_ms	The timeout to wait gracefull shutdown

Returns

0 if succeed, -1 if the id is not found

12.19.3.7 bigvoice_Webserver_tcp()

```
uint64_t bigvoice_Webserver_tcp (
            unsigned int listenport,
            unsigned int listenport_secure,
```

```
            const char * socket_ip,
            unsigned int socket_port )
```

Run a web server, connecting to process with JSON over TCP

Same as bigvoice_Webserver_tcp2, but with default parameters (from env)

Deprecated Use bigvoice_Webserver_tcp2

12.19.3.8 bigvoice_Webserver_tcp2()

```
uint64_t bigvoice_Webserver_tcp2 (
            unsigned int listenport,
            unsigned int listenport_secure,
            const char * socket_ip,
            unsigned int socket_port,
            const struct bigvoice_CParameters * parameters )
```

Run a web server, connecting to process with JSON over TCP, using parameters

This function returns after connecting to the process, and continue to run in background See bigvoice_Webserver_Stop too stop it gracefully

For secure connection, it will use privatekey.pem and certificate.pem from current directory. Environment variables `SSL_PRIVATE_PATH` and `SSL_CERTIFICATE_PATH` can override those (see Environment variables and parameters). If none is valid, it will try also /etc/ssl/certs/server.key and /etc/ssl/certs/server.crt.

Warning

On Windows, calling this from Go<1.20 code will crash.

Parameters

listenport	The port to listen for HTTP connections
listenport_secure	The port to listen for HTTPS connections
socket_ip	The ip of the process to connect to
socket_port	The port of the process's JSON server to connect to
parameters	The parameters to use, created with bigvoice_NewParameters

Returns

id of webserver (starting at 0), to use with bigvoice_Webserver_Stop

Chapter 13

Namespace Documentation

13.1 sound4 Namespace Reference

Namespaces

- namespace bigvoice
- namespace helper

Classes

- struct AuxiliaryOutputInfos
- class CAudioConverter

  Audio converter helper.
- class CBus

  Shared Bus.
- class CInstance

  Instance handling class.
- class CPresetLoader

  Custom preset handler helper.
- class CProcessor

  Dynamic library interface.

Typedefs

- using log_cb_t = std::function< void(LogSeverity, const std::string &)>

Enumerations

- enum SampleFormat {
  INVALID_FORMAT , S16_LE , S16_BE , S24_LE ,
  S24_BE , S32_LE , S32_BE , F32_LE ,
  F32_BE , S16_NATIVE , S24_NATIVE , S32_NATIVE ,
  F32_NATIVE }
- enum LogSeverity {
  none , fatal , error , warning ,
  info , verbose , verbose2 , verbose3 ,
  verbose4 , verbose5 }
- enum PresetChange_Kind { change_kind_created , change_kind_modified , change_kind_deleted }
- enum ConverterTargetMode {
  ConverterTargetMode_AsInput = sound4cl_ConverterTargetMode_AsInput , ConverterTargetMode_Mono = sound4cl_ConverterTargetMode_Mono , ConverterTargetMode_Stereo = sound4cl_ConverterTargetMode↩_Stereo , ConverterTargetMode_StereoToMono = sound4cl_ConverterTargetMode_StereoToMono ,
  ConverterTargetMode_MonoToStereo = sound4cl_ConverterTargetMode_MonoToStereo }

Functions

- static void _log_cb_c (sound4cl_LogSeverity severity, const char *c_msg)

Variables

- static log_cb_t _log_cb

13.1.1 Detailed Description

SOUND4 namespace

13.1.2 Typedef Documentation

13.1.2.1 log_cb_t

```
using sound4::log_cb_t = typedef std::function<void(LogSeverity,const std::string&)>
```

Log callback type

Definition at line 296 of file sound4cl.hpp.

13.1.3 Enumeration Type Documentation

13.1.3.1 LogSeverity

```
enum sound4::LogSeverity
```

Log Severity levels

Enumerator

none	Not used.
fatal	fatal error
error	error
warning	warning
info	info
verbose	verbose
verbose2	verbose2
verbose3	verbose3
verbose4	verbose4
verbose5	verbose5

Definition at line 280 of file sound4cl.hpp.

13.1.3.2 PresetChange_Kind

```
enum sound4::PresetChange_Kind
```

Enumerator

change_kind_created	has been created
change_kind_modified	has been modified
change_kind_deleted	has been deleted

Definition at line 913 of file sound4cl.hpp.

13.1.3.3 SampleFormat

```
enum sound4::SampleFormat
```

Supported formats for audio I/O

Enumerator

INVALID_FORMAT	Invalid.
S16_LE	16-bit signed integer, little-endian
S16_BE	16-bit signed integer, big-endian
S24_LE	24-bit signed integer, little-endian
S24_BE	24-bit signed integer, big-endian
S32_LE	32-bit signed integer, little-endian
S32_BE	32-bit signed integer, big-endian
F32_LE	32-bit floating-point, little-endian
F32_BE	32-bit floating-point, big-endian
S16_NATIVE	16-bit signed integer, native
S24_NATIVE	24-bit signed integer, native
S32_NATIVE	32-bit signed integer, native
F32_NATIVE	32-bit floating-point, native

Definition at line 60 of file sound4cl.hpp.

13.1.4 Function Documentation

13.1.4.1 _log_cb_c()

```
static void sound4::_log_cb_c (
            sound4cl_LogSeverity severity,
            const char * c_msg )  [inline], [static]
```

Definition at line 303 of file sound4cl.hpp.

13.1.5 Variable Documentation

13.1.5.1 _log_cb

```
log_cb_t sound4::_log_cb [static]
```

internal helpers for C log callbacks

Definition at line 301 of file sound4cl.hpp.

13.2 sound4::bigvoice Namespace Reference

Namespaces

- namespace dyn
- namespace helper

Classes

- class CAudioConverter

  Audio converter helper.
- class CBus

  Shared Bus.
- class CInstance

  Instance handling class.
- class CPresetLoader

  Custom preset handler helper.

Typedefs

- using SampleFormat = bigvoice_SampleFormat
- using LogSeverity = bigvoice_LogSeverity
- using log_cb_t = std::function< void(LogSeverity, const std::string &)>
- using PresetChange_Kind = bigvoice_PresetChange_Kind

Functions

- static std::string GetVersion ()
- static unsigned int GetChunkSizeInFrames ()
- static std::vector< unsigned int > GetPossibleChunkSizeInFrames ()
- static unsigned int GetChannelCount ()
- static unsigned int GetAudioInputCount ()
- static unsigned int GetAudioOutputCount ()
- static unsigned int GetSampleRate ()
- static void SanityCheck (bool a_bCheckFrames=true)
- static std::string GetFormatName (const SampleFormat fmt)
- static SampleFormat GetFormatFromName (const std::string &name)
- static unsigned int GetBytesFromFormat (const SampleFormat fmt)
- static void _log_cb_c (bigvoice_LogSeverity severity, const char *c_msg)
- static void SetLogSeverity (LogSeverity severity)
- static void SetLoggerCallback (log_cb_t cb)

Variables

- static constexpr const char ∗ process_name = "SOUND4 BIGVOICE.CL"
- static constexpr const char ∗ process_shortname = "bigvoice"
- const size_t ChunkFrames = 12
- const size_t InputChannels = 1 ∗ 1
- const size_t OutputChannels = 1 ∗ 1
- const size_t InputSampleSize =ChunkFrames∗InputChannels
- const size_t OutputSampleSize =ChunkFrames∗OutputChannels
- const size_t SampleRate = 48000
- static log_cb_t _log_cb

13.2.1 Detailed Description

bigvoice namespace

13.2.2 Typedef Documentation

13.2.2.1 log_cb_t

```
using sound4::bigvoice::log_cb_t = typedef std::function<void(LogSeverity,const std::string&)>
```

Log callback type

Definition at line 405 of file sound4.bigvoice.cl.hpp.

13.2.2.2 LogSeverity

```
using sound4::bigvoice::LogSeverity = typedef bigvoice_LogSeverity
```

Log Severity levels

Definition at line 401 of file sound4.bigvoice.cl.hpp.

13.2.2.3 PresetChange_Kind

```
using sound4::bigvoice::PresetChange_Kind = typedef bigvoice_PresetChange_Kind
```

Definition at line 471 of file sound4.bigvoice.cl.hpp.

13.2.2.4 SampleFormat

```
using sound4::bigvoice::SampleFormat = typedef bigvoice_SampleFormat
```

Definition at line 63 of file sound4.bigvoice.cl.hpp.

13.2.3 Function Documentation

13.2.3.1 _log_cb_c()

```
static void sound4::bigvoice::_log_cb_c (
            bigvoice_LogSeverity severity,
            const char * c_msg )  [inline], [static]
```

Definition at line 412 of file sound4.bigvoice.cl.hpp.

13.2.3.2 GetAudioInputCount()

```
static unsigned int sound4::bigvoice::GetAudioInputCount ( )  [inline], [static]
```

Get the number of inputs for this process

Remarks

All inputs have GetChannelCount() channels

Returns

The process input count

Definition at line 311 of file sound4.bigvoice.cl.hpp.

13.2.3.3 GetAudioOutputCount()

```
static unsigned int sound4::bigvoice::GetAudioOutputCount ( )  [inline], [static]
```

Get the number of outputs for this process

Remarks

All outputs have GetChannelCount() channels

Returns

The process outputs count

Definition at line 323 of file sound4.bigvoice.cl.hpp.

13.2.3.4 GetBytesFromFormat()

```
static unsigned int sound4::bigvoice::GetBytesFromFormat (
            const SampleFormat fmt )  [inline], [static]
```

Get the format byte size

Parameters

fmt	the format

Returns

the number of bytes used by this format for a single channel audio sample

Definition at line 393 of file sound4.bigvoice.cl.hpp.

13.2.3.5 GetChannelCount()

```
static unsigned int sound4::bigvoice::GetChannelCount ( ) [inline], [static]
```

Get the number of channels needed by this process

Returns

The process channels count

Definition at line 299 of file sound4.bigvoice.cl.hpp.

13.2.3.6 GetChunkSizeInFrames()

```
static unsigned int sound4::bigvoice::GetChunkSizeInFrames ( ) [inline], [static]
```

Get the default number of frames in a process chunk.

The output will be available only by chunks of this size.

Note

A Frame is a set of GetChannelCount samples

Returns

The process chunk size in frame

Deprecated Use GetPossibleChunkSizeInFrames

Definition at line 272 of file sound4.bigvoice.cl.hpp.

13.2.3.7 GetFormatFromName()

```
static SampleFormat sound4::bigvoice::GetFormatFromName (
            const std::string & name ) [inline], [static]
```

Convert string to format

Parameters

name	the format string

Returns

the matching format, or INVALID_FORMAT if invalid.

Definition at line 382 of file sound4.bigvoice.cl.hpp.

13.2.3.8 GetFormatName()

```
static std::string sound4::bigvoice::GetFormatName (
            const SampleFormat fmt )  [inline], [static]
```

Convert format to string

Parameters

fmt	the format

Returns

the string name of the format

Definition at line 371 of file sound4.bigvoice.cl.hpp.

13.2.3.9 GetPossibleChunkSizeInFrames()

```
static std::vector< unsigned int > sound4::bigvoice::GetPossibleChunkSizeInFrames ( )  [inline],
[static]
```

Get the possibles number of frames in a process chunk.

The output will be available only by chunks of this size.

Note

A Frame is a set of GetChannelCount samples

Returns

An vector of possible process chunk size in frame

Definition at line 285 of file sound4.bigvoice.cl.hpp.

13.2.3.10 GetSampleRate()

```
static unsigned int sound4::bigvoice::GetSampleRate ( ) [inline], [static]
```

Get the processing sample-rate

Remarks

For now, always return 48000, but should be checked for backward compatibility

Returns

The process sample-rate in Hz

Definition at line 335 of file sound4.bigvoice.cl.hpp.

13.2.3.11 GetVersion()

```
static std::string sound4::bigvoice::GetVersion ( ) [inline], [static]
```

Get the process version string

Returns

version string

Definition at line 257 of file sound4.bigvoice.cl.hpp.

13.2.3.12 SanityCheck()

```
static void sound4::bigvoice::SanityCheck (
            bool a_bCheckFrames = true ) [inline], [static]
```

Checks for library compatibility with const/defines

Throws std::runtime_error on failure

Definition at line 345 of file sound4.bigvoice.cl.hpp.

13.2.3.13 SetLoggerCallback()

```
static void sound4::bigvoice::SetLoggerCallback (
            log_cb_t cb ) [inline], [static]
```

Sets the log callback. If not set, console output will be used.

Definition at line 426 of file sound4.bigvoice.cl.hpp.

13.2.3.14 SetLogSeverity()

```
static void sound4::bigvoice::SetLogSeverity (
            LogSeverity severity )  [inline], [static]
```

Sets the log severity (global)

Definition at line 419 of file sound4.bigvoice.cl.hpp.

13.2.4 Variable Documentation

13.2.4.1 _log_cb

```
log_cb_t sound4::bigvoice::_log_cb  [static]
```

internal helpers for C log callbacks

Definition at line 410 of file sound4.bigvoice.cl.hpp.

13.2.4.2 ChunkFrames

```
const size_t sound4::bigvoice::ChunkFrames = 12
```

Number of frames in a chunk

Deprecated use GetPossibleChunkSizeInFrames

Definition at line 68 of file sound4.bigvoice.cl.hpp.

13.2.4.3 InputChannels

```
const size_t sound4::bigvoice::InputChannels = 1 * 1
```

Number of float values in an input frame

Deprecated Use GetChannelCount and GetAudioInputCount

Definition at line 73 of file sound4.bigvoice.cl.hpp.

13.2.4.4 InputSampleSize

```
const size_t sound4::bigvoice::InputSampleSize =ChunkFrames*InputChannels
```

Number of float values for an input chunk

Deprecated Use GetPossibleChunkSizeInFrames and GetAudioInputCount

Definition at line 83 of file sound4.bigvoice.cl.hpp.

13.2.4.5 OutputChannels

```
const size_t sound4::bigvoice::OutputChannels = 1 * 1
```

Number of float values in an output frame

Deprecated Use GetChannelCount and GetAudioOutputCount

Definition at line 78 of file sound4.bigvoice.cl.hpp.

13.2.4.6 OutputSampleSize

```
const size_t sound4::bigvoice::OutputSampleSize =ChunkFrames*OutputChannels
```

Number of float values for an output chunk

Deprecated Use GetPossibleChunkSizeInFrames and GetAudioOutputCount

Definition at line 88 of file sound4.bigvoice.cl.hpp.

13.2.4.7 process_name

```
constexpr const char* sound4::bigvoice::process_name = "SOUND4 BIGVOICE.CL"  [static], [constexpr]
```

Definition at line 61 of file sound4.bigvoice.cl.hpp.

13.2.4.8 process_shortname

```
constexpr const char* sound4::bigvoice::process_shortname = "bigvoice"  [static], [constexpr]
```

Definition at line 62 of file sound4.bigvoice.cl.hpp.

13.2.4.9 SampleRate

```
const size_t sound4::bigvoice::SampleRate = 48000
```

Sample rate of library

Deprecated Use GetSampleRate

Definition at line 93 of file sound4.bigvoice.cl.hpp.

13.3 sound4::bigvoice::dyn Namespace Reference

Namespaces

- namespace helper

Classes

- class CAudioConverter

  Audio converter helper.
- class CBus

  Shared Bus.
- class CDynLib

  Dynamic library interface.
- class CInstance

  Instance handling class.
- class CPresetLoader

  Custom preset handler helper.

Typedefs

- using SampleFormat = bigvoice_SampleFormat
- using LogSeverity = bigvoice_LogSeverity
- using log_cb_t = std::function< void(LogSeverity, const std::string &)>
- using PresetChange_Kind = bigvoice_PresetChange_Kind

Functions

- static std::string GetVersion (CDynLib &dynlib)
- static unsigned int GetChunkSizeInFrames (CDynLib &dynlib)
- static std::vector< unsigned int > GetPossibleChunkSizeInFrames (CDynLib &dynlib)
- static unsigned int GetChannelCount (CDynLib &dynlib)
- static unsigned int GetAudioInputCount (CDynLib &dynlib)
- static unsigned int GetAudioOutputCount (CDynLib &dynlib)
- static unsigned int GetSampleRate (CDynLib &dynlib)
- static void SanityCheck (CDynLib &dynlib, bool a_bCheckFrames=true)
- static std::string GetFormatName (CDynLib &dynlib, const SampleFormat fmt)
- static SampleFormat GetFormatFromName (CDynLib &dynlib, const std::string &name)
- static unsigned int GetBytesFromFormat (CDynLib &dynlib, const SampleFormat fmt)
- static void _log_cb_c (bigvoice_LogSeverity severity, const char *c_msg)
- static void SetLogSeverity (CDynLib &dynlib, LogSeverity severity)
- static void SetLoggerCallback (CDynLib &dynlib, log_cb_t cb)

Variables

- static constexpr const char * process_name = "SOUND4 BIGVOICE.CL"
- static constexpr const char * process_shortname = "bigvoice"
- const size_t ChunkFrames = 12
- const size_t InputChannels = 1 * 1
- const size_t OutputChannels = 1 * 1
- const size_t InputSampleSize =ChunkFrames*InputChannels
- const size_t OutputSampleSize =ChunkFrames*OutputChannels
- const size_t SampleRate = 48000
- static log_cb_t _log_cb

13.3.1 Detailed Description

Dynamic loading namespace

13.3.2 Typedef Documentation

13.3.2.1 log_cb_t

```
using sound4::bigvoice::dyn::log_cb_t = typedef std::function<void(LogSeverity,const std↩
::string&)>
```

Log callback type

Definition at line 881 of file sound4.bigvoice.cl_dyn.hpp.

13.3.2.2 LogSeverity

```
using sound4::bigvoice::dyn::LogSeverity = typedef bigvoice_LogSeverity
```

Log Severity levels

Definition at line 877 of file sound4.bigvoice.cl_dyn.hpp.

13.3.2.3 PresetChange_Kind

```
using sound4::bigvoice::dyn::PresetChange_Kind = typedef bigvoice_PresetChange_Kind
```

Definition at line 955 of file sound4.bigvoice.cl_dyn.hpp.

13.3.2.4 SampleFormat

```
using sound4::bigvoice::dyn::SampleFormat = typedef bigvoice_SampleFormat
```

Definition at line 515 of file sound4.bigvoice.cl_dyn.hpp.

13.3.3 Function Documentation

13.3.3.1 _log_cb_c()

```
static void sound4::bigvoice::dyn::_log_cb_c (
            bigvoice_LogSeverity severity,
            const char * c_msg )  [inline], [static]
```

Definition at line 888 of file sound4.bigvoice.cl_dyn.hpp.

13.3.3.2 GetAudioInputCount()

```
static unsigned int sound4::bigvoice::dyn::GetAudioInputCount (
            CDynLib & dynlib )  [inline], [static]
```

Get the number of inputs for this process

Remarks

All inputs have GetChannelCount() channels

Parameters

dynlib	the dynamic library

Returns

The process input count

Definition at line 780 of file sound4.bigvoice.cl_dyn.hpp.

13.3.3.3 GetAudioOutputCount()

```
static unsigned int sound4::bigvoice::dyn::GetAudioOutputCount (
            CDynLib & dynlib )  [inline], [static]
```

Get the number of outputs for this process

Remarks

All outputs have GetChannelCount() channels

Parameters

dynlib	the dynamic library

Returns

The process outputs count

Definition at line 793 of file sound4.bigvoice.cl_dyn.hpp.

13.3.3.4 GetBytesFromFormat()

```
static unsigned int sound4::bigvoice::dyn::GetBytesFromFormat (
            CDynLib & dynlib,
            const SampleFormat fmt )  [inline], [static]
```

Get the format byte size

Parameters

dynlib	the dynamic library
fmt	the format

Returns

the number of bytes used by this format for a single channel audio sample

Definition at line 869 of file sound4.bigvoice.cl_dyn.hpp.

13.3.3.5 GetChannelCount()

```
static unsigned int sound4::bigvoice::dyn::GetChannelCount (
            CDynLib & dynlib )  [inline], [static]
```

Get the number of channels needed by this process

Parameters

dynlib	the dynamic library

Returns

The process channels count

Definition at line 767 of file sound4.bigvoice.cl_dyn.hpp.

13.3.3.6 GetChunkSizeInFrames()

```
static unsigned int sound4::bigvoice::dyn::GetChunkSizeInFrames (
            CDynLib & dynlib )  [inline], [static]
```

Get the default number of frames in a process chunk.

The output will be available only by chunks of this size.

Note

A Frame is a set of GetChannelCount samples

Deprecated Use GetPossibleChunkSizeInFrames

Parameters

dynlib	the dynamic library

Returns

The process chunk size in frame

Definition at line 734 of file sound4.bigvoice.cl_dyn.hpp.

13.3.3.7 GetFormatFromName()

```
static SampleFormat sound4::bigvoice::dyn::GetFormatFromName (
            CDynLib & dynlib,
            const std::string & name )  [inline], [static]
```

Convert string to format

Parameters

dynlib	the dynamic library
name	the format string

Returns

the matching format, or INVALID_FORMAT if invalid.

Definition at line 857 of file sound4.bigvoice.cl_dyn.hpp.

13.3.3.8 GetFormatName()

```
static std::string sound4::bigvoice::dyn::GetFormatName (
            CDynLib & dynlib,
            const SampleFormat fmt )  [inline], [static]
```

Convert format to string

Parameters

dynlib	the dynamic library
fmt	the format

Returns

the string name of the format

Definition at line 845 of file sound4.bigvoice.cl_dyn.hpp.

13.3.3.9 GetPossibleChunkSizeInFrames()

```
static std::vector< unsigned int > sound4::bigvoice::dyn::GetPossibleChunkSizeInFrames (
            CDynLib & dynlib )  [inline], [static]
```

Get the possibles number of frames in a process chunk.

The output will be available only by chunks of this size.

Note

A Frame is a set of GetChannelCount samples

Parameters

dynlib	the dynamic library

Returns

An vector of possible process chunk size in frame

Definition at line 748 of file sound4.bigvoice.cl_dyn.hpp.

13.3.3.10 GetSampleRate()

```
static unsigned int sound4::bigvoice::dyn::GetSampleRate (
            CDynLib & dynlib )  [inline], [static]
```

Get the processing sample-rate

Remarks

For now, always return 48000, but should be checked for backward compatibility

Parameters

dynlib	the dynamic library

Returns

The process sample-rate in Hz

Definition at line 806 of file sound4.bigvoice.cl_dyn.hpp.

13.3.3.11 GetVersion()

```
static std::string sound4::bigvoice::dyn::GetVersion (
            CDynLib & dynlib )  [inline], [static]
```

Get the process version string

Parameters

dynlib	the dynamic library

Returns

version string

Definition at line 718 of file sound4.bigvoice.cl_dyn.hpp.

13.3.3.12 SanityCheck()

```
static void sound4::bigvoice::dyn::SanityCheck (
            CDynLib & dynlib,
            bool a_bCheckFrames = true )  [inline], [static]
```

Checks for library compatibility with const/defines

Exceptions

std::runtime_error	on failure

Parameters

dynlib	the dynamic library
a_bCheckFrames	if false, do not check chunk size

Definition at line 818 of file sound4.bigvoice.cl_dyn.hpp.

13.3.3.13 SetLoggerCallback()

```
static void sound4::bigvoice::dyn::SetLoggerCallback (
            CDynLib & dynlib,
            log_cb_t cb )  [inline], [static]
```

Sets the log callback. If not set, console output will be used.

Definition at line 902 of file sound4.bigvoice.cl_dyn.hpp.

13.3.3.14 SetLogSeverity()

```
static void sound4::bigvoice::dyn::SetLogSeverity (
            CDynLib & dynlib,
            LogSeverity severity )  [inline], [static]
```

Sets the log severity (global)

Definition at line 895 of file sound4.bigvoice.cl_dyn.hpp.

13.3.4 Variable Documentation

13.3.4.1 _log_cb

```
log_cb_t sound4::bigvoice::dyn::_log_cb  [static]
```

internal helpers for C log callbacks

Definition at line 886 of file sound4.bigvoice.cl_dyn.hpp.

13.3.4.2 ChunkFrames

```
const size_t sound4::bigvoice::dyn::ChunkFrames = 12
```

Number of frames in a chunk

Deprecated use GetPossibleChunkSizeInFrames()

Definition at line 520 of file sound4.bigvoice.cl_dyn.hpp.

13.3.4.3 InputChannels

```
const size_t sound4::bigvoice::dyn::InputChannels = 1 * 1
```

Number of float values in an input frame

Deprecated Use GetChannelCount and GetAudioInputCount

Definition at line 525 of file sound4.bigvoice.cl_dyn.hpp.

13.3.4.4 InputSampleSize

```
const size_t sound4::bigvoice::dyn::InputSampleSize =ChunkFrames*InputChannels
```

Number of float values for an input chunk

Deprecated Use GetPossibleChunkSizeInFrames and GetAudioInputCount

Definition at line 535 of file sound4.bigvoice.cl_dyn.hpp.

13.3.4.5 OutputChannels

```
const size_t sound4::bigvoice::dyn::OutputChannels = 1 * 1
```

Number of float values in an output frame

Deprecated Use GetChannelCount and GetAudioOutputCount

Definition at line 530 of file sound4.bigvoice.cl_dyn.hpp.

13.3.4.6 OutputSampleSize

```
const size_t sound4::bigvoice::dyn::OutputSampleSize =ChunkFrames*OutputChannels
```

Number of float values for an output chunk

Deprecated Use GetPossibleChunkSizeInFrames and GetAudioOutputCount

Definition at line 540 of file sound4.bigvoice.cl_dyn.hpp.

13.3.4.7 process_name

```
constexpr const char* sound4::bigvoice::dyn::process_name = "SOUND4 BIGVOICE.CL"  [static],
[constexpr]
```

Definition at line 513 of file sound4.bigvoice.cl_dyn.hpp.

13.3.4.8 process_shortname

```
constexpr const char* sound4::bigvoice::dyn::process_shortname = "bigvoice"  [static], [constexpr]
```

Definition at line 514 of file sound4.bigvoice.cl_dyn.hpp.

13.3.4.9 SampleRate

```
const size_t sound4::bigvoice::dyn::SampleRate = 48000
```

Sample rate of library

Deprecated Use GetSampleRate

Definition at line 545 of file sound4.bigvoice.cl_dyn.hpp.

13.4 sound4::bigvoice::dyn::helper Namespace Reference

Classes

- class CDynLoader

  Helper to load dynamic library.
- class DynFuncHolder

  Helper to wrap a function pointer.
- struct SampleFormat

  Helper for Sample format types.
- struct **SampleFormat**< **float** >
- struct **SampleFormat**< **int16_t** >
- struct **SampleFormat**< **int32_t** >

Functions

- static std::string WStringToUTF8 (const std::wstring &wstr)
- static std::wstring UTF8ToWString (const std::string &str)
- static void AudioConvertFrom (CDynLib &dynlib, const uint8_t *payload, float *output, size_t nSpl, bigvoice_SampleFormat fmt)
- static void AudioConvertTo (CDynLib &dynlib, const float *input, uint8_t *payload, size_t nSpl, bigvoice_SampleFormat fmt)
- static void StereoToMono (CDynLib &dynlib, const float *input, float *output, size_t nFrame)
- static void MonoToStereo (CDynLib &dynlib, const float *input, float *output, size_t nFrame)
- static void StereoToMono_Planar (CDynLib &dynlib, const float *inputL, const float *inputR, float *output, size_t nFrame)
- static void MonoToStereo_Planar (CDynLib &dynlib, const float *input, float *outputL, float *outputR, size_t nFrame)
- static void AudioMonoFromLiveStereo (CDynLib &dynlib, const uint8_t *payload, float *output)
- static void AudioMonoToLiveStereo (CDynLib &dynlib, const float *input, uint8_t *payload)

13.4.1 Detailed Description

helper functions for unicode strings in Windows

13.4.2 Function Documentation

13.4.2.1 AudioConvertFrom()

```
static void sound4::bigvoice::dyn::helper::AudioConvertFrom (
            CDynLib & dynlib,
            const uint8_t * payload,
            float * output,
            size_t nSpl,
            bigvoice_SampleFormat fmt )  [inline], [static]
```

Convert the payload to floating-point array

Warning

Output buffer must be 64-byte aligned

Parameters

dynlib	the dynamic library
payload	the binary raw audio buffer
output	audio output buffer (64 byte aligned)
nSpl	the number of samples (not frames)
fmt	the format of the payload

Definition at line 611 of file sound4.bigvoice.cl_dyn.hpp.

13.4.2.2 AudioConvertTo()

```
static void sound4::bigvoice::dyn::helper::AudioConvertTo (
            CDynLib & dynlib,
            const float * input,
            uint8_t * payload,
            size_t nSpl,
            bigvoice_SampleFormat fmt )  [inline], [static]
```

Convert floating-point array to payload

Warning

Input buffer must be 64-byte aligned

Parameters

dynlib	the dynamic library

Parameters

input	audio input buffer (64 byte aligned)
payload	the binary raw audio buffer
nSpl	the number of samples (not frames)
fmt	the format of the payload

Definition at line 626 of file sound4.bigvoice.cl_dyn.hpp.

13.4.2.3 AudioMonoFromLiveStereo()

```
static void sound4::bigvoice::dyn::helper::AudioMonoFromLiveStereo (
            CDynLib & dynlib,
            const uint8_t * payload,
            float * output )  [inline], [static]
```

Convert Livewire Livestereo payload to floating-point Mono (12 samples)

Parameters

dynlib	the dynamic library
payload	Livewire Live Stereo raw buffer
output	audio output mono buffer (64 byte aligned)

Definition at line 695 of file sound4.bigvoice.cl_dyn.hpp.

13.4.2.4 AudioMonoToLiveStereo()

```
static void sound4::bigvoice::dyn::helper::AudioMonoToLiveStereo (
            CDynLib & dynlib,
            const float * input,
            uint8_t * payload )  [inline], [static]
```

Convert floating-point Mono (12 samples) to Livewire Livestereo payload

Parameters

dynlib	the dynamic library
input	audio input mono buffer (64 byte aligned)
payload	Livewire Live Stereo raw buffer

Definition at line 706 of file sound4.bigvoice.cl_dyn.hpp.

13.4.2.5 MonoToStereo()

```
static void sound4::bigvoice::dyn::helper::MonoToStereo (
            CDynLib & dynlib,
```

```
            const float * input,
            float * output,
            size_t nFrame )  [inline], [static]
```

Convert floating-point Mono to Stereo (L,L)

Warning

Buffers must be 64-byte aligned

Parameters

dynlib	the dynamic library
input	audio input mono buffer (64 byte aligned)
output	audio output stereo buffer (64 byte aligned)
nFrame	the number of frames

Definition at line 654 of file sound4.bigvoice.cl_dyn.hpp.

13.4.2.6 MonoToStereo_Planar()

```
static void sound4::bigvoice::dyn::helper::MonoToStereo_Planar (
            CDynLib & dynlib,
            const float * input,
            float * outputL,
            float * outputR,
            size_t nFrame )  [inline], [static]
```

Convert floating-point Mono to Stereo (planar) (L,L)

Warning

Buffers must be 64-byte aligned

Parameters

dynlib	the dynamic library
input	audio input mono buffer (64 byte aligned)
outputL	audio output left buffer (64 byte aligned)
outputR	audio output right buffer (64 byte aligned)
nFrame	the number of frames

Definition at line 684 of file sound4.bigvoice.cl_dyn.hpp.

13.4.2.7 StereoToMono()

```
static void sound4::bigvoice::dyn::helper::StereoToMono (
            CDynLib & dynlib,
```

```
            const float * input,
            float * output,
            size_t nFrame )  [inline], [static]
```

Convert floating-point Stereo to Mono (L+R)/2

Warning

Buffers must be 64-byte aligned

Parameters

dynlib	the dynamic library
input	audio input stereo buffer (64 byte aligned)
output	audio output mono buffer (64 byte aligned)
nFrame	the number of frames

Definition at line 640 of file sound4.bigvoice.cl_dyn.hpp.

13.4.2.8 StereoToMono_Planar()

```
static void sound4::bigvoice::dyn::helper::StereoToMono_Planar (
            CDynLib & dynlib,
            const float * inputL,
            const float * inputR,
            float * output,
            size_t nFrame )  [inline], [static]
```

Convert floating-point Stereo (planar) to Mono (L+R)/2

Warning

Buffers must be 64-byte aligned

Parameters

dynlib	the dynamic library
inputL	audio input left buffer (64 byte aligned)
inputR	audio input right buffer (64 byte aligned)
output	audio output mono buffer (64 byte aligned)
nFrame	the number of frames

Definition at line 669 of file sound4.bigvoice.cl_dyn.hpp.

13.4.2.9 UTF8ToWString()

```
static std::wstring sound4::bigvoice::dyn::helper::UTF8ToWString (
            const std::string & str )  [inline], [static]
```

Helper to convert a std::string (UTF8) to a std::wstring for Windows

Attention

For Windows only

Definition at line 569 of file sound4.bigvoice.cl_dyn.hpp.

13.4.2.10 WStringToUTF8()

```
static std::string sound4::bigvoice::dyn::helper::WStringToUTF8 (
            const std::wstring & wstr )  [inline], [static]
```

Helper to convert a std::wstring to a std::string (UTF8) for Windows

Attention

For Windows only

Definition at line 557 of file sound4.bigvoice.cl_dyn.hpp.

13.5 sound4::bigvoice::helper Namespace Reference

Classes

- struct SampleFormat

  Helper for Sample format types.
- struct **SampleFormat**< **float** >
- struct **SampleFormat**< **int16_t** >
- struct **SampleFormat**< **int32_t** >

Functions

- static std::string WStringToUTF8 (const std::wstring &wstr)
- static std::wstring UTF8ToWString (const std::string &str)
- static void AudioConvertFrom (const uint8_t ∗payload, float ∗output, size_t nSpl, bigvoice_SampleFormat fmt)
- static void AudioConvertTo (const float ∗input, uint8_t ∗payload, size_t nSpl, bigvoice_SampleFormat fmt)
- static void StereoToMono (const float ∗input, float ∗output, size_t nFrame)
- static void MonoToStereo (const float ∗input, float ∗output, size_t nFrame)
- static void StereoToMono_Planar (const float ∗inputL, const float ∗inputR, float ∗output, size_t nFrame)
- static void MonoToStereo_Planar (const float ∗input, float ∗outputL, float ∗outputR, size_t nFrame)
- static void AudioMonoFromLiveStereo (const uint8_t ∗payload, float ∗output)
- static void AudioMonoToLiveStereo (const float ∗input, uint8_t ∗payload)

13.5.1 Detailed Description

helper functions for unicode strings in Windows

13.5.2 Function Documentation

13.5.2.1 AudioConvertFrom()

```
static void sound4::bigvoice::helper::AudioConvertFrom (
            const uint8_t * payload,
            float * output,
            size_t nSpl,
            bigvoice_SampleFormat fmt )  [inline], [static]
```

Convert the payload to floating-point array

Warning

Output buffer must be 64-byte aligned

Parameters

payload	the binary raw audio buffer
output	audio output buffer (64 byte aligned)
nSpl	the number of samples (not frames)
fmt	the format of the payload

Definition at line 158 of file sound4.bigvoice.cl.hpp.

13.5.2.2 AudioConvertTo()

```
static void sound4::bigvoice::helper::AudioConvertTo (
            const float * input,
            uint8_t * payload,
            size_t nSpl,
            bigvoice_SampleFormat fmt )  [inline], [static]
```

Convert floating-point array to payload

Warning

Input buffer must be 64-byte aligned

Parameters

input	audio input buffer (64 byte aligned)
payload	the binary raw audio buffer
nSpl	the number of samples (not frames)
fmt	the format of the payload

Definition at line 172 of file sound4.bigvoice.cl.hpp.

13.5.2.3 AudioMonoFromLiveStereo()

```
static void sound4::bigvoice::helper::AudioMonoFromLiveStereo (
            const uint8_t * payload,
            float * output )  [inline], [static]
```

Convert Livewire Livestereo payload to floating-point Mono (12 samples)

Parameters

payload	Livewire Live Stereo raw buffer
output	audio output mono buffer (64 byte aligned)

Definition at line 236 of file sound4.bigvoice.cl.hpp.

13.5.2.4 AudioMonoToLiveStereo()

```
static void sound4::bigvoice::helper::AudioMonoToLiveStereo (
            const float * input,
            uint8_t * payload )  [inline], [static]
```

Convert floating-point Mono (12 samples) to Livewire Livestereo payload

Parameters

input	audio input mono buffer (64 byte aligned)
payload	Livewire Live Stereo raw buffer

Definition at line 246 of file sound4.bigvoice.cl.hpp.

13.5.2.5 MonoToStereo()

```
static void sound4::bigvoice::helper::MonoToStereo (
            const float * input,
            float * output,
            size_t nFrame )  [inline], [static]
```

Convert floating-point Mono to Stereo (L,L)

Warning

Buffers must be 64-byte aligned

Parameters

input	audio input mono buffer (64 byte aligned)
output	audio output stereo buffer (64 byte aligned)
nFrame	the number of frames

Definition at line 198 of file sound4.bigvoice.cl.hpp.

13.5.2.6 MonoToStereo_Planar()

```
static void sound4::bigvoice::helper::MonoToStereo_Planar (
            const float * input,
            float * outputL,
            float * outputR,
            size_t nFrame )  [inline], [static]
```

Convert floating-point Mono to Stereo (planar) (L,L)

Warning

Buffers must be 64-byte aligned

Parameters

input	audio input mono buffer (64 byte aligned)
outputL	audio output left buffer (64 byte aligned)
outputR	audio output right buffer (64 byte aligned)
nFrame	the number of frames

Definition at line 226 of file sound4.bigvoice.cl.hpp.

13.5.2.7 StereoToMono()

```
static void sound4::bigvoice::helper::StereoToMono (
            const float * input,
            float * output,
            size_t nFrame )  [inline], [static]
```

Convert floating-point Stereo to Mono (L+R)/2

Warning

Buffers must be 64-byte aligned

Parameters

input	audio input stereo buffer (64 byte aligned)
output	audio output mono buffer (64 byte aligned)
nFrame	the number of frames

Definition at line 185 of file sound4.bigvoice.cl.hpp.

13.5.2.8 StereoToMono_Planar()

```
static void sound4::bigvoice::helper::StereoToMono_Planar (
            const float * inputL,
            const float * inputR,
            float * output,
            size_t nFrame )  [inline], [static]
```

Convert floating-point Stereo (planar) to Mono (L+R)/2

Warning

Buffers must be 64-byte aligned

Parameters

inputL	audio input left buffer (64 byte aligned)
inputR	audio input right buffer (64 byte aligned)
output	audio output mono buffer (64 byte aligned)
nFrame	the number of frames

Definition at line 212 of file sound4.bigvoice.cl.hpp.

13.5.2.9 UTF8ToWString()

```
static std::wstring sound4::bigvoice::helper::UTF8ToWString (
            const std::string & str )  [inline], [static]
```

Helper to convert a std::string (UTF8) to a std::wstring for Windows

Attention

For Windows only

Definition at line 117 of file sound4.bigvoice.cl.hpp.

13.5.2.10 WStringToUTF8()

```
static std::string sound4::bigvoice::helper::WStringToUTF8 (
            const std::wstring & wstr )  [inline], [static]
```

Helper to convert a std::wstring to a std::string (UTF8) for Windows

Attention

For Windows only

Definition at line 105 of file sound4.bigvoice.cl.hpp.

13.6 sound4::helper Namespace Reference

Classes

- class CDynLoader

  Helper to load dynamic library.
- class DynFuncHolder

  Helper to wrap a function pointer.
- struct SampleFormat

  Helper for Sample format types.
- struct **SampleFormat**< **float** >
- struct **SampleFormat**< **int16_t** >
- struct **SampleFormat**< **int32_t** >

Functions

- static std::string WStringToUTF8 (const std::wstring &wstr)
- static std::wstring UTF8ToWString (const std::string &str)

13.6.1 Detailed Description

helper functions for unicode strings in Windows

13.6.2 Function Documentation

13.6.2.1 UTF8ToWString()

```
static std::wstring sound4::helper::UTF8ToWString (
            const std::string & str )  [inline], [static]
```

Helper to convert a std::string (UTF8) to a std::wstring for Windows

Attention

For Windows only

Definition at line 98 of file sound4cl.hpp.

13.6.2.2 WStringToUTF8()

```
static std::string sound4::helper::WStringToUTF8 (
            const std::wstring & wstr )  [inline], [static]
```

Helper to convert a std::wstring to a std::string (UTF8) for Windows

Attention

For Windows only

Definition at line 86 of file sound4cl.hpp.

Chapter 14

Class Documentation

14.1 sound4::AuxiliaryOutputInfos Struct Reference

```
#include <sound4.bigvoice.cl.hpp>
```

Public Attributes

- std::string id

  The ID of the output (fixed across versions)
- std::string description

  The description of the output.
- unsigned int sample_rate

  The sampling rate of this output.
- unsigned int channel_count

  The number of channels of this output.
- const float * buffer

  The output buffer of the output. See sound4::bigvoice::CInstance::ProcessAudio for format.

14.1.1 Detailed Description

Definition at line 50 of file sound4.bigvoice.cl.hpp.

14.1.2 Member Data Documentation

14.1.2.1 buffer

```
const float* sound4::AuxiliaryOutputInfos::buffer
```

Definition at line 55 of file sound4.bigvoice.cl.hpp.

14.1.2.2 channel_count

```
unsigned int sound4::AuxiliaryOutputInfos::channel_count
```

Definition at line 54 of file sound4.bigvoice.cl.hpp.

14.1.2.3 description

```
std::string sound4::AuxiliaryOutputInfos::description
```

Definition at line 52 of file sound4.bigvoice.cl.hpp.

14.1.2.4 id

```
std::string sound4::AuxiliaryOutputInfos::id
```

Definition at line 51 of file sound4.bigvoice.cl.hpp.

14.1.2.5 sample_rate

```
unsigned int sound4::AuxiliaryOutputInfos::sample_rate
```

Definition at line 53 of file sound4.bigvoice.cl.hpp.

The documentation for this struct was generated from the following file:

- sound4.bigvoice.cl.hpp

14.2 bigvoice_CAudioConverter Struct Reference

```
#include <sound4.bigvoice.cl.h>
```

14.2.1 Detailed Description

Abstract holder for an audio conveerter

See also

bigvoice_GetAudioConverter

The documentation for this struct was generated from the following file:

- sound4.bigvoice.cl.h

14.3 bigvoice_CBus Struct Reference

```
#include <sound4.bigvoice.cl.h>
```

14.3.1 Detailed Description

Abstract holder for a instances' bus

The documentation for this struct was generated from the following file:

- sound4.bigvoice.cl.h

14.4 bigvoice_CClientInstance Struct Reference

```
#include <sound4.bigvoice.cl.h>
```

14.4.1 Detailed Description

Abstract pointer for a client instance

The documentation for this struct was generated from the following file:

- sound4.bigvoice.cl.h

14.5 bigvoice_CInstance Struct Reference

```
#include <sound4.bigvoice.cl.h>
```

14.5.1 Detailed Description

Abstract holder for a process instance

The documentation for this struct was generated from the following file:

- sound4.bigvoice.cl.h

14.6 bigvoice_CParameters Struct Reference

```
#include <sound4.bigvoice.cl.h>
```

14.6.1 Detailed Description

Abstract holder for a process instance parameters

The documentation for this struct was generated from the following file:

- sound4.bigvoice.cl.h

14.7 sound4::bigvoice::CAudioConverter Class Reference

Audio converter helper.

```
#include <sound4.bigvoice.cl.hpp>
```

Public Member Functions

- CAudioConverter ()=default

  Construct a new empty CAudioConverter object.
- virtual ~CAudioConverter ()

  Destroy the CAudioConverter object.
- bool Configure (SampleFormat fmt, size_t nFrame, size_t payl_ch, size_t payl_ch_offset, bigvoice_ConverterTargetMode target_mode)
- void Delete ()
- bool IsOK () const
- void ConvertFrom (const uint8_t *payload, float *output)
- void ConvertTo (const float *input, uint8_t *payload)

14.7.1 Detailed Description

This helps to extract/insert a subset of channels from/to the payload, and convert it to floating-point format.

Definition at line 1108 of file sound4.bigvoice.cl.hpp.

14.7.2 Constructor & Destructor Documentation

14.7.2.1 CAudioConverter()

```
sound4::bigvoice::CAudioConverter::CAudioConverter ( ) [default]
```

14.7.2.2 ~CAudioConverter()

```
virtual sound4::bigvoice::CAudioConverter::~CAudioConverter ( ) [inline], [virtual]
```

Definition at line 1118 of file sound4.bigvoice.cl.hpp.

14.7.3 Member Function Documentation

14.7.3.1 Configure()

```
bool sound4::bigvoice::CAudioConverter::Configure (
            SampleFormat fmt,
            size_t nFrame,
            size_t payl_ch,
            size_t payl_ch_offset,
            bigvoice_ConverterTargetMode target_mode )  [inline]
```

Prepare an audio converter for extract/insert and convert.

The floating-point channels count depends on `target_mode`. It can be the same as payload, or fixed to mono or stereo.

Parameters

fmt	the format of the payload
nFrame	the number of frames per packet
payl_ch	the number of channels in the payload
payl_ch_offset	the offset of the first channel to extract/insert in the payload [must be <= (payl_ch-proc_ch)]
target_mode	defines the number of channels in process, and the number of channels to extract from payload for mono<->stereo conversion

Returns

true if was created

Note

The converter is not multithread-safe, it uses internal cache buffers.

Definition at line 1138 of file sound4.bigvoice.cl.hpp.

14.7.3.2 ConvertFrom()

```
void sound4::bigvoice::CAudioConverter::ConvertFrom (
            const uint8_t * payload,
            float * output )  [inline]
```

Convert the payload to floating-point array, using a predefined converter.

Warning

Output buffer must be 64-byte aligned

Parameters

payload	the binary raw audio buffer
output	audio output buffer (64 byte aligned)

Definition at line 1161 of file sound4.bigvoice.cl.hpp.

14.7.3.3 ConvertTo()

```
void sound4::bigvoice::CAudioConverter::ConvertTo (
            const float * input,
            uint8_t * payload )  [inline]
```

Convert floating-point array to payload, using a predefined converter.

Warning

Input buffer must be 64-byte aligned

Parameters

input	audio input buffer (64 byte aligned)
payload	the binary raw audio buffer

Definition at line 1172 of file sound4.bigvoice.cl.hpp.

14.7.3.4 Delete()

```
void sound4::bigvoice::CAudioConverter::Delete ( )  [inline]
```

Definition at line 1144 of file sound4.bigvoice.cl.hpp.

14.7.3.5 IsOK()

```
bool sound4::bigvoice::CAudioConverter::IsOK ( ) const  [inline]
```

Definition at line 1151 of file sound4.bigvoice.cl.hpp.

The documentation for this class was generated from the following file:

- sound4.bigvoice.cl.hpp

14.8 sound4::bigvoice::dyn::CAudioConverter Class Reference

Audio converter helper.

```
#include <sound4.bigvoice.cl_dyn.hpp>
```

Public Member Functions

- CAudioConverter (CDynLib &dynlib)

  Construct a new empty CAudioConverter object.
- virtual ~CAudioConverter ()

  Destroy the CAudioConverter object.
- bool Configure (SampleFormat fmt, size_t nFrame, size_t payl_ch, size_t payl_ch_offset, bigvoice_ConverterTargetMode target_mode)
- void Delete ()
- bool IsOK () const
- void ConvertFrom (const uint8_t *payload, float *output)
- void ConvertTo (const float *input, uint8_t *payload)

14.8.1 Detailed Description

This helps to extract/insert a subset of channels from/to the payload, and convert it to floating-point format.

Definition at line 1595 of file sound4.bigvoice.cl_dyn.hpp.

14.8.2 Constructor & Destructor Documentation

14.8.2.1 CAudioConverter()

```
sound4::bigvoice::dyn::CAudioConverter::CAudioConverter (
            CDynLib & dynlib )  [inline]
```

Parameters

dynlib	the processor dynamic library

Definition at line 1602 of file sound4.bigvoice.cl_dyn.hpp.

14.8.2.2 ~CAudioConverter()

```
virtual sound4::bigvoice::dyn::CAudioConverter::~CAudioConverter ( )  [inline], [virtual]
```

Definition at line 1609 of file sound4.bigvoice.cl_dyn.hpp.

14.8.3 Member Function Documentation

14.8.3.1 Configure()

```
bool sound4::bigvoice::dyn::CAudioConverter::Configure (
            SampleFormat fmt,
            size_t nFrame,
            size_t payl_ch,
```

```
size_t payl_ch_offset,
bigvoice_ConverterTargetMode target_mode )  [inline]
```

Prepare an audio converter for extract/insert and convert.

The floating-point channels count depends on `target_mode`. It can be the same as payload, or fixed to mono or stereo.

Parameters

fmt	the format of the payload
nFrame	the number of frames per packet
payl_ch	the number of channels in the payload
payl_ch_offset	the offset of the first channel to extract/insert in the payload [must be <= (payload_channels-output_channels)]
target_mode	defines the number of channels in process, and the number of channels to extract from payload for mono<->stereo conversion

Returns

true if was created

Note

The converter is not multithread-safe, it uses internal cache buffers.

Definition at line 1629 of file sound4.bigvoice.cl_dyn.hpp.

14.8.3.2 ConvertFrom()

```
void sound4::bigvoice::dyn::CAudioConverter::ConvertFrom (
            const uint8_t * payload,
            float * output )  [inline]
```

Convert the payload to floating-point array, using a predefined converter.

Warning

Output buffer must be 64-byte aligned

Parameters

payload	the binary raw audio buffer
output	audio output buffer (64 byte aligned)

Definition at line 1653 of file sound4.bigvoice.cl_dyn.hpp.

14.8.3.3 ConvertTo()

```
void sound4::bigvoice::dyn::CAudioConverter::ConvertTo (
            const float * input,
            uint8_t * payload )  [inline]
```

Convert floating-point array to payload, using a predefined converter.

Warning

Input buffer must be 64-byte aligned

Parameters

input	audio input buffer (64 byte aligned)
payload	the binary raw audio buffer

Definition at line 1664 of file sound4.bigvoice.cl_dyn.hpp.

14.8.3.4 Delete()

```
void sound4::bigvoice::dyn::CAudioConverter::Delete ( ) [inline]
```

Definition at line 1636 of file sound4.bigvoice.cl_dyn.hpp.

14.8.3.5 IsOK()

```
bool sound4::bigvoice::dyn::CAudioConverter::IsOK ( ) const [inline]
```

Definition at line 1643 of file sound4.bigvoice.cl_dyn.hpp.

The documentation for this class was generated from the following file:

- sound4.bigvoice.cl_dyn.hpp

14.9 sound4::CAudioConverter Class Reference

Audio converter helper.

```
#include <sound4cl.hpp>
```

Public Member Functions

- CAudioConverter (CProcessor &dynlib)

  Construct a new empty CAudioConverter object.
- virtual ~CAudioConverter ()

  Destroy the CAudioConverter object.
- bool Configure (SampleFormat fmt, size_t nFrame, size_t payl_ch, size_t payl_ch_offset, ConverterTargetMode target_mode)
- void Delete ()
- bool IsOK () const
- void ConvertFrom (const uint8_t *payload, float *output)
- void ConvertTo (const float *input, uint8_t *payload)

14.9.1 Detailed Description

This helps to extract/insert a subset of channels from/to the payload, and convert it to floating-point format.

Definition at line 1591 of file sound4cl.hpp.

14.9.2 Constructor & Destructor Documentation

14.9.2.1 CAudioConverter()

```
sound4::CAudioConverter::CAudioConverter (
            CProcessor & dynlib ) [inline]
```

Parameters

dynlib	the processor dynamic library

Definition at line 1598 of file sound4cl.hpp.

14.9.2.2 ~CAudioConverter()

```
virtual sound4::CAudioConverter::~CAudioConverter ( ) [inline], [virtual]
```

Definition at line 1605 of file sound4cl.hpp.

14.9.3 Member Function Documentation

14.9.3.1 Configure()

```
bool sound4::CAudioConverter::Configure (
            SampleFormat fmt,
            size_t nFrame,
            size_t payl_ch,
            size_t payl_ch_offset,
            ConverterTargetMode target_mode ) [inline]
```

Configure the converter.

The floating-point channels count depends on `target_mode`. It can be the same as payload, or fixed to mono or stereo.

Parameters

fmt	the format of the payload
nFrame	the number of frames per packet
payl_ch	the number of channels in the payload
payl_ch_offset	the offset of the first channel to extract/insert in the payload [must be <= (payload_channels-output_channels)]
target_mode	defines the number of channels in process, and the number of channels to extract from payload for mono<->stereo conversion

Returns

true if was created

Note

The converter is not multithread-safe, it uses internal cache buffers.

Definition at line 1625 of file sound4cl.hpp.

14.9.3.2 ConvertFrom()

```
void sound4::CAudioConverter::ConvertFrom (
            const uint8_t * payload,
            float * output )  [inline]
```

Convert the payload to floating-point array, using a predefined converter.

Warning

Output buffer must be 64-byte aligned

Parameters

payload	the binary raw audio buffer
output	audio output buffer (64 byte aligned)

Definition at line 1649 of file sound4cl.hpp.

14.9.3.3 ConvertTo()

```
void sound4::CAudioConverter::ConvertTo (
            const float * input,
            uint8_t * payload )  [inline]
```

Convert floating-point array to payload, using a predefined converter.

Warning

Input buffer must be 64-byte aligned

Parameters

input	audio input buffer (64 byte aligned)
payload	the binary raw audio buffer

Definition at line 1660 of file sound4cl.hpp.

14.9.3.4 Delete()

```
void sound4::CAudioConverter::Delete ( )  [inline]
```

Definition at line 1632 of file sound4cl.hpp.

14.9.3.5 IsOK()

```
bool sound4::CAudioConverter::IsOK ( ) const  [inline]
```

Definition at line 1639 of file sound4cl.hpp.

The documentation for this class was generated from the following file:

- sound4cl.hpp

14.10 sound4::bigvoice::CBus Class Reference

Shared Bus.

```
#include <sound4.bigvoice.cl.hpp>
```

Public Member Functions

- CBus ()
- ~CBus ()
- bigvoice_CBus * Get () const

14.10.1 Detailed Description

Some processor can share a bus for realtime data exchange

Definition at line 438 of file sound4.bigvoice.cl.hpp.

14.10.2 Constructor & Destructor Documentation

14.10.2.1 CBus()

```
sound4::bigvoice::CBus::CBus ( )  [inline]
```

Definition at line 440 of file sound4.bigvoice.cl.hpp.

14.10.2.2 ~CBus()

```
sound4::bigvoice::CBus::~CBus ( )  [inline]
```

Definition at line 442 of file sound4.bigvoice.cl.hpp.

14.10.3 Member Function Documentation

14.10.3.1 Get()

```
bigvoice_CBus * sound4::bigvoice::CBus::Get ( ) const  [inline]
```

Definition at line 447 of file sound4.bigvoice.cl.hpp.

The documentation for this class was generated from the following file:

- sound4.bigvoice.cl.hpp

14.11 sound4::bigvoice::dyn::CBus Class Reference

Shared Bus.

```
#include <sound4.bigvoice.cl_dyn.hpp>
```

Public Member Functions

- CBus (CDynLib &dynlib)
- ~CBus ()
- bigvoice_CBus * Get () const

14.11.1 Detailed Description

Some processor can share a bus for realtime data exchange

Definition at line 914 of file sound4.bigvoice.cl_dyn.hpp.

14.11.2 Constructor & Destructor Documentation

14.11.2.1 CBus()

```
sound4::bigvoice::dyn::CBus::CBus (
            CDynLib & dynlib )  [inline]
```

Definition at line 916 of file sound4.bigvoice.cl_dyn.hpp.

14.11.2.2 ~CBus()

```
sound4::bigvoice::dyn::CBus::~CBus ( )  [inline]
```

Definition at line 923 of file sound4.bigvoice.cl_dyn.hpp.

14.11.3 Member Function Documentation

14.11.3.1 Get()

```
bigvoice_CBus * sound4::bigvoice::dyn::CBus::Get ( ) const  [inline]
```

Definition at line 930 of file sound4.bigvoice.cl_dyn.hpp.

The documentation for this class was generated from the following file:

- sound4.bigvoice.cl_dyn.hpp

14.12 sound4::CBus Class Reference

Shared Bus.

```
#include <sound4cl.hpp>
```

Public Member Functions

- CBus (CProcessor &dynlib)
- ~CBus ()

Protected Member Functions

- sound4cl_CBus * Get () const

Friends

- class CInstance

14.12.1 Detailed Description

Some processor can share a bus for realtime data exchange

Definition at line 871 of file sound4cl.hpp.

14.12.2 Constructor & Destructor Documentation

14.12.2.1 CBus()

```
sound4::CBus::CBus (
            CProcessor & dynlib )  [inline]
```

Definition at line 873 of file sound4cl.hpp.

14.12.2.2 ~CBus()

```
sound4::CBus::~CBus ( ) [inline]
```

Definition at line 880 of file sound4cl.hpp.

14.12.3 Member Function Documentation

14.12.3.1 Get()

```
sound4cl_CBus * sound4::CBus::Get ( ) const [inline], [protected]
```

Definition at line 889 of file sound4cl.hpp.

14.12.4 Friends And Related Symbol Documentation

14.12.4.1 CInstance

```
friend class CInstance [friend]
```

Definition at line 888 of file sound4cl.hpp.

The documentation for this class was generated from the following file:

- sound4cl.hpp

14.13 sound4::bigvoice::CInstance::CClient Class Reference

```
#include <sound4.bigvoice.cl.hpp>
```

Public Member Functions

- CClient (bigvoice_CInstance *instance)
- CClient (const CInstance &)=delete
- CClient & operator= (const CInstance &)=delete
- ~CClient ()
- std::string ProcessJson (const std::string &request, bool *NeedSave=nullptr)

  Process a JSON request and returns the answer.

14.13.1 Detailed Description

Low-level JSON client.

See also JSON syntax

Definition at line 986 of file sound4.bigvoice.cl.hpp.

14.13.2 Constructor & Destructor Documentation

14.13.2.1 CClient() [1/2]

```
sound4::bigvoice::CInstance::CClient::CClient (
            bigvoice_CInstance * instance )  [inline]
```

Definition at line 988 of file sound4.bigvoice.cl.hpp.

14.13.2.2 CClient() [2/2]

```
sound4::bigvoice::CInstance::CClient::CClient (
            const CInstance &  )  [delete]
```

14.13.2.3 ~CClient()

```
sound4::bigvoice::CInstance::CClient::~CClient ( )  [inline]
```

Definition at line 997 of file sound4.bigvoice.cl.hpp.

14.13.3 Member Function Documentation

14.13.3.1 operator=()

```
CClient & sound4::bigvoice::CInstance::CClient::operator= (
            const CInstance &  )  [delete]
```

14.13.3.2 ProcessJson()

```
std::string sound4::bigvoice::CInstance::CClient::ProcessJson (
            const std::string & request,
            bool * NeedSave = nullptr )  [inline]
```

Parameters

request	the JSON request. See also JSON syntax
NeedSave	if non null, returns if the saving is required (maybe delayed)

Returns

the JSON answer

Definition at line 1011 of file sound4.bigvoice.cl.hpp.

The documentation for this class was generated from the following file:

- sound4.bigvoice.cl.hpp

14.14 sound4::bigvoice::dyn::CInstance::CClient Class Reference

```
#include <sound4.bigvoice.cl_dyn.hpp>
```

Public Member Functions

- CClient (bigvoice_CInstance *instance, CDynLib &dynlib)
- CClient (const CInstance &)=delete
- CClient & operator= (const CInstance &)=delete
- ~CClient ()
- std::string ProcessJson (const std::string &request, bool *NeedSave=nullptr)

  Process a JSON request and returns the answer.

14.14.1 Detailed Description

Low-level JSON client.

See also JSON syntax

Definition at line 1466 of file sound4.bigvoice.cl_dyn.hpp.

14.14.2 Constructor & Destructor Documentation

14.14.2.1 CClient() [1/2]

```
sound4::bigvoice::dyn::CInstance::CClient::CClient (
            bigvoice_CInstance * instance,
            CDynLib & dynlib )  [inline]
```

Definition at line 1468 of file sound4.bigvoice.cl_dyn.hpp.

14.14.2.2 CClient() [2/2]

```
sound4::bigvoice::dyn::CInstance::CClient::CClient (
            const CInstance &  )  [delete]
```

14.14.2.3 ~CClient()

```
sound4::bigvoice::dyn::CInstance::CClient::~CClient ( )  [inline]
```

Definition at line 1478 of file sound4.bigvoice.cl_dyn.hpp.

14.14.3 Member Function Documentation

14.14.3.1 operator=()

```
CClient & sound4::bigvoice::dyn::CInstance::CClient::operator= (
            const CInstance &  )  [delete]
```

14.14.3.2 ProcessJson()

```
std::string sound4::bigvoice::dyn::CInstance::CClient::ProcessJson (
            const std::string & request,
            bool * NeedSave = nullptr )  [inline]
```

Parameters

request	the JSON request. See also JSON syntax
NeedSave	if non null, returns if the saving is required (maybe delayed)

Returns

the JSON answer

Definition at line 1492 of file sound4.bigvoice.cl_dyn.hpp.

The documentation for this class was generated from the following file:

- sound4.bigvoice.cl_dyn.hpp

14.15 sound4::CInstance::CClient Class Reference

```
#include <sound4cl.hpp>
```

Public Member Functions

- CClient (sound4cl_CInstance ∗instance, CProcessor &dynlib)
- CClient (const CInstance &)=delete
- CClient & operator= (const CInstance &)=delete
- ∼CClient ()
- std::string ProcessJson (const std::string &request, bool ∗NeedSave=nullptr)

  Process a JSON request and returns the answer.

14.15.1 Detailed Description

Low-level JSON client.

See also JSON syntax

Definition at line 1447 of file sound4cl.hpp.

14.15.2 Constructor & Destructor Documentation

14.15.2.1 CClient() [1/2]

```
sound4::CInstance::CClient::CClient (
            sound4cl_CInstance * instance,
            CProcessor & dynlib )  [inline]
```

Definition at line 1449 of file sound4cl.hpp.

14.15.2.2 CClient() [2/2]

```
sound4::CInstance::CClient::CClient (
            const CInstance &  )  [delete]
```

14.15.2.3 ~CClient()

```
sound4::CInstance::CClient::~CClient ( )  [inline]
```

Definition at line 1459 of file sound4cl.hpp.

14.15.3 Member Function Documentation

14.15.3.1 operator=()

```
CClient & sound4::CInstance::CClient::operator= (
            const CInstance &  )  [delete]
```

14.15.3.2 ProcessJson()

```
std::string sound4::CInstance::CClient::ProcessJson (
            const std::string & request,
            bool * NeedSave = nullptr )  [inline]
```

Parameters

request	the JSON request. See also JSON syntax
NeedSave	if non null, returns if the saving is required (maybe delayed)

Returns

the JSON answer

Definition at line 1473 of file sound4cl.hpp.

The documentation for this class was generated from the following file:

- sound4cl.hpp

14.16 sound4::bigvoice::dyn::CDynLib Class Reference

Dynamic library interface.

```
#include <sound4.bigvoice.cl_dyn.hpp>
```

Public Member Functions

- CDynLib ()=default
- bool Load (const std::filesystem::path &path={})

  Loads the library.
- bool IsOk () const

  Check if the library was loaded correctly.

Public Attributes

- helper::DynFuncHolder< decltype(bigvoice_GetVersion) > GetVersion
- helper::DynFuncHolder< decltype(bigvoice_GetChunkSizeInFrames) > GetChunkSizeInFrames
- helper::DynFuncHolder< decltype(bigvoice_GetChannelCount) > GetChannelCount
- helper::DynFuncHolder< decltype(bigvoice_GetAudioInputCount) > GetAudioInputCount
- helper::DynFuncHolder< decltype(bigvoice_GetAudioOutputCount) > GetAudioOutputCount
- helper::DynFuncHolder< decltype(bigvoice_GetSampleRate) > GetSampleRate
- helper::DynFuncHolder< decltype(bigvoice_SetLoggerCallback) > SetLoggerCallback
- helper::DynFuncHolder< decltype(bigvoice_SetLogSeverity) > SetLogSeverity
- helper::DynFuncHolder< decltype(bigvoice_NewParameters) > NewParameters
- helper::DynFuncHolder< decltype(bigvoice_FreeParameters) > FreeParameters
- helper::DynFuncHolder< decltype(bigvoice_SetParameter) > SetParameter
- helper::DynFuncHolder< decltype(bigvoice_GetParameter) > GetParameter
- helper::DynFuncHolder< decltype(bigvoice_FreeParameterValue) > FreeParameterValue
- helper::DynFuncHolder< decltype(bigvoice_InitProcess) > InitProcess
- helper::DynFuncHolder< decltype(bigvoice_InitProcess2) > InitProcess2
- helper::DynFuncHolder< decltype(bigvoice_TerminateProcess) > TerminateProcess
- helper::DynFuncHolder< decltype(bigvoice_ExitProcess) > ExitProcess
- helper::DynFuncHolder< decltype(bigvoice_StartUpdateThread) > StartUpdateThread
- helper::DynFuncHolder< decltype(bigvoice_StopUpdateThread) > StopUpdateThread
- helper::DynFuncHolder< decltype(bigvoice_WaitUpdateThreadReady) > WaitUpdateThreadReady
- helper::DynFuncHolder< decltype(bigvoice_ProcessAudio) > ProcessAudio
- helper::DynFuncHolder< decltype(bigvoice_ProcessAudio_Planar) > ProcessAudio_Planar
- helper::DynFuncHolder< decltype(bigvoice_GetBufferIn) > GetBufferIn
- helper::DynFuncHolder< decltype(bigvoice_GetBufferOut) > GetBufferOut
- helper::DynFuncHolder< decltype(bigvoice_GetEstimatedDelay) > GetEstimatedDelay
- helper::DynFuncHolder< decltype(bigvoice_GetFormatName) > GetFormatName
- helper::DynFuncHolder< decltype(bigvoice_GetFormatFromName) > GetFormatFromName
- helper::DynFuncHolder< decltype(bigvoice_GetBytesFromFormat) > GetBytesFromFormat
- helper::DynFuncHolder< decltype(bigvoice_GetMaxPacketFrame) > GetMaxPacketFrame
- helper::DynFuncHolder< decltype(bigvoice_AddAudio) > AddAudio
- helper::DynFuncHolder< decltype(bigvoice_AddPadAudio) > AddPadAudio
- helper::DynFuncHolder< decltype(bigvoice_GetOutputCount) > GetOutputCount
- helper::DynFuncHolder< decltype(bigvoice_GetAudio) > GetAudio
- helper::DynFuncHolder< decltype(bigvoice_AudioConvertFrom) > AudioConvertFrom
- helper::DynFuncHolder< decltype(bigvoice_AudioConvertTo) > AudioConvertTo
- helper::DynFuncHolder< decltype(bigvoice_StereoToMono) > StereoToMono
- helper::DynFuncHolder< decltype(bigvoice_MonoToStereo) > MonoToStereo
- helper::DynFuncHolder< decltype(bigvoice_AudioMonoFromLiveStereo) > AudioMonoFromLiveStereo
- helper::DynFuncHolder< decltype(bigvoice_AudioMonoToLiveStereo) > AudioMonoToLiveStereo
- helper::DynFuncHolder< decltype(bigvoice_NewClient) > NewClient
- helper::DynFuncHolder< decltype(bigvoice_DeleteClient) > DeleteClient
- helper::DynFuncHolder< decltype(bigvoice_ProcessJson) > ProcessJson
- helper::DynFuncHolder< decltype(bigvoice_FreeJsonAnswer) > FreeJsonAnswer
- helper::DynFuncHolder< decltype(bigvoice_SaveState) > SaveState

- helper::DynFuncHolder< decltype(bigvoice_Webserver_tcp) > Webserver_tcp
- helper::DynFuncHolder< decltype(bigvoice_Webserver_tcp2) > Webserver_tcp2
- helper::DynFuncHolder< decltype(bigvoice_Webserver) > Webserver
- helper::DynFuncHolder< decltype(bigvoice_Webserver_Stop) > Webserver_Stop
- helper::DynFuncHolder< decltype(bigvoice_Webserver_Status) > Webserver_Status
- helper::DynFuncHolder< decltype(bigvoice_StereoToMono_Planar) > StereoToMono_Planar
- helper::DynFuncHolder< decltype(bigvoice_MonoToStereo_Planar) > MonoToStereo_Planar
- helper::DynFuncHolder< decltype(bigvoice_SetMetadata) > SetMetadata
- helper::DynFuncHolder< decltype(bigvoice_GetMetadataInfos) > GetMetadataInfos
- helper::DynFuncHolder< decltype(bigvoice_FreeMetadataInfos) > FreeMetadataInfos
- helper::DynFuncHolder< decltype(bigvoice_SetPresetManager) > SetPresetManager
- helper::DynFuncHolder< decltype(bigvoice_PresetManager_InformChange) > PresetManager_InformChange
- helper::DynFuncHolder< decltype(bigvoice_GetPossibleChunkSizeInFrames) > GetPossibleChunkSizeInFrames
- helper::DynFuncHolder< decltype(bigvoice_GetProcessChunkFrames) > GetProcessChunkFrames
- helper::DynFuncHolder< decltype(bigvoice_InitProcess3) > InitProcess3
- helper::DynFuncHolder< decltype(bigvoice_NewBus) > NewBus
- helper::DynFuncHolder< decltype(bigvoice_FreeBus) > FreeBus
- helper::DynFuncHolder< decltype(bigvoice_SetInstanceBus) > SetInstanceBus
- helper::DynFuncHolder< decltype(bigvoice_SetMetadataMulti) > SetMetadataMulti
- helper::DynFuncHolder< decltype(bigvoice_Webserver_SetAppHealth) > Webserver_SetAppHealth
- helper::DynFuncHolder< decltype(bigvoice_Webserver_GetAppHealth) > Webserver_GetAppHealth
- helper::DynFuncHolder< decltype(bigvoice_Webserver_FreeString) > Webserver_FreeString
- helper::DynFuncHolder< decltype(bigvoice_SetInstanceTracing) > SetInstanceTracing
- helper::DynFuncHolder< decltype(bigvoice_SetInstanceTracingProcessActivity) > SetInstanceTracingProcessActivity
- helper::DynFuncHolder< decltype(bigvoice_GetAudioConverter) > GetAudioConverter
- helper::DynFuncHolder< decltype(bigvoice_FreeAudioConverter) > FreeAudioConverter
- helper::DynFuncHolder< decltype(bigvoice_AudioConverter_From) > AudioConverter_From
- helper::DynFuncHolder< decltype(bigvoice_AudioConverter_To) > AudioConverter_To

14.16.1 Detailed Description

Once you loaded the library with Load(), if it succeed you can use all the standard C functions from this library.

Definition at line 235 of file sound4.bigvoice.cl_dyn.hpp.

14.16.2 Constructor & Destructor Documentation

14.16.2.1 CDynLib()

```
sound4::bigvoice::dyn::CDynLib::CDynLib ( ) [default]
```

14.16.3 Member Function Documentation

14.16.3.1 IsOk()

```
bool sound4::bigvoice::dyn::CDynLib::IsOk ( ) const [inline]
```

Returns

true if OK.

false if not OK.

Definition at line 505 of file sound4.bigvoice.cl_dyn.hpp.

14.16.3.2 Load()

```
bool sound4::bigvoice::dyn::CDynLib::Load (
            const std::filesystem::path & path = {} )  [inline]
```

Parameters

path	the path of the library to load.

Returns

true if library was loaded correctly.

false if library load failed. Do not use in this case !

Definition at line 349 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4 Member Data Documentation

14.16.4.1 AddAudio

```
helper::DynFuncHolder< decltype(bigvoice_AddAudio ) > sound4::bigvoice::dyn::CDynLib::AddAudio
```

Definition at line 272 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.2 AddPadAudio

```
helper::DynFuncHolder< decltype(bigvoice_AddPadAudio ) > sound4::bigvoice::dyn::CDynLib::Add↩
PadAudio
```

Definition at line 273 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.3 AudioConverter_From

```
helper::DynFuncHolder< decltype(bigvoice_AudioConverter_From ) > sound4::bigvoice::dyn::CDyn↩
Lib::AudioConverter_From
```

Definition at line 339 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.4 AudioConverter_To

```
helper::DynFuncHolder< decltype(bigvoice_AudioConverter_To ) > sound4::bigvoice::dyn::CDyn↩
Lib::AudioConverter_To
```

Definition at line 340 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.5 AudioConvertFrom

```
helper::DynFuncHolder< decltype(bigvoice_AudioConvertFrom ) > sound4::bigvoice::dyn::CDynLib↩
::AudioConvertFrom
```

Definition at line 276 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.6 AudioConvertTo

```
helper::DynFuncHolder< decltype(bigvoice_AudioConvertTo ) > sound4::bigvoice::dyn::CDynLib::↩
AudioConvertTo
```

Definition at line 277 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.7 AudioMonoFromLiveStereo

```
helper::DynFuncHolder< decltype(bigvoice_AudioMonoFromLiveStereo) > sound4::bigvoice::dyn::↩
CDynLib::AudioMonoFromLiveStereo
```

Definition at line 280 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.8 AudioMonoToLiveStereo

```
helper::DynFuncHolder< decltype(bigvoice_AudioMonoToLiveStereo ) > sound4::bigvoice::dyn::↩
CDynLib::AudioMonoToLiveStereo
```

Definition at line 281 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.9 DeleteClient

```
helper::DynFuncHolder< decltype(bigvoice_DeleteClient ) > sound4::bigvoice::dyn::CDynLib::↩
DeleteClient
```

Definition at line 283 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.10 ExitProcess

```
helper::DynFuncHolder< decltype(bigvoice_ExitProcess ) > sound4::bigvoice::dyn::CDynLib::↩
ExitProcess
```

Definition at line 259 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.11 FreeAudioConverter

```
helper::DynFuncHolder< decltype(bigvoice_FreeAudioConverter ) > sound4::bigvoice::dyn::CDyn↩
Lib::FreeAudioConverter
```

Definition at line 338 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.12 FreeBus

```
helper::DynFuncHolder< decltype(bigvoice_FreeBus ) > sound4::bigvoice::dyn::CDynLib::FreeBus
```

Definition at line 316 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.13 FreeJsonAnswer

```
helper::DynFuncHolder< decltype(bigvoice_FreeJsonAnswer ) > sound4::bigvoice::dyn::CDynLib::↩
FreeJsonAnswer
```

Definition at line 285 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.14 FreeMetadataInfos

```
helper::DynFuncHolder< decltype(bigvoice_FreeMetadataInfos ) > sound4::bigvoice::dyn::CDyn↩
Lib::FreeMetadataInfos
```

Definition at line 302 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.15 FreeParameters

```
helper::DynFuncHolder< decltype(bigvoice_FreeParameters ) > sound4::bigvoice::dyn::CDynLib::↩
FreeParameters
```

Definition at line 252 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.16 FreeParameterValue

```
helper::DynFuncHolder< decltype(bigvoice_FreeParameterValue ) > sound4::bigvoice::dyn::CDyn↩
Lib::FreeParameterValue
```

Definition at line 255 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.17 GetAudio

```
helper::DynFuncHolder< decltype(bigvoice_GetAudio ) > sound4::bigvoice::dyn::CDynLib::GetAudio
```

Definition at line 275 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.18 GetAudioConverter

```
helper::DynFuncHolder< decltype(bigvoice_GetAudioConverter ) > sound4::bigvoice::dyn::CDyn↩
Lib::GetAudioConverter
```

Definition at line 337 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.19 GetAudioInputCount

```
helper::DynFuncHolder< decltype(bigvoice_GetAudioInputCount ) > sound4::bigvoice::dyn::CDyn↩
Lib::GetAudioInputCount
```

Definition at line 246 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.20 GetAudioOutputCount

```
helper::DynFuncHolder< decltype(bigvoice_GetAudioOutputCount ) > sound4::bigvoice::dyn::CDyn↩
Lib::GetAudioOutputCount
```

Definition at line 247 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.21 GetBufferIn

```
helper::DynFuncHolder< decltype(bigvoice_GetBufferIn ) > sound4::bigvoice::dyn::CDynLib::Get↩
BufferIn
```

Definition at line 265 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.22 GetBufferOut

```
helper::DynFuncHolder< decltype(bigvoice_GetBufferOut ) > sound4::bigvoice::dyn::CDynLib::↩
GetBufferOut
```

Definition at line 266 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.23 GetBytesFromFormat

```
helper::DynFuncHolder< decltype(bigvoice_GetBytesFromFormat ) > sound4::bigvoice::dyn::CDyn↩
Lib::GetBytesFromFormat
```

Definition at line 270 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.24 GetChannelCount

```
helper::DynFuncHolder< decltype(bigvoice_GetChannelCount ) > sound4::bigvoice::dyn::CDynLib↩
::GetChannelCount
```

Definition at line 245 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.25 GetChunkSizeInFrames

```
helper::DynFuncHolder< decltype(bigvoice_GetChunkSizeInFrames ) > sound4::bigvoice::dyn::↩
CDynLib::GetChunkSizeInFrames
```

Definition at line 244 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.26 GetEstimatedDelay

```
helper::DynFuncHolder< decltype(bigvoice_GetEstimatedDelay ) > sound4::bigvoice::dyn::CDyn↩
Lib::GetEstimatedDelay
```

Definition at line 267 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.27 GetFormatFromName

```
helper::DynFuncHolder< decltype(bigvoice_GetFormatFromName ) > sound4::bigvoice::dyn::CDyn↩
Lib::GetFormatFromName
```

Definition at line 269 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.28 GetFormatName

```
helper::DynFuncHolder< decltype(bigvoice_GetFormatName ) > sound4::bigvoice::dyn::CDynLib::↩
GetFormatName
```

Definition at line 268 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.29 GetMaxPacketFrame

```
helper::DynFuncHolder< decltype(bigvoice_GetMaxPacketFrame ) > sound4::bigvoice::dyn::CDyn↩
Lib::GetMaxPacketFrame
```

Definition at line 271 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.30 GetMetadataInfos

```
helper::DynFuncHolder< decltype(bigvoice_GetMetadataInfos ) > sound4::bigvoice::dyn::CDynLib↩
::GetMetadataInfos
```

Definition at line 301 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.31 GetOutputCount

```
helper::DynFuncHolder< decltype(bigvoice_GetOutputCount ) > sound4::bigvoice::dyn::CDynLib::↩
GetOutputCount
```

Definition at line 274 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.32 GetParameter

```
helper::DynFuncHolder< decltype(bigvoice_GetParameter ) > sound4::bigvoice::dyn::CDynLib::↩
GetParameter
```

Definition at line 254 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.33 GetPossibleChunkSizeInFrames

```
helper::DynFuncHolder< decltype(bigvoice_GetPossibleChunkSizeInFrames ) > sound4::bigvoice↩
::dyn::CDynLib::GetPossibleChunkSizeInFrames
```

Definition at line 309 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.34 GetProcessChunkFrames

```
helper::DynFuncHolder< decltype(bigvoice_GetProcessChunkFrames ) > sound4::bigvoice::dyn::↩
CDynLib::GetProcessChunkFrames
```

Definition at line 310 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.35 GetSampleRate

```
helper::DynFuncHolder< decltype(bigvoice_GetSampleRate ) > sound4::bigvoice::dyn::CDynLib::↩
GetSampleRate
```

Definition at line 248 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.36 GetVersion

```
helper::DynFuncHolder< decltype(bigvoice_GetVersion ) > sound4::bigvoice::dyn::CDynLib::Get↩
Version
```

Definition at line 243 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.37 InitProcess

```
helper::DynFuncHolder< decltype(bigvoice_InitProcess ) > sound4::bigvoice::dyn::CDynLib::↩
InitProcess
```

Definition at line 256 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.38 InitProcess2

```
helper::DynFuncHolder< decltype(bigvoice_InitProcess2 ) > sound4::bigvoice::dyn::CDynLib::↩
InitProcess2
```

Definition at line 257 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.39 InitProcess3

```
helper::DynFuncHolder< decltype(bigvoice_InitProcess3 ) > sound4::bigvoice::dyn::CDynLib::↩
InitProcess3
```

Definition at line 311 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.40 MonoToStereo

```
helper::DynFuncHolder< decltype(bigvoice_MonoToStereo ) > sound4::bigvoice::dyn::CDynLib::↩
MonoToStereo
```

Definition at line 279 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.41 MonoToStereo_Planar

```
helper::DynFuncHolder< decltype(bigvoice_MonoToStereo_Planar ) > sound4::bigvoice::dyn::CDyn↩
Lib::MonoToStereo_Planar
```

Definition at line 297 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.42 NewBus

```
helper::DynFuncHolder< decltype(bigvoice_NewBus ) > sound4::bigvoice::dyn::CDynLib::NewBus
```

Definition at line 315 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.43 NewClient

```
helper::DynFuncHolder< decltype(bigvoice_NewClient ) > sound4::bigvoice::dyn::CDynLib::New↩
Client
```

Definition at line 282 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.44 NewParameters

```
helper::DynFuncHolder< decltype(bigvoice_NewParameters ) > sound4::bigvoice::dyn::CDynLib::↩
NewParameters
```

Definition at line 251 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.45 PresetManager_InformChange

```
helper::DynFuncHolder< decltype(bigvoice_PresetManager_InformChange ) > sound4::bigvoice↩
::dyn::CDynLib::PresetManager_InformChange
```

Definition at line 306 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.46 ProcessAudio

```
helper::DynFuncHolder< decltype(bigvoice_ProcessAudio ) > sound4::bigvoice::dyn::CDynLib::↩
ProcessAudio
```

Definition at line 263 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.47 ProcessAudio_Planar

```
helper::DynFuncHolder< decltype(bigvoice_ProcessAudio_Planar ) > sound4::bigvoice::dyn::CDyn↩
Lib::ProcessAudio_Planar
```

Definition at line 264 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.48 ProcessJson

```
helper::DynFuncHolder< decltype(bigvoice_ProcessJson ) > sound4::bigvoice::dyn::CDynLib::↩
ProcessJson
```

Definition at line 284 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.49 SaveState

```
helper::DynFuncHolder< decltype(bigvoice_SaveState ) > sound4::bigvoice::dyn::CDynLib::Save↩
State
```

Definition at line 286 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.50 SetInstanceBus

```
helper::DynFuncHolder< decltype(bigvoice_SetInstanceBus ) > sound4::bigvoice::dyn::CDynLib::↩
SetInstanceBus
```

Definition at line 317 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.51 SetInstanceTracing

```
helper::DynFuncHolder< decltype(bigvoice_SetInstanceTracing ) > sound4::bigvoice::dyn::CDyn↩
Lib::SetInstanceTracing
```

Definition at line 332 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.52 SetInstanceTracingProcessActivity

```
helper::DynFuncHolder< decltype(bigvoice_SetInstanceTracingProcessActivity ) > sound4::bigvoice↩
::dyn::CDynLib::SetInstanceTracingProcessActivity
```

Definition at line 333 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.53 SetLoggerCallback

```
helper::DynFuncHolder< decltype(bigvoice_SetLoggerCallback ) > sound4::bigvoice::dyn::CDyn↩
Lib::SetLoggerCallback
```

Definition at line 249 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.54 SetLogSeverity

```
helper::DynFuncHolder< decltype(bigvoice_SetLogSeverity ) > sound4::bigvoice::dyn::CDynLib::↩
SetLogSeverity
```

Definition at line 250 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.55 SetMetadata

```
helper::DynFuncHolder< decltype(bigvoice_SetMetadata ) > sound4::bigvoice::dyn::CDynLib::Set↩
Metadata
```

Definition at line 300 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.56 SetMetadataMulti

```
helper::DynFuncHolder< decltype(bigvoice_SetMetadataMulti ) > sound4::bigvoice::dyn::CDynLib↩
::SetMetadataMulti
```

Definition at line 321 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.57 SetParameter

```
helper::DynFuncHolder< decltype(bigvoice_SetParameter ) > sound4::bigvoice::dyn::CDynLib::↩
SetParameter
```

Definition at line 253 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.58 SetPresetManager

```
helper::DynFuncHolder< decltype(bigvoice_SetPresetManager ) > sound4::bigvoice::dyn::CDynLib↩
::SetPresetManager
```

Definition at line 305 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.59 StartUpdateThread

```
helper::DynFuncHolder< decltype(bigvoice_StartUpdateThread ) > sound4::bigvoice::dyn::CDyn↩
Lib::StartUpdateThread
```

Definition at line 260 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.60 StereoToMono

```
helper::DynFuncHolder< decltype(bigvoice_StereoToMono ) > sound4::bigvoice::dyn::CDynLib::↩
StereoToMono
```

Definition at line 278 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.61 StereoToMono_Planar

```
helper::DynFuncHolder< decltype(bigvoice_StereoToMono_Planar ) > sound4::bigvoice::dyn::CDyn↩
Lib::StereoToMono_Planar
```

Definition at line 296 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.62 StopUpdateThread

```
helper::DynFuncHolder< decltype(bigvoice_StopUpdateThread ) > sound4::bigvoice::dyn::CDynLib↩
::StopUpdateThread
```

Definition at line 261 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.63 TerminateProcess

```
helper::DynFuncHolder< decltype(bigvoice_TerminateProcess ) > sound4::bigvoice::dyn::CDynLib↩
::TerminateProcess
```

Definition at line 258 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.64 WaitUpdateThreadReady

```
helper::DynFuncHolder< decltype(bigvoice_WaitUpdateThreadReady ) > sound4::bigvoice::dyn::↩
CDynLib::WaitUpdateThreadReady
```

Definition at line 262 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.65 Webserver

```
helper::DynFuncHolder< decltype(bigvoice_Webserver ) > sound4::bigvoice::dyn::CDynLib::↩
Webserver
```

Definition at line 290 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.66 Webserver_FreeString

```
helper::DynFuncHolder< decltype(bigvoice_Webserver_FreeString ) > sound4::bigvoice::dyn::↩
CDynLib::Webserver_FreeString
```

Definition at line 327 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.67 Webserver_GetAppHealth

```
helper::DynFuncHolder< decltype(bigvoice_Webserver_GetAppHealth ) > sound4::bigvoice::dyn::↩
CDynLib::Webserver_GetAppHealth
```

Definition at line 326 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.68 Webserver_SetAppHealth

```
helper::DynFuncHolder< decltype(bigvoice_Webserver_SetAppHealth ) > sound4::bigvoice::dyn::↩
CDynLib::Webserver_SetAppHealth
```

Definition at line 325 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.69 Webserver_Status

```
helper::DynFuncHolder< decltype(bigvoice_Webserver_Status ) > sound4::bigvoice::dyn::CDynLib↩
::Webserver_Status
```

Definition at line 292 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.70 Webserver_Stop

```
helper::DynFuncHolder< decltype(bigvoice_Webserver_Stop ) > sound4::bigvoice::dyn::CDynLib::↩
Webserver_Stop
```

Definition at line 291 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.71 Webserver_tcp

```
helper::DynFuncHolder< decltype(bigvoice_Webserver_tcp ) > sound4::bigvoice::dyn::CDynLib::↩
Webserver_tcp
```

Definition at line 288 of file sound4.bigvoice.cl_dyn.hpp.

14.16.4.72 Webserver_tcp2

```
helper::DynFuncHolder< decltype(bigvoice_Webserver_tcp2 ) > sound4::bigvoice::dyn::CDynLib::↩
Webserver_tcp2
```

Definition at line 289 of file sound4.bigvoice.cl_dyn.hpp.

The documentation for this class was generated from the following file:

- sound4.bigvoice.cl_dyn.hpp

14.17 sound4::bigvoice::dyn::helper::CDynLoader Class Reference

Helper to load dynamic library.

```
#include <sound4.bigvoice.cl_dyn.hpp>
```

Public Member Functions

- CDynLoader ()=default
- CDynLoader (CDynLoader &&other) noexcept
- CDynLoader & operator= (CDynLoader &&other) noexcept
- CDynLoader (const CDynLoader &)=delete
- CDynLoader & operator= (CDynLoader const &)=delete
- operator bool () const
- bool IsOk () const
- bool Load (const std::filesystem::path &dynlib, uint32_t loadflags=LOAD_LIBRARY_SEARCH_DLL_LOAD_DIR|LOAD_LIBRAF
- void Close ()
- template<typename T >
  DynFuncHolder< T > GetSymbol (const std::string &name)
- template<typename T >
  DynFuncHolder< T > GetSymbol_safe (const std::string &name)
- virtual ~CDynLoader ()

Static Public Member Functions

- static std::filesystem::path GetThisLibraryPath (void)

14.17.1 Detailed Description

Definition at line 108 of file sound4.bigvoice.cl_dyn.hpp.

14.17.2 Constructor & Destructor Documentation

14.17.2.1 CDynLoader() [1/3]

```
sound4::bigvoice::dyn::helper::CDynLoader::CDynLoader ( ) [default]
```

14.17.2.2 CDynLoader() [2/3]

```
sound4::bigvoice::dyn::helper::CDynLoader::CDynLoader (
            CDynLoader && other ) [inline], [noexcept]
```

Definition at line 119 of file sound4.bigvoice.cl_dyn.hpp.

14.17.2.3 CDynLoader() [3/3]

```
sound4::bigvoice::dyn::helper::CDynLoader::CDynLoader (
            const CDynLoader & ) [delete]
```

14.17.2.4 ~CDynLoader()

```
virtual sound4::bigvoice::dyn::helper::CDynLoader::~CDynLoader ( ) [inline], [virtual]
```

Definition at line 223 of file sound4.bigvoice.cl_dyn.hpp.

14.17.3 Member Function Documentation

14.17.3.1 Close()

```
void sound4::bigvoice::dyn::helper::CDynLoader::Close ( )  [inline]
```

Definition at line 184 of file sound4.bigvoice.cl_dyn.hpp.

14.17.3.2 GetSymbol()

```
template<typename T >
DynFuncHolder< T > sound4::bigvoice::dyn::helper::CDynLoader::GetSymbol (
            const std::string & name )  [inline]
```

Definition at line 197 of file sound4.bigvoice.cl_dyn.hpp.

14.17.3.3 GetSymbol_safe()

```
template<typename T >
DynFuncHolder< T > sound4::bigvoice::dyn::helper::CDynLoader::GetSymbol_safe (
            const std::string & name )  [inline]
```

Definition at line 205 of file sound4.bigvoice.cl_dyn.hpp.

14.17.3.4 GetThisLibraryPath()

```
static std::filesystem::path sound4::bigvoice::dyn::helper::CDynLoader::GetThisLibraryPath (
            void  )  [inline], [static]
```

Definition at line 209 of file sound4.bigvoice.cl_dyn.hpp.

14.17.3.5 IsOk()

```
bool sound4::bigvoice::dyn::helper::CDynLoader::IsOk ( ) const  [inline]
```

Definition at line 130 of file sound4.bigvoice.cl_dyn.hpp.

14.17.3.6 Load()

```
bool sound4::bigvoice::dyn::helper::CDynLoader::Load (
            const std::filesystem::path & dynlib,
            uint32_t loadflags = LOAD_LIBRARY_SEARCH_DLL_LOAD_DIR|LOAD_LIBRARY_SEARCH_APPLICATION_DIR|LOAD_LIB
)  [inline]
```

Definition at line 178 of file sound4.bigvoice.cl_dyn.hpp.

14.17.3.7 operator bool()

```
sound4::bigvoice::dyn::helper::CDynLoader::operator bool ( ) const  [inline]
```

Definition at line 127 of file sound4.bigvoice.cl_dyn.hpp.

14.17.3.8 operator=() [1/2]

```
CDynLoader & sound4::bigvoice::dyn::helper::CDynLoader::operator= (
            CDynLoader && other )  [inline], [noexcept]
```

Definition at line 120 of file sound4.bigvoice.cl_dyn.hpp.

14.17.3.9 operator=() [2/2]

```
CDynLoader & sound4::bigvoice::dyn::helper::CDynLoader::operator= (
            CDynLoader const &  )  [delete]
```

The documentation for this class was generated from the following file:

- sound4.bigvoice.cl_dyn.hpp

14.18 sound4::helper::CDynLoader Class Reference

Helper to load dynamic library.

```
#include <sound4cl.hpp>
```

Public Member Functions

- CDynLoader ()=default
- CDynLoader (CDynLoader &&other) noexcept
- CDynLoader & operator= (CDynLoader &&other) noexcept
- CDynLoader (const CDynLoader &)=delete
- CDynLoader & operator= (CDynLoader const &)=delete
- operator bool () const
- bool IsOk () const
- bool Load (const std::filesystem::path &dynlib, uint32_t loadflags=LOAD_LIBRARY_SEARCH_DLL_LOAD_DIR|LOAD_LIBRAF
- void Close ()
- template<typename T >
  DynFuncHolder< T > GetSymbol (const std::string &name)
- template<typename T >
  DynFuncHolder< T > GetSymbol_safe (const std::string &name)
- virtual ~CDynLoader ()

Static Public Member Functions

- static std::filesystem::path GetThisLibraryPath (void)

14.18.1 Detailed Description

Definition at line 155 of file sound4cl.hpp.

14.18.2 Constructor & Destructor Documentation

14.18.2.1 CDynLoader() [1/3]

```
sound4::helper::CDynLoader::CDynLoader ( ) [default]
```

14.18.2.2 CDynLoader() [2/3]

```
sound4::helper::CDynLoader::CDynLoader (
            CDynLoader && other ) [inline], [noexcept]
```

Definition at line 166 of file sound4cl.hpp.

14.18.2.3 CDynLoader() [3/3]

```
sound4::helper::CDynLoader::CDynLoader (
            const CDynLoader & ) [delete]
```

14.18.2.4 ~CDynLoader()

```
virtual sound4::helper::CDynLoader::~CDynLoader ( ) [inline], [virtual]
```

Definition at line 270 of file sound4cl.hpp.

14.18.3 Member Function Documentation

14.18.3.1 Close()

```
void sound4::helper::CDynLoader::Close ( ) [inline]
```

Definition at line 231 of file sound4cl.hpp.

14.18.3.2 GetSymbol()

```
template<typename T >
DynFuncHolder< T > sound4::helper::CDynLoader::GetSymbol (
            const std::string & name ) [inline]
```

Definition at line 244 of file sound4cl.hpp.

14.18.3.3 GetSymbol_safe()

```
template<typename T >
DynFuncHolder< T > sound4::helper::CDynLoader::GetSymbol_safe (
            const std::string & name )  [inline]
```

Definition at line 252 of file sound4cl.hpp.

14.18.3.4 GetThisLibraryPath()

```
static std::filesystem::path sound4::helper::CDynLoader::GetThisLibraryPath (
            void  )  [inline], [static]
```

Definition at line 256 of file sound4cl.hpp.

14.18.3.5 IsOk()

```
bool sound4::helper::CDynLoader::IsOk ( ) const  [inline]
```

Definition at line 177 of file sound4cl.hpp.

14.18.3.6 Load()

```
bool sound4::helper::CDynLoader::Load (
            const std::filesystem::path & dynlib,
            uint32_t loadflags = LOAD_LIBRARY_SEARCH_DLL_LOAD_DIR|LOAD_LIBRARY_SEARCH_APPLICATION_DIR|LOAD_LIB
)  [inline]
```

Definition at line 225 of file sound4cl.hpp.

14.18.3.7 operator bool()

```
sound4::helper::CDynLoader::operator bool ( ) const  [inline]
```

Definition at line 174 of file sound4cl.hpp.

14.18.3.8 operator=() [1/2]

```
CDynLoader & sound4::helper::CDynLoader::operator= (
            CDynLoader && other )  [inline], [noexcept]
```

Definition at line 167 of file sound4cl.hpp.

14.18.3.9 operator=() [2/2]

```
CDynLoader & sound4::helper::CDynLoader::operator= (
            CDynLoader const & ) [delete]
```

The documentation for this class was generated from the following file:

- sound4cl.hpp

14.19 sound4::bigvoice::CInstance Class Reference

Instance handling class.

```
#include <sound4.bigvoice.cl.hpp>
```

Classes

- class CClient

Public Member Functions

- CInstance ()
- CInstance (const CInstance &)=delete
- CInstance & operator= (const CInstance &)=delete
- virtual ~CInstance ()
- bool IsOk () const
- void SetParam (const std::string &name, const std::string &value)
- std::string GetParam (const std::string &name)
- void SetBus (const CBus &bus)
- void SetPresetManager (CPresetLoader *preset_manager)
- bool Create (const std::string &LoginKey, const std::string &RadioName, const std::string &Access_Key_ID, const std::string &Access_Key_Secret, const std::filesystem::path &save_path, int json_port=0, unsigned int frames_per_chunk=12)
- unsigned int GetChunkFrames ()
- void PresetManager_InformChange (const std::filesystem::path &relative_path, PresetChange_Kind change_kind)
- void SetMetadata (const std::string &key, const char *value)
- void SetMetadataMulti (const std::unordered_map< std::string, const char * > &list)
- std::vector< std::tuple< std::string, std::string > > GetMetadataInfos ()
- std::vector< AuxiliaryOutputInfos > GetAuxiliaryAudioOutputInfos ()
- void ActivateAuxiliaryAudioID (const std::string &id)
- virtual void OnUpdateThreadStart ()
- virtual void OnUpdateThreadStop ()
- bool StartWebServer (int http_port, int https_port=0)
- void StopWebServer (int timeout_ms=1000)
- void SetWebServerAppHealth (int httpcode, const std::string &contenttype, const std::string &content)
- void GetWebServerAppHealth (int &httpcode, std::string &contenttype, std::string &content)
- int Terminate ()
- void Stop ()
- unsigned int GetEstimatedDelay ()

- std::array< float, InputSampleSize > & GetBufferIn ()
- std::array< float, OutputSampleSize > & GetBufferOut ()
- void ProcessAudio ()
- void ProcessAudio_Planar (float const *const *input, float *const *output)
- template<typename T >
  std::vector< T > ProcessAnyAudio (const std::vector< T > input)
- std::shared_ptr< CClient > NewClient ()
- bool SaveState ()
- void SetInstanceTracing (TraceLoggingHProvider tracing_provider, GUID activity_guid={})
- void SetInstanceTracingProcessActivity (GUID activity_guid)

Protected Member Functions

- template<typename T >
  unsigned int AddAudio (const T *payload, unsigned int nFrame)
- template<typename T >
  unsigned int GetAudio (T *payload, unsigned int max_nFrame)

14.19.1 Detailed Description

Holds an instance of processing

Definition at line 478 of file sound4.bigvoice.cl.hpp.

14.19.2 Constructor & Destructor Documentation

14.19.2.1 CInstance() [1/2]

```
sound4::bigvoice::CInstance::CInstance ( ) [inline]
```

Creates the instance, with default parameters

Definition at line 483 of file sound4.bigvoice.cl.hpp.

14.19.2.2 CInstance() [2/2]

```
sound4::bigvoice::CInstance::CInstance (
            const CInstance & ) [delete]
```

14.19.2.3 ~CInstance()

```
virtual sound4::bigvoice::CInstance::~CInstance ( ) [inline], [virtual]
```

Destructor, stopping any running tasks

Definition at line 494 of file sound4.bigvoice.cl.hpp.

14.19.3 Member Function Documentation

14.19.3.1 ActivateAuxiliaryAudioID()

```
void sound4::bigvoice::CInstance::ActivateAuxiliaryAudioID (
            const std::string & id )  [inline]
```

Definition at line 759 of file sound4.bigvoice.cl.hpp.

14.19.3.2 AddAudio()

```
template<typename T >
unsigned int sound4::bigvoice::CInstance::AddAudio (
            const T * payload,
            unsigned int nFrame )  [inline], [protected]
```

Definition at line 1080 of file sound4.bigvoice.cl.hpp.

14.19.3.3 Create()

```
bool sound4::bigvoice::CInstance::Create (
            const std::string & LoginKey,
            const std::string & RadioName,
            const std::string & Access_Key_ID,
            const std::string & Access_Key_Secret,
            const std::filesystem::path & save_path,
            int json_port = 0,
            unsigned int frames_per_chunk = 12 )  [inline]
```

Creates and initialize the instance, and starts its update thread

Attention

The **save_path** must be an existing folder with R/W access, or be NULL (then it uses volatile memory storage) If the save_path is empty or the folder is empty, a default configuration with a default preset will be loaded, unless using SetPresetManager.

If used in a container, we recommend to put a volume for this path, so it will survive updates.

License access

The licenses are retrieved via Internet and access some servers. You may use an alternate server by changing `LICENSE_SERVER` in the parameters.

Parameters

LoginKey	SOUND4 Login key
RadioName	SOUND4 RadioName
Access_Key_ID	SOUND4 AWS access ID
Access_Key_Secret	SOUND4 AWS access Secret
save_path	Path where we can load/save the configuration
json_port	Optional json listening port
frames_per_chunk	The number of audio frames in each chunk of processing. Must be in the list returned by bigvoice_GetPossibleChunkSizeInFrames, or 0 to set default

Returns

false if failed

Definition at line 597 of file sound4.bigvoice.cl.hpp.

14.19.3.4 GetAudio()

```
template<typename T >
unsigned int sound4::bigvoice::CInstance::GetAudio (
            T * payload,
            unsigned int max_nFrame )  [inline], [protected]
```

Definition at line 1086 of file sound4.bigvoice.cl.hpp.

14.19.3.5 GetAuxiliaryAudioOutputInfos()

```
std::vector< AuxiliaryOutputInfos > sound4::bigvoice::CInstance::GetAuxiliaryAudioOutputInfos
( )  [inline]
```

Get information on auxiliary audio outputs.

Returns

a list of AuxiliaryOutputInfos

Definition at line 740 of file sound4.bigvoice.cl.hpp.

14.19.3.6 GetBufferIn()

```
std::array< float, InputSampleSize > & sound4::bigvoice::CInstance::GetBufferIn ( )  [inline]
```

Get preallocated aligned buffer for audio input for ProcessAudio

The buffer is a big enough for all supported chunk sizes.

Each sample is a native 32-bit floating-point number where 1.0 is full scale. Channels are interlaced, so the buffers are [L0,R0,L1,R1,...,Ln,Rn] (L=Left, R=Right)

In case of multiple audio input/output, buffer is [aL0,aR0,bL0,bR0,...,aLn,aRn,bLn,bRn]

Returns

An audio input dedicated buffer.

Definition at line 901 of file sound4.bigvoice.cl.hpp.

14.19.3.7 GetBufferOut()

```
std::array< float, OutputSampleSize > & sound4::bigvoice::CInstance::GetBufferOut ( ) [inline]
```

Get preallocated aligned buffer for audio output for ProcessAudio

The buffer is a big enough for all supported chunk sizes.

Each sample is a native 32-bit floating-point number where 1.0 is full scale. Channels are interlaced, so the buffers are [L0,R0,L1,R1,...,Ln,Rn] (L=Left, R=Right)

In case of multiple audio input/output, buffer is [aL0,aR0,bL0,bR0,...,aLn,aRn,bLn,bRn]

Returns

An audio output dedicated buffer.

Definition at line 919 of file sound4.bigvoice.cl.hpp.

14.19.3.8 GetChunkFrames()

```
unsigned int sound4::bigvoice::CInstance::GetChunkFrames ( ) [inline]
```

Get the number of audio frames in each chunk of processing.

The value reflects the frames_per_chunk parameter passed to Create

Returns

the number of audio frames in each chunk of processing

Definition at line 638 of file sound4.bigvoice.cl.hpp.

14.19.3.9 GetEstimatedDelay()

```
unsigned int sound4::bigvoice::CInstance::GetEstimatedDelay ( ) [inline]
```

Get the delay (estimated) of current processing algorithm

Remarks

This is not very accurate, it does not take into account group delays.

But it is sufficient for file processing adjustements.

Changing the preset and parameters may change the returned value.

Returns

Estimated delay in frames

Definition at line 883 of file sound4.bigvoice.cl.hpp.

14.19.3.10 GetMetadataInfos()

```
std::vector< std::tuple< std::string, std::string > > sound4::bigvoice::CInstance::Get↩
MetadataInfos ( ) [inline]
```

Get information on known metadata keys.

Returns

a list of {key,description} of known metadata used in process and extensions.

Definition at line 716 of file sound4.bigvoice.cl.hpp.

14.19.3.11 GetParam()

```
std::string sound4::bigvoice::CInstance::GetParam (
            const std::string & name ) [inline]
```

Gets a parameter value

Parameters

name	the parameter name

Returns

the parameter value

Definition at line 523 of file sound4.bigvoice.cl.hpp.

14.19.3.12 GetWebServerAppHealth()

```
void sound4::bigvoice::CInstance::GetWebServerAppHealth (
            int & httpcode,
            std::string & contenttype,
            std::string & content ) [inline]
```

Get the web server /apphealth status info

Definition at line 830 of file sound4.bigvoice.cl.hpp.

14.19.3.13 IsOk()

```
bool sound4::bigvoice::CInstance::IsOk ( ) const [inline]
```

Returns true if an instance has been created and not stopped.

Definition at line 502 of file sound4.bigvoice.cl.hpp.

14.19.3.14 NewClient()

```
std::shared_ptr< CClient > sound4::bigvoice::CInstance::NewClient ( ) [inline]
```

Creates a low-level JSON client

See also JSON syntax

Returns

a new client to communicate with the processing

Definition at line 1034 of file sound4.bigvoice.cl.hpp.

14.19.3.15 OnUpdateThreadStart()

```
virtual void sound4::bigvoice::CInstance::OnUpdateThreadStart ( ) [inline], [virtual]
```

Can be overloaded, called at start of UpdateThread in the thread

Definition at line 766 of file sound4.bigvoice.cl.hpp.

14.19.3.16 OnUpdateThreadStop()

```
virtual void sound4::bigvoice::CInstance::OnUpdateThreadStop ( ) [inline], [virtual]
```

Can be overloaded to call at end of UpdateThread in the thread

Definition at line 770 of file sound4.bigvoice.cl.hpp.

14.19.3.17 operator=()

```
CInstance & sound4::bigvoice::CInstance::operator= (
            const CInstance & ) [delete]
```

14.19.3.18 PresetManager_InformChange()

```
void sound4::bigvoice::CInstance::PresetManager_InformChange (
            const std::filesystem::path & relative_path,
            PresetChange_Kind change_kind ) [inline]
```

Inform that a change happened in the storage. This must be used only in conjonction with SetPresetManager

Parameters

relative_path	The path which changed, relative to the root storage
change_kind	What happened to this path

Definition at line 652 of file sound4.bigvoice.cl.hpp.

14.19.3.19 ProcessAnyAudio()

```
template<typename T >
std::vector< T > sound4::bigvoice::CInstance::ProcessAnyAudio (
            const std::vector< T > input )  [inline]
```

Process audio (different formats, less optimized)

Supports for int16_t, int32_t and float (32) in native endianness

Attention

the return count is independent from the input count due to BIGVOICE_AUDIOFRAME_COUNT

Template Parameters

T	the C type for one audio sample

Parameters

input	audio to process

Returns

processed audio

Definition at line 962 of file sound4.bigvoice.cl.hpp.

14.19.3.20 ProcessAudio()

```
void sound4::bigvoice::CInstance::ProcessAudio ( )  [inline]
```

Process one audio chunk, from GetBufferIn() to GetBufferOut()

Definition at line 928 of file sound4.bigvoice.cl.hpp.

14.19.3.21 ProcessAudio_Planar()

```
void sound4::bigvoice::CInstance::ProcessAudio_Planar (
            float const *const * input,
            float *const * output )  [inline]
```

Process one audio chunk, but with planar audio

Each sample is a native 32-bit floating-point number where 1.0 is full scale. Channels are NOT interlaced, so the buffers are arrays of planar audio : [[L0,L1,...,Ln] , [R0,R1,...,Rn]] (L=Left, R=Right)

In case of multiple audio input/output, buffer are [[aL...], [aR...], [bL...], [bR...], ...]

Parameters

input	has GetAudioInputCount() ∗ GetChannelCount() channels
output	has GetAudioOutputCount() ∗ GetChannelCount() channels

Definition at line 944 of file sound4.bigvoice.cl.hpp.

14.19.3.22 SaveState()

```
bool sound4::bigvoice::CInstance::SaveState ( ) [inline]
```

Save the current state

Needed when CClient::ProcessJson returned with need_save to true. However it can be postponed as much as wanted.

Remarks

Works only when update thread is running

Returns

true if success

Definition at line 1050 of file sound4.bigvoice.cl.hpp.

14.19.3.23 SetBus()

```
void sound4::bigvoice::CInstance::SetBus (
            const CBus & bus ) [inline]
```

Set the instance's bus. It can be used by instances to exchange real-time information if needed.

Attention

The bus should be created with the same library

Parameters

bus	the bus to use

Definition at line 541 of file sound4.bigvoice.cl.hpp.

14.19.3.24 SetInstanceTracing()

```
void sound4::bigvoice::CInstance::SetInstanceTracing (
            TraceLoggingHProvider tracing_provider,
            GUID activity_guid = {} ) [inline]
```

Set the instance's tracing provider before creating instance

Parameters

activity_guid	the activity guid, used for creation, updates and destruction
tracing_provider	the provider as created with TRACELOGGING_DEFINE_PROVIDER

Definition at line 1064 of file sound4.bigvoice.cl.hpp.

14.19.3.25 SetInstanceTracingProcessActivity()

```
void sound4::bigvoice::CInstance::SetInstanceTracingProcessActivity (
            GUID activity_guid )  [inline]
```

Set the instance's process activity for tracing (optional). Should be called only in process's thread.

Parameters

activity_guid	the activity guid

Definition at line 1073 of file sound4.bigvoice.cl.hpp.

14.19.3.26 SetMetadata()

```
void sound4::bigvoice::CInstance::SetMetadata (
            const std::string & key,
            const char * value )  [inline]
```

Adds the specific metadata to the process.

It can come from any thread, and will be used as soon as possible. Setting a null value erase the metadata, which is different from setting an empty string.

Parameters

key	the metadata key If key contains a dot (like wm.KEY), it will be sent only to the matching plugin (ie wm here) without the prefix (ie KEY here) Use empty prefix for routing to main only.
value	the metadata value or nullptr to erase it.

Definition at line 668 of file sound4.bigvoice.cl.hpp.

14.19.3.27 SetMetadataMulti()

```
void sound4::bigvoice::CInstance::SetMetadataMulti (
            const std::unordered_map< std::string, const char * > & list )  [inline]
```

Adds multiple metadata to the process.

This works like SetMetadata but with multiple metadata at once.

See also

CInstance::SetMetadata

Parameters

list	a map of key/value pair.

Definition at line 686 of file sound4.bigvoice.cl.hpp.

14.19.3.28 SetParam()

```
void sound4::bigvoice::CInstance::SetParam (
            const std::string & name,
            const std::string & value )  [inline]
```

Set a parameter value

Must be done before Create See also Environment variables and parameters

Parameters

name	the parameter name
value	the parameter value

Definition at line 512 of file sound4.bigvoice.cl.hpp.

14.19.3.29 SetPresetManager()

```
void sound4::bigvoice::CInstance::SetPresetManager (
            CPresetLoader * preset_manager )  [inline]
```

Sets a custom preset manager Optional, this overrides the `save_path` in Create

To dynamically update when storage change, see PresetManager_InformChange

Must be done before Create

Parameters

preset_manager	The custom preset manager

Definition at line 557 of file sound4.bigvoice.cl.hpp.

14.19.3.30 SetWebServerAppHealth()

```
void sound4::bigvoice::CInstance::SetWebServerAppHealth (
            int httpcode,
```

```
            const std::string & contenttype,
            const std::string & content )  [inline]
```

Set the web server /apphealth status info

Definition at line 822 of file sound4.bigvoice.cl.hpp.

14.19.3.31 StartWebServer()

```
bool sound4::bigvoice::CInstance::StartWebServer (
            int http_port,
            int https_port = 0 )  [inline]
```

Starts a Web server on requested ports

For secure connection, it will use privatekey.pem and certificate.pem from current directory. Environment variables `SSL_PRIVATE_PATH` and `SSL_CERTIFICATE_PATH` can override those (see Environment variables and parameters). If none is valid, it will try also /etc/ssl/certs/server.key and /etc/ssl/certs/server.crt.

Warning

On Windows, calling this from Go<1.20 code will crash.

Parameters

http_port	The port to listen for HTTP connections (0 to disable)
https_port	The port to listen for HTTPS connections (0 to disable)

Returns

true if ports were opened successfully.

Definition at line 786 of file sound4.bigvoice.cl.hpp.

14.19.3.32 Stop()

```
void sound4::bigvoice::CInstance::Stop ( )  [inline]
```

Stops the instance, its web server and its update thread.

Definition at line 860 of file sound4.bigvoice.cl.hpp.

14.19.3.33 StopWebServer()

```
void sound4::bigvoice::CInstance::StopWebServer (
            int timeout_ms = 1000 )  [inline]
```

Stop a web server started with StartWebServer

Warning

On Windows, calling this from Go<1.20 code will crash.

Parameters

timeout_ms	The timeout to wait gracefull shutdown

Definition at line 811 of file sound4.bigvoice.cl.hpp.

14.19.3.34 Terminate()

```
int sound4::bigvoice::CInstance::Terminate ( ) [inline]
```

Terminate the processing.

This is useful only with file processing, to get the final status. For some plugins, this is mandatory

Returns

0 is success, <0 if error, >0 if some status

Definition at line 851 of file sound4.bigvoice.cl.hpp.

The documentation for this class was generated from the following file:

- sound4.bigvoice.cl.hpp

14.20 sound4::bigvoice::dyn::CInstance Class Reference

Instance handling class.

```
#include <sound4.bigvoice.cl_dyn.hpp>
```

Classes

- class CClient

Public Member Functions

- CInstance (CDynLib &dynlib)
- CInstance (const CInstance &)=delete
- CInstance & operator= (const CInstance &)=delete
- virtual ~CInstance ()
- bool IsOk () const
- void SetParam (const std::string &name, const std::string &value)
- std::string GetParam (const std::string &name)
- void SetBus (const CBus &bus)
- void SetPresetManager (CPresetLoader *preset_manager)
- bool Create (const std::string &LoginKey, const std::string &RadioName, const std::string &Access_Key_ID, const std::string &Access_Key_Secret, const std::filesystem::path &save_path, int json_port=0, unsigned int frames_per_chunk=12)
- unsigned int GetChunkFrames ()
- void PresetManager_InformChange (const std::filesystem::path &relative_path, PresetChange_Kind change_kind)
- void SetMetadata (const std::string &key, const char *value)
- void SetMetadataMulti (const std::unordered_map< std::string, const char * > &list)
- std::vector< std::tuple< std::string, std::string > > GetMetadataInfos ()
- virtual void OnUpdateThreadStart ()
- virtual void OnUpdateThreadStop ()
- bool StartWebServer (int http_port, int https_port=0)
- void StopWebServer (int timeout_ms=1000)
- void SetWebServerAppHealth (int httpcode, const std::string &contenttype, const std::string &content)
- void GetWebServerAppHealth (int &httpcode, std::string &contenttype, std::string &content)
- int Terminate ()
- void Stop ()
- unsigned int GetEstimatedDelay ()
- std::array< float, InputSampleSize > & GetBufferIn ()
- std::array< float, OutputSampleSize > & GetBufferOut ()
- void ProcessAudio ()
- void ProcessAudio_Planar (float const *const *input, float *const *output)
- template<typename T >
  std::vector< T > ProcessAnyAudio (const std::vector< T > input)
- std::shared_ptr< CClient > NewClient ()
- bool SaveState ()
- void SetInstanceTracing (TraceLoggingHProvider tracing_provider, GUID activity_guid={})
- void SetInstanceTracingProcessActivity (GUID activity_guid)

Protected Member Functions

- template<typename T >
  unsigned int AddAudio (const T *payload, unsigned int nFrame)
- template<typename T >
  unsigned int GetAudio (T *payload, unsigned int max_nFrame)

14.20.1 Detailed Description

Holds an instance of processing

Definition at line 962 of file sound4.bigvoice.cl_dyn.hpp.

14.20.2 Constructor & Destructor Documentation

14.20.2.1 CInstance() [1/2]

```
sound4::bigvoice::dyn::CInstance::CInstance (
            CDynLib & dynlib )  [inline]
```

Creates the instance, with default parameters

Definition at line 967 of file sound4.bigvoice.cl_dyn.hpp.

14.20.2.2 CInstance() [2/2]

```
sound4::bigvoice::dyn::CInstance::CInstance (
            const CInstance &  )  [delete]
```

14.20.2.3 ~CInstance()

```
virtual sound4::bigvoice::dyn::CInstance::~CInstance ( )  [inline], [virtual]
```

Destructor, stopping any running tasks

Definition at line 979 of file sound4.bigvoice.cl_dyn.hpp.

14.20.3 Member Function Documentation

14.20.3.1 AddAudio()

```
template<typename T >
unsigned int sound4::bigvoice::dyn::CInstance::AddAudio (
            const T * payload,
            unsigned int nFrame )  [inline], [protected]
```

Definition at line 1566 of file sound4.bigvoice.cl_dyn.hpp.

14.20.3.2 Create()

```
bool sound4::bigvoice::dyn::CInstance::Create (
            const std::string & LoginKey,
            const std::string & RadioName,
            const std::string & Access_Key_ID,
            const std::string & Access_Key_Secret,
            const std::filesystem::path & save_path,
            int json_port = 0,
            unsigned int frames_per_chunk = 12 )  [inline]
```

Creates and initialize the instance, and starts its update thread

Attention

The **save_path** must be an existing folder with R/W access, or be NULL (then it uses volatile memory storage) If the save_path is empty or the folder is empty, a default configuration with a default preset will be loaded, unless using SetPresetManager.

If used in a container, we recommend to put a volume for this path, so it will survive updates.

License access

The licenses are retrieved via Internet and access some servers. You may use an alternate server by changing `LICENSE_SERVER` in the parameters.

Parameters

LoginKey	SOUND4 Login key
RadioName	SOUND4 RadioName
Access_Key_ID	SOUND4 AWS access ID
Access_Key_Secret	SOUND4 AWS access Secret
save_path	Path where we can load/save the configuration
json_port	Optional json listening port
frames_per_chunk	The number of audio frames in each chunk of processing. Must be in the list returned by bigvoice_GetPossibleChunkSizeInFrames, or 0 to set default

Returns

false if failed

Definition at line 1084 of file sound4.bigvoice.cl_dyn.hpp.

14.20.3.3 GetAudio()

```
template<typename T >
unsigned int sound4::bigvoice::dyn::CInstance::GetAudio (
            T * payload,
            unsigned int max_nFrame )  [inline], [protected]
```

Definition at line 1572 of file sound4.bigvoice.cl_dyn.hpp.

14.20.3.4 GetBufferIn()

```
std::array< float, InputSampleSize > & sound4::bigvoice::dyn::CInstance::GetBufferIn ( )
[inline]
```

Get preallocated aligned buffer for audio input for ProcessAudio

The buffer is a big enough for all supported chunk sizes.

Each sample is a native 32-bit floating-point number where 1.0 is full scale. Channels are interlaced, so the buffers are [L0,R0,L1,R1,...,Ln,Rn] (L=Left, R=Right)

In case of multiple audio input/output, buffer is [aL0,aR0,bL0,bR0,...,aLn,aRn,bLn,bRn]

Returns

An audio input dedicated buffer.

Definition at line 1381 of file sound4.bigvoice.cl_dyn.hpp.

14.20.3.5 GetBufferOut()

```
std::array< float, OutputSampleSize > & sound4::bigvoice::dyn::CInstance::GetBufferOut ( )
[inline]
```

Get preallocated aligned buffer for audio output for ProcessAudio

The buffer is a big enough for all supported chunk sizes.

Each sample is a native 32-bit floating-point number where 1.0 is full scale. Channels are interlaced, so the buffers are [L0,R0,L1,R1,...,Ln,Rn] (L=Left, R=Right)

In case of multiple audio input/output, buffer is [aL0,aR0,bL0,bR0,...,aLn,aRn,bLn,bRn]

Returns

An audio output dedicated buffer.

Definition at line 1399 of file sound4.bigvoice.cl_dyn.hpp.

14.20.3.6 GetChunkFrames()

```
unsigned int sound4::bigvoice::dyn::CInstance::GetChunkFrames ( ) [inline]
```

Get the number of audio frames in each chunk of processing.

The value reflects the frames_per_chunk parameter passed to Create

Returns

the number of audio frames in each chunk of processing

Definition at line 1131 of file sound4.bigvoice.cl_dyn.hpp.

14.20.3.7 GetEstimatedDelay()

```
unsigned int sound4::bigvoice::dyn::CInstance::GetEstimatedDelay ( ) [inline]
```

Get the delay (estimated) of current processing algorithm

Remarks

This is not very accurate, it does not take into account group delays.

But it is sufficient for file processing adjustements.

Changing the preset and parameters may change the returned value.

Returns

Estimated delay in frames

Definition at line 1363 of file sound4.bigvoice.cl_dyn.hpp.

14.20.3.8 GetMetadataInfos()

```
std::vector< std::tuple< std::string, std::string > > sound4::bigvoice::dyn::CInstance::Get↩
MetadataInfos ( ) [inline]
```

Get information on known metadata keys.

Returns

a list of {key,description} of known metadata used in process and extensions.

Definition at line 1220 of file sound4.bigvoice.cl_dyn.hpp.

14.20.3.9 GetParam()

```
std::string sound4::bigvoice::dyn::CInstance::GetParam (
            const std::string & name ) [inline]
```

Gets a parameter value

Parameters

name	the parameter name

Returns

the parameter value

Definition at line 1008 of file sound4.bigvoice.cl_dyn.hpp.

14.20.3.10 GetWebServerAppHealth()

```
void sound4::bigvoice::dyn::CInstance::GetWebServerAppHealth (
            int & httpcode,
            std::string & contenttype,
            std::string & content ) [inline]
```

Get the web server /apphealth status info

Definition at line 1309 of file sound4.bigvoice.cl_dyn.hpp.

14.20.3.11 IsOk()

```
bool sound4::bigvoice::dyn::CInstance::IsOk ( ) const [inline]
```

Returns true if an instance has been created and not stopped.

Definition at line 987 of file sound4.bigvoice.cl_dyn.hpp.

14.20.3.12 NewClient()

```
std::shared_ptr< CClient > sound4::bigvoice::dyn::CInstance::NewClient ( ) [inline]
```

Creates a low-level JSON client

See also JSON syntax

Returns

a new client to communicate with the processing

Definition at line 1516 of file sound4.bigvoice.cl_dyn.hpp.

14.20.3.13 OnUpdateThreadStart()

```
virtual void sound4::bigvoice::dyn::CInstance::OnUpdateThreadStart ( ) [inline], [virtual]
```

Can be overloaded, called at start of UpdateThread in the thread

Definition at line 1244 of file sound4.bigvoice.cl_dyn.hpp.

14.20.3.14 OnUpdateThreadStop()

```
virtual void sound4::bigvoice::dyn::CInstance::OnUpdateThreadStop ( ) [inline], [virtual]
```

Can be overloaded to call at end of UpdateThread in the thread

Definition at line 1248 of file sound4.bigvoice.cl_dyn.hpp.

14.20.3.15 operator=()

```
CInstance & sound4::bigvoice::dyn::CInstance::operator= (
            const CInstance & ) [delete]
```

14.20.3.16 PresetManager_InformChange()

```
void sound4::bigvoice::dyn::CInstance::PresetManager_InformChange (
            const std::filesystem::path & relative_path,
            PresetChange_Kind change_kind ) [inline]
```

Inform that a change happened in the storage. This must be used only in conjonction with SetPresetManager

Parameters

relative_path	The path which changed, relative to the root storage
change_kind	What happened to this path

Definition at line 1145 of file sound4.bigvoice.cl_dyn.hpp.

14.20.3.17 ProcessAnyAudio()

```
template<typename T >
std::vector< T > sound4::bigvoice::dyn::CInstance::ProcessAnyAudio (
            const std::vector< T > input )  [inline]
```

Process audio (different formats, less optimized)

Supports for int16_t, int32_t and float (32) in native endianness

Attention

the return count is independent from the input count due to BIGVOICE_AUDIOFRAME_COUNT

Template Parameters

T	the C type for one audio sample

Parameters

input	audio to process

Returns

processed audio

Definition at line 1442 of file sound4.bigvoice.cl_dyn.hpp.

14.20.3.18 ProcessAudio()

```
void sound4::bigvoice::dyn::CInstance::ProcessAudio ( )  [inline]
```

Process one audio chunk, from GetBufferIn() to GetBufferOut()

Definition at line 1408 of file sound4.bigvoice.cl_dyn.hpp.

14.20.3.19 ProcessAudio_Planar()

```
void sound4::bigvoice::dyn::CInstance::ProcessAudio_Planar (
            float const *const * input,
            float *const * output )  [inline]
```

Process one audio chunk, but with planar audio

Each sample is a native 32-bit floating-point number where 1.0 is full scale. Channels are NOT interlaced, so the buffers are arrays of planar audio : [[L0,L1,...,Ln] , [R0,R1,...,Rn]] (L=Left, R=Right)

In case of multiple audio input/output, buffer are [[aL...], [aR...], [bL...], [bR...], ...]

Parameters

input	has GetAudioInputCount() ∗ GetChannelCount() channels
output	has GetAudioOutputCount() ∗ GetChannelCount() channels

Definition at line 1424 of file sound4.bigvoice.cl_dyn.hpp.

14.20.3.20 SaveState()

```
bool sound4::bigvoice::dyn::CInstance::SaveState ( ) [inline]
```

Save the current state

Needed when CClient::ProcessJson returned with need_save to true. However it can be postponed as much as wanted.

Remarks

Works only when update thread is running

Returns

true if success

Definition at line 1532 of file sound4.bigvoice.cl_dyn.hpp.

14.20.3.21 SetBus()

```
void sound4::bigvoice::dyn::CInstance::SetBus (
            const CBus & bus ) [inline]
```

Set the instance's bus. It can be used by instances to exchange real-time information if needed.

Attention

The bus should be created with the same library

Parameters

bus	the bus to use

Definition at line 1025 of file sound4.bigvoice.cl_dyn.hpp.

14.20.3.22 SetInstanceTracing()

```
void sound4::bigvoice::dyn::CInstance::SetInstanceTracing (
            TraceLoggingHProvider tracing_provider,
            GUID activity_guid = {} ) [inline]
```

Set the instance's tracing provider before creating instance

Parameters

activity_guid	the activity guid, used for creation, updates and destruction
tracing_provider	the provider as created with TRACELOGGING_DEFINE_PROVIDER

Definition at line 1546 of file sound4.bigvoice.cl_dyn.hpp.

14.20.3.23 SetInstanceTracingProcessActivity()

```
void sound4::bigvoice::dyn::CInstance::SetInstanceTracingProcessActivity (
            GUID activity_guid )  [inline]
```

Set the instance's process activity for tracing (optional). Should be called only in process's thread.

Parameters

activity_guid	the activity guid

Definition at line 1557 of file sound4.bigvoice.cl_dyn.hpp.

14.20.3.24 SetMetadata()

```
void sound4::bigvoice::dyn::CInstance::SetMetadata (
            const std::string & key,
            const char * value )  [inline]
```

Adds the specific metadata to the process.

It can come from any thread, and will be used as soon as possible. Setting a null value erase the metadata, which is different from setting an empty string.

Parameters

key	the metadata key If key contains a dot (like wm.KEY), it will be sent only to the matching plugin (ie wm here) without the prefix (ie KEY here) Use empty prefix for routing to main only.
value	the metadata value or nullptr to erase it.

Definition at line 1163 of file sound4.bigvoice.cl_dyn.hpp.

14.20.3.25 SetMetadataMulti()

```
void sound4::bigvoice::dyn::CInstance::SetMetadataMulti (
            const std::unordered_map< std::string, const char * > & list )  [inline]
```

Adds multiple metadata to the process.

This works like SetMetadata but with multiple metadata at once.

See also

CInstance::SetMetadata

Parameters

list	a map of key/value pair.

Definition at line 1184 of file sound4.bigvoice.cl_dyn.hpp.

14.20.3.26 SetParam()

```
void sound4::bigvoice::dyn::CInstance::SetParam (
            const std::string & name,
            const std::string & value )  [inline]
```

Set a parameter value

Must be done before Create See also Environment variables and parameters

Parameters

name	the parameter name
value	the parameter value

Definition at line 997 of file sound4.bigvoice.cl_dyn.hpp.

14.20.3.27 SetPresetManager()

```
void sound4::bigvoice::dyn::CInstance::SetPresetManager (
            CPresetLoader * preset_manager )  [inline]
```

Sets a custom preset manager Optional, this overrides the `save_path` in Create

To dynamically update when storage change, see PresetManager_InformChange

Must be done before Create

Parameters

preset_manager	The custom preset manager

Definition at line 1043 of file sound4.bigvoice.cl_dyn.hpp.

14.20.3.28 SetWebServerAppHealth()

```
void sound4::bigvoice::dyn::CInstance::SetWebServerAppHealth (
            int httpcode,
```

```
            const std::string & contenttype,
            const std::string & content )  [inline]
```

Set the web server /apphealth status info

Definition at line 1300 of file sound4.bigvoice.cl_dyn.hpp.

14.20.3.29 StartWebServer()

```
bool sound4::bigvoice::dyn::CInstance::StartWebServer (
            int http_port,
            int https_port = 0 )  [inline]
```

Starts a Web server on requested ports

For secure connection, it will use privatekey.pem and certificate.pem from current directory. Environment variables `SSL_PRIVATE_PATH` and `SSL_CERTIFICATE_PATH` can override those (see Environment variables and parameters). If none is valid, it will try also /etc/ssl/certs/server.key and /etc/ssl/certs/server.crt.

Warning

On Windows, calling this from Go<1.20 code will crash.

Parameters

http_port	The port to listen for HTTP connections (0 to disable)
https_port	The port to listen for HTTPS connections (0 to disable)

Returns

true if ports were opened successfully.

Definition at line 1264 of file sound4.bigvoice.cl_dyn.hpp.

14.20.3.30 Stop()

```
void sound4::bigvoice::dyn::CInstance::Stop ( )  [inline]
```

Stops the instance, its web server and its update thread.

Definition at line 1340 of file sound4.bigvoice.cl_dyn.hpp.

14.20.3.31 StopWebServer()

```
void sound4::bigvoice::dyn::CInstance::StopWebServer (
            int timeout_ms = 1000 )  [inline]
```

Stop a web server started with StartWebServer

Warning

On Windows, calling this from Go<1.20 code will crash.

Parameters

timeout_ms	The timeout to wait gracefull shutdown

Definition at line 1289 of file sound4.bigvoice.cl_dyn.hpp.

14.20.3.32 Terminate()

```
int sound4::bigvoice::dyn::CInstance::Terminate ( ) [inline]
```

Terminate the processing.

This is useful only with file processing, to get the final status. For some plugins, this is mandatory

Returns

0 is success, <0 if error, >0 if some status

Definition at line 1331 of file sound4.bigvoice.cl_dyn.hpp.

The documentation for this class was generated from the following file:

- sound4.bigvoice.cl_dyn.hpp

14.21 sound4::CInstance Class Reference

Instance handling class.

```
#include <sound4cl.hpp>
```

Classes

- class CClient

Public Member Functions

- CInstance (CProcessor &dynlib)
- CInstance (CProcessor &dynlib, void *_instance)
- CInstance (const CInstance &)=delete
- CInstance & operator= (const CInstance &)=delete
- virtual ~CInstance ()
- bool IsOk () const
- void SetParam (const std::string &name, const std::string &value)
- std::string GetParam (const std::string &name)
- void SetBus (const CBus &bus)
- void SetPresetManager (CPresetLoader *preset_manager)
- bool Create (const std::string &LoginKey, const std::string &RadioName, const std::string &Access_Key_ID, const std::string &Access_Key_Secret, const std::filesystem::path &save_path, int json_port=0, unsigned int frames_per_chunk=0)
- unsigned int GetChunkFrames ()
- void PresetManager_InformChange (const std::filesystem::path &relative_path, PresetChange_Kind change_kind)
- void SetMetadata (const std::string &key, const char *value)
- void SetMetadataMulti (const std::unordered_map< std::string, const char * > &list)
- std::vector< std::tuple< std::string, std::string > > GetMetadataInfos ()
- virtual void OnUpdateThreadStart ()
- virtual void OnUpdateThreadStop ()
- bool StartWebServer (int http_port, int https_port=0)
- void StopWebServer (int timeout_ms=1000)
- void SetWebServerAppHealth (int httpcode, const std::string &contenttype, const std::string &content)
- void GetWebServerAppHealth (int &httpcode, std::string &contenttype, std::string &content)
- int Terminate ()
- void Stop ()
- unsigned int GetEstimatedDelay ()
- float * GetBufferIn ()
- float * GetBufferOut ()
- void ProcessAudio ()
- void ProcessAudio_Planar (float const *const *input, float *const *output)
- template<typename T >
  std::vector< T > ProcessAnyAudio (const std::vector< T > input)
- std::shared_ptr< CClient > NewClient ()
- bool SaveState ()
- void SetInstanceTracing (TraceLoggingHProvider tracing_provider, GUID activity_guid={})
- void SetInstanceTracingProcessActivity (GUID activity_guid)

Protected Member Functions

- template<typename T >
  unsigned int AddAudio (const T *payload, unsigned int nFrame)
- template<typename T >
  unsigned int GetAudio (T *payload, unsigned int max_nFrame)

14.21.1 Detailed Description

Holds an instance of processing

Definition at line 923 of file sound4cl.hpp.

14.21.2 Constructor & Destructor Documentation

14.21.2.1 CInstance() [1/3]

```
sound4::CInstance::CInstance (
            CProcessor & dynlib )  [inline]
```

Creates the instance, with default parameters

Parameters

dynlib	the processor dynamic library

Definition at line 930 of file sound4cl.hpp.

14.21.2.2 CInstance() [2/3]

```
sound4::CInstance::CInstance (
            CProcessor & dynlib,
            void * _instance )  [inline]
```

Wrap an already created C instance.

Note

Stop will not stop the instance.

Parameters

dynlib	the processor dynamic library
_instance	the C instance pointer (No check on the pointer is made.)

Definition at line 945 of file sound4cl.hpp.

14.21.2.3 CInstance() [3/3]

```
sound4::CInstance::CInstance (
            const CInstance &  )  [delete]
```

14.21.2.4 ~CInstance()

```
virtual sound4::CInstance::~CInstance ( )  [inline], [virtual]
```

Destructor, stopping any running tasks

Definition at line 957 of file sound4cl.hpp.

14.21.3 Member Function Documentation

14.21.3.1 AddAudio()

```
template<typename T >
unsigned int sound4::CInstance::AddAudio (
            const T * payload,
            unsigned int nFrame )  [inline], [protected]
```

Definition at line 1547 of file sound4cl.hpp.

14.21.3.2 Create()

```
bool sound4::CInstance::Create (
            const std::string & LoginKey,
            const std::string & RadioName,
            const std::string & Access_Key_ID,
            const std::string & Access_Key_Secret,
            const std::filesystem::path & save_path,
            int json_port = 0,
            unsigned int frames_per_chunk = 0 )  [inline]
```

Creates and initialize the instance, and starts its update thread

Attention

The **save_path** must be an existing folder with R/W access, or be NULL (then it uses volatile memory storage) If the save_path is empty or the folder is empty, a default configuration with a default preset will be loaded, unless using SetPresetManager.

If used in a container, we recommend to put a volume for this path, so it will survive updates.

License access

The licenses are retrieved via Internet and access some servers. You may use an alternate server by changing `LICENSE_SERVER` in the parameters.

Parameters

LoginKey	SOUND4 Login key
RadioName	SOUND4 RadioName
Access_Key_ID	SOUND4 AWS access ID
Access_Key_Secret	SOUND4 AWS access Secret
save_path	Path where we can load/save the configuration
json_port	Optional json listening port
frames_per_chunk	The number of audio frames in each chunk of processing. Must be in the list returned by CProcessor::GetChunkSizeInFrames, or 0 to set default

Returns

false if failed

Definition at line 1061 of file sound4cl.hpp.

14.21.3.3 GetAudio()

```
template<typename T >
unsigned int sound4::CInstance::GetAudio (
            T * payload,
            unsigned int max_nFrame )  [inline], [protected]
```

Definition at line 1553 of file sound4cl.hpp.

14.21.3.4 GetBufferIn()

```
float * sound4::CInstance::GetBufferIn ( )  [inline]
```

Get preallocated aligned buffer for audio input for ProcessAudio

The buffer is a big enough for all supported chunk sizes.

Each sample is a native 32-bit floating-point number where 1.0 is full scale. Channels are interlaced, so the buffers are [L0,R0,L1,R1,...,Ln,Rn] (L=Left, R=Right)

In case of multiple audio input/output, buffer is [aL0,aR0,bL0,bR0,...,aLn,aRn,bLn,bRn]

Returns

An audio input dedicated buffer.

Definition at line 1364 of file sound4cl.hpp.

14.21.3.5 GetBufferOut()

```
float * sound4::CInstance::GetBufferOut ( )  [inline]
```

Get preallocated aligned buffer for audio output for ProcessAudio

The buffer is a big enough for all supported chunk sizes.

Each sample is a native 32-bit floating-point number where 1.0 is full scale. Channels are interlaced, so the buffers are [L0,R0,L1,R1,...,Ln,Rn] (L=Left, R=Right)

In case of multiple audio input/output, buffer is [aL0,aR0,bL0,bR0,...,aLn,aRn,bLn,bRn]

Returns

An audio output dedicated buffer.

Definition at line 1381 of file sound4cl.hpp.

14.21.3.6 GetChunkFrames()

```
unsigned int sound4::CInstance::GetChunkFrames ( ) [inline]
```

Get the number of audio frames in each chunk of processing.

The value reflects the frames_per_chunk parameter passed to Create

Returns

the number of audio frames in each chunk of processing

Definition at line 1111 of file sound4cl.hpp.

14.21.3.7 GetEstimatedDelay()

```
unsigned int sound4::CInstance::GetEstimatedDelay ( ) [inline]
```

Get the delay (estimated) of current processing algorithm

Remarks

This is not very accurate, it does not take into account group delays.

But it is sufficient for file processing adjustements.

Changing the preset and parameters may change the returned value.

Returns

Estimated delay in frames

Definition at line 1346 of file sound4cl.hpp.

14.21.3.8 GetMetadataInfos()

```
std::vector< std::tuple< std::string, std::string > > sound4::CInstance::GetMetadataInfos ( )
[inline]
```

Get information on known metadata keys.

Returns

a list of {key,description} of known metadata used in process and extensions.

Definition at line 1199 of file sound4cl.hpp.

14.21.3.9 GetParam()

```
std::string sound4::CInstance::GetParam (
            const std::string & name ) [inline]
```

Gets a parameter value

Parameters

name	the parameter name

Returns

the parameter value

Definition at line 986 of file sound4cl.hpp.

14.21.3.10 GetWebServerAppHealth()

```
void sound4::CInstance::GetWebServerAppHealth (
            int & httpcode,
            std::string & contenttype,
            std::string & content )  [inline]
```

Get the web server /apphealth status info

Definition at line 1292 of file sound4cl.hpp.

14.21.3.11 IsOk()

```
bool sound4::CInstance::IsOk ( ) const  [inline]
```

Returns true if an instance has been created and not stopped.

Definition at line 965 of file sound4cl.hpp.

14.21.3.12 NewClient()

```
std::shared_ptr< CClient > sound4::CInstance::NewClient ( )  [inline]
```

Creates a low-level JSON client

See also JSON syntax

Returns

a new client to communicate with the processing

Definition at line 1497 of file sound4cl.hpp.

14.21.3.13 OnUpdateThreadStart()

```
virtual void sound4::CInstance::OnUpdateThreadStart ( )  [inline], [virtual]
```

Can be overloaded, called at start of UpdateThread in the thread

Definition at line 1223 of file sound4cl.hpp.

14.21.3.14 OnUpdateThreadStop()

```
virtual void sound4::CInstance::OnUpdateThreadStop ( ) [inline], [virtual]
```

Can be overloaded to call at end of UpdateThread in the thread

Definition at line 1227 of file sound4cl.hpp.

14.21.3.15 operator=()

```
CInstance & sound4::CInstance::operator= (
            const CInstance & ) [delete]
```

14.21.3.16 PresetManager_InformChange()

```
void sound4::CInstance::PresetManager_InformChange (
            const std::filesystem::path & relative_path,
            PresetChange_Kind change_kind ) [inline]
```

Inform that a change happened in the storage. This must be used only in conjonction with SetPresetManager

Parameters

relative_path	The path which changed, relative to the root storage
change_kind	What happened to this path

Definition at line 1125 of file sound4cl.hpp.

14.21.3.17 ProcessAnyAudio()

```
template<typename T >
std::vector< T > sound4::CInstance::ProcessAnyAudio (
            const std::vector< T > input ) [inline]
```

Process audio (different formats, less optimized)

Supports for int16_t, int32_t and float (32) in native endianness

Attention

the return count is independent from the input count

Template Parameters

T	the C type for one audio sample

Parameters

input	audio to process

Returns

processed audio

Definition at line 1423 of file sound4cl.hpp.

14.21.3.18 ProcessAudio()

```
void sound4::CInstance::ProcessAudio ( ) [inline]
```

Process one audio chunk, from GetBufferIn() to GetBufferOut()

Definition at line 1389 of file sound4cl.hpp.

14.21.3.19 ProcessAudio_Planar()

```
void sound4::CInstance::ProcessAudio_Planar (
            float const *const * input,
            float *const * output ) [inline]
```

Process one audio chunk, but with planar audio

Each sample is a native 32-bit floating-point number where 1.0 is full scale. Channels are NOT interlaced, so the buffers are arrays of planar audio : [[L0,L1,...,Ln] , [R0,R1,...,Rn]] (L=Left, R=Right)

In case of multiple audio input/output, buffer are [[aL...], [aR...], [bL...], [bR...], ...]

Parameters

input	has GetAudioInputCount() ∗ GetChannelCount() channels
output	has GetAudioOutputCount() ∗ GetChannelCount() channels

Definition at line 1405 of file sound4cl.hpp.

14.21.3.20 SaveState()

```
bool sound4::CInstance::SaveState ( ) [inline]
```

Save the current state

Needed when CClient::ProcessJson returned with need_save to true. However it can be postponed as much as wanted.

Remarks

Works only when update thread is running

Returns

true if success

Definition at line 1513 of file sound4cl.hpp.

14.21.3.21 SetBus()

```
void sound4::CInstance::SetBus (
            const CBus & bus )  [inline]
```

Set the instance's bus. It can be used by instances to exchange real-time information if needed.

Attention

The bus should be created with the same library

Parameters

bus	the bus to use

Definition at line 1003 of file sound4cl.hpp.

14.21.3.22 SetInstanceTracing()

```
void sound4::CInstance::SetInstanceTracing (
            TraceLoggingHProvider tracing_provider,
            GUID activity_guid = {} )  [inline]
```

Set the instance's tracing provider before creating instance

Parameters

activity_guid	the activity guid, used for creation, updates and destruction
tracing_provider	the provider as created with TRACELOGGING_DEFINE_PROVIDER

Definition at line 1527 of file sound4cl.hpp.

14.21.3.23 SetInstanceTracingProcessActivity()

```
void sound4::CInstance::SetInstanceTracingProcessActivity (
            GUID activity_guid )  [inline]
```

Set the instance's process activity for tracing (optional). Should be called only in process's thread.

Parameters

activity_guid	the activity guid

Definition at line 1538 of file sound4cl.hpp.

14.21.3.24 SetMetadata()

```
void sound4::CInstance::SetMetadata (
            const std::string & key,
            const char * value )  [inline]
```

Adds the specific metadata to the process.

It can come from any thread, and will be used as soon as possible. Setting a null value erase the metadata, which is different from setting an empty string.

Parameters

key	the metadata key If key contains a dot (like wm.KEY), it will be sent only to the matching plugin (ie wm here) without the prefix (ie KEY here) Use empty prefix for routing to main only.
value	the metadata value or nullptr to erase it.

Definition at line 1143 of file sound4cl.hpp.

14.21.3.25 SetMetadataMulti()

```
void sound4::CInstance::SetMetadataMulti (
            const std::unordered_map< std::string, const char * > & list )  [inline]
```

Adds multiple metadata to the process.

This works like SetMetadata but with multiple metadata at once.

See also

CInstance::SetMetadata

Parameters

list	a map of key/value pair.

Definition at line 1163 of file sound4cl.hpp.

14.21.3.26 SetParam()

```
void sound4::CInstance::SetParam (
            const std::string & name,
            const std::string & value )  [inline]
```

Set a parameter value

Must be done before Create See also Environment variables and parameters

Parameters

name	the parameter name
value	the parameter value

Definition at line 975 of file sound4cl.hpp.

14.21.3.27 SetPresetManager()

```
void sound4::CInstance::SetPresetManager (
            CPresetLoader * preset_manager )  [inline]
```

Sets a custom preset manager Optional, this overrides the `save_path` in Create

To dynamically update when storage change, see PresetManager_InformChange

Must be done before Create

Parameters

preset_manager	The custom preset manager

Definition at line 1020 of file sound4cl.hpp.

14.21.3.28 SetWebServerAppHealth()

```
void sound4::CInstance::SetWebServerAppHealth (
            int httpcode,
            const std::string & contenttype,
            const std::string & content )  [inline]
```

Set the web server /apphealth status info

Definition at line 1283 of file sound4cl.hpp.

14.21.3.29 StartWebServer()

```
bool sound4::CInstance::StartWebServer (
            int http_port,
            int https_port = 0 )  [inline]
```

Starts a Web server on requested ports

For secure connection, it will use privatekey.pem and certificate.pem from current directory. Environment variables `SSL_PRIVATE_PATH` and `SSL_CERTIFICATE_PATH` can override those (see Environment variables and parameters). If none is valid, it will try also /etc/ssl/certs/server.key and /etc/ssl/certs/server.crt.

Warning

On Windows, calling this from Go<1.20 code will crash.

Parameters

http_port	The port to listen for HTTP connections (0 to disable)
https_port	The port to listen for HTTPS connections (0 to disable)

Returns

true if ports were opened successfully.

Definition at line 1243 of file sound4cl.hpp.

14.21.3.30 Stop()

```
void sound4::CInstance::Stop ( ) [inline]
```

Stops the instance, its web server and its update thread.

Note

Stop will not stop a wrapped C instance

Definition at line 1323 of file sound4cl.hpp.

14.21.3.31 StopWebServer()

```
void sound4::CInstance::StopWebServer (
            int timeout_ms = 1000 ) [inline]
```

Stop a web server started with StartWebServer

Warning

On Windows, calling this from Go<1.20 code will crash.

Parameters

timeout_ms	The timeout to wait gracefull shutdown

Definition at line 1271 of file sound4cl.hpp.

14.21.3.32 Terminate()

```
int sound4::CInstance::Terminate ( ) [inline]
```

Terminate the processing.

This is useful only with file processing, to get the final status. For some plugins, this is mandatory

Returns

0 is success, <0 if error, >0 if some status

Definition at line 1312 of file sound4cl.hpp.

The documentation for this class was generated from the following file:

- sound4cl.hpp

14.22 sound4::bigvoice::CPresetLoader Class Reference

Custom preset handler helper.

```
#include <sound4.bigvoice.cl.hpp>
```

Public Member Functions

- CPresetLoader ()=default
- virtual ~CPresetLoader ()=default
- virtual bool IsReadOnly ()=0
- virtual bool Exists (const std::filesystem::path &name)=0
- virtual bool Remove (const std::filesystem::path &name)=0
- virtual bool Rename (const std::filesystem::path &from, const std::filesystem::path &to)=0
- virtual std::vector< std::filesystem::path > GetAll ()=0
- virtual std::string Read (const std::filesystem::path &filename)=0
- virtual bool Write (const std::filesystem::path &filename, const std::string &content)=0

14.22.1 Detailed Description

Derive from this class and call CInstance::SetPresetManager

Definition at line 458 of file sound4.bigvoice.cl.hpp.

14.22.2 Constructor & Destructor Documentation

14.22.2.1 CPresetLoader()

```
sound4::bigvoice::CPresetLoader::CPresetLoader ( ) [default]
```

14.22.2.2 ~CPresetLoader()

```
virtual sound4::bigvoice::CPresetLoader::~CPresetLoader ( ) [virtual], [default]
```

14.22.3 Member Function Documentation

14.22.3.1 Exists()

```
virtual bool sound4::bigvoice::CPresetLoader::Exists (
            const std::filesystem::path & name )  [pure virtual]
```

14.22.3.2 GetAll()

```
virtual std::vector< std::filesystem::path > sound4::bigvoice::CPresetLoader::GetAll ( )
[pure virtual]
```

14.22.3.3 IsReadOnly()

```
virtual bool sound4::bigvoice::CPresetLoader::IsReadOnly ( )  [pure virtual]
```

14.22.3.4 Read()

```
virtual std::string sound4::bigvoice::CPresetLoader::Read (
            const std::filesystem::path & filename )  [pure virtual]
```

14.22.3.5 Remove()

```
virtual bool sound4::bigvoice::CPresetLoader::Remove (
            const std::filesystem::path & name )  [pure virtual]
```

14.22.3.6 Rename()

```
virtual bool sound4::bigvoice::CPresetLoader::Rename (
            const std::filesystem::path & from,
            const std::filesystem::path & to )  [pure virtual]
```

14.22.3.7 Write()

```
virtual bool sound4::bigvoice::CPresetLoader::Write (
            const std::filesystem::path & filename,
            const std::string & content )  [pure virtual]
```

The documentation for this class was generated from the following file:

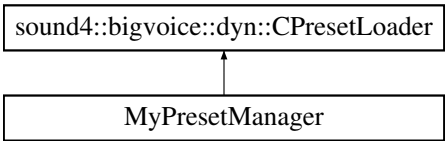
- sound4.bigvoice.cl.hpp

14.23 sound4::bigvoice::dyn::CPresetLoader Class Reference

Custom preset handler helper.

```
#include <sound4.bigvoice.cl_dyn.hpp>
```

Inheritance diagram for sound4::bigvoice::dyn::CPresetLoader:



Public Member Functions

- CPresetLoader ()=default
- virtual ~CPresetLoader ()=default
- virtual bool IsReadOnly ()=0
- virtual bool Exists (const std::filesystem::path &name)=0
- virtual bool Remove (const std::filesystem::path &name)=0
- virtual bool Rename (const std::filesystem::path &from, const std::filesystem::path &to)=0
- virtual std::vector< std::filesystem::path > GetAll ()=0
- virtual std::string Read (const std::filesystem::path &filename)=0
- virtual bool Write (const std::filesystem::path &filename, const std::string &content)=0

14.23.1 Detailed Description

Derive from this class and call CInstance::SetPresetManager

Definition at line 942 of file sound4.bigvoice.cl_dyn.hpp.

14.23.2 Constructor & Destructor Documentation

14.23.2.1 CPresetLoader()

```
sound4::bigvoice::dyn::CPresetLoader::CPresetLoader ( ) [default]
```

14.23.2.2 ~CPresetLoader()

```
virtual sound4::bigvoice::dyn::CPresetLoader::~CPresetLoader ( ) [virtual], [default]
```

14.23.3 Member Function Documentation

14.23.3.1 Exists()

```
virtual bool sound4::bigvoice::dyn::CPresetLoader::Exists (
            const std::filesystem::path & name ) [pure virtual]
```

Implemented in MyPresetManager, and MyPresetManager.

14.23.3.2 GetAll()

```
virtual std::vector< std::filesystem::path > sound4::bigvoice::dyn::CPresetLoader::GetAll ( )
[pure virtual]
```

Implemented in MyPresetManager, and MyPresetManager.

14.23.3.3 IsReadOnly()

```
virtual bool sound4::bigvoice::dyn::CPresetLoader::IsReadOnly ( )  [pure virtual]
```

Implemented in MyPresetManager, and MyPresetManager.

14.23.3.4 Read()

```
virtual std::string sound4::bigvoice::dyn::CPresetLoader::Read (
            const std::filesystem::path & filename )  [pure virtual]
```

Implemented in MyPresetManager, and MyPresetManager.

14.23.3.5 Remove()

```
virtual bool sound4::bigvoice::dyn::CPresetLoader::Remove (
            const std::filesystem::path & name )  [pure virtual]
```

Implemented in MyPresetManager, and MyPresetManager.

14.23.3.6 Rename()

```
virtual bool sound4::bigvoice::dyn::CPresetLoader::Rename (
            const std::filesystem::path & from,
            const std::filesystem::path & to )  [pure virtual]
```

Implemented in MyPresetManager, and MyPresetManager.

14.23.3.7 Write()

```
virtual bool sound4::bigvoice::dyn::CPresetLoader::Write (
            const std::filesystem::path & filename,
            const std::string & content )  [pure virtual]
```

Implemented in MyPresetManager, and MyPresetManager.

The documentation for this class was generated from the following file:

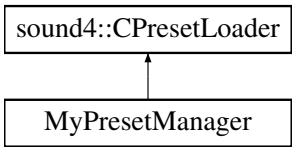
- sound4.bigvoice.cl_dyn.hpp

14.24 sound4::CPresetLoader Class Reference

Custom preset handler helper.

```
#include <sound4cl.hpp>
```

Inheritance diagram for sound4::CPresetLoader:



Public Member Functions

- CPresetLoader ()=default
- virtual ~CPresetLoader ()=default
- virtual bool IsReadOnly ()=0
- virtual bool Exists (const std::filesystem::path &name)=0
- virtual bool Remove (const std::filesystem::path &name)=0
- virtual bool Rename (const std::filesystem::path &from, const std::filesystem::path &to)=0
- virtual std::vector< std::filesystem::path > GetAll ()=0
- virtual std::string Read (const std::filesystem::path &filename)=0
- virtual bool Write (const std::filesystem::path &filename, const std::string &content)=0

14.24.1 Detailed Description

Derive from this class and call CInstance::SetPresetManager

Definition at line 900 of file sound4cl.hpp.

14.24.2 Constructor & Destructor Documentation

14.24.2.1 CPresetLoader()

```
sound4::CPresetLoader::CPresetLoader ( ) [default]
```

14.24.2.2 ~CPresetLoader()

```
virtual sound4::CPresetLoader::~CPresetLoader ( ) [virtual], [default]
```

14.24.3 Member Function Documentation

14.24.3.1 Exists()

```
virtual bool sound4::CPresetLoader::Exists (
            const std::filesystem::path & name ) [pure virtual]
```

Implemented in MyPresetManager, and MyPresetManager.

14.24.3.2 GetAll()

```
virtual std::vector< std::filesystem::path > sound4::CPresetLoader::GetAll ( )  [pure virtual]
```

Implemented in MyPresetManager, and MyPresetManager.

14.24.3.3 IsReadOnly()

```
virtual bool sound4::CPresetLoader::IsReadOnly ( )  [pure virtual]
```

Implemented in MyPresetManager, and MyPresetManager.

14.24.3.4 Read()

```
virtual std::string sound4::CPresetLoader::Read (
            const std::filesystem::path & filename )  [pure virtual]
```

Implemented in MyPresetManager, and MyPresetManager.

14.24.3.5 Remove()

```
virtual bool sound4::CPresetLoader::Remove (
            const std::filesystem::path & name )  [pure virtual]
```

Implemented in MyPresetManager, and MyPresetManager.

14.24.3.6 Rename()

```
virtual bool sound4::CPresetLoader::Rename (
            const std::filesystem::path & from,
            const std::filesystem::path & to )  [pure virtual]
```

Implemented in MyPresetManager, and MyPresetManager.

14.24.3.7 Write()

```
virtual bool sound4::CPresetLoader::Write (
            const std::filesystem::path & filename,
            const std::string & content )  [pure virtual]
```

Implemented in MyPresetManager, and MyPresetManager.

The documentation for this class was generated from the following file:

- sound4cl.hpp

14.25 sound4::CProcessor Class Reference

Dynamic library interface.

```
#include <sound4cl.hpp>
```

Public Member Functions

- CProcessor ()=default
- bool Load (const std::filesystem::path &filepath)

  Loads the library.
- bool IsOk () const

  Check if the library was loaded correctly.
- void AudioConvertFrom (const uint8_t ∗payload, float ∗output, size_t nSpl, SampleFormat fmt)
- void AudioConvertTo (const float ∗input, uint8_t ∗payload, size_t nSpl, SampleFormat fmt)
- void StereoToMono (const float ∗input, float ∗output, size_t nFrame)
- void MonoToStereo (const float ∗input, float ∗output, size_t nFrame)
- void StereoToMono_Planar (const float ∗inputL, const float ∗inputR, float ∗output, size_t nFrame)
- void MonoToStereo_Planar (const float ∗input, float ∗outputL, float ∗outputR, size_t nFrame)
- void AudioMonoFromLiveStereo (const uint8_t ∗payload, float ∗output)
- void AudioMonoToLiveStereo (const float ∗input, uint8_t ∗payload)
- std::string GetVersion ()
- unsigned int GetChunkSizeInFrames ()
- std::vector< unsigned int > GetPossibleChunkSizeInFrames ()
- unsigned int GetChannelCount ()
- unsigned int GetAudioInputCount ()
- unsigned int GetAudioOutputCount ()
- unsigned int GetSampleRate ()
- std::string GetFormatName (const SampleFormat fmt)
- SampleFormat GetFormatFromName (const std::string &name)
- unsigned int GetBytesFromFormat (const SampleFormat fmt)
- void SetLogSeverity (LogSeverity severity)
- void SetLoggerCallback (log_cb_t cb)

Protected Member Functions

- template<typename T >
  helper::DynFuncHolder< T > GetPrefixSymbol (const std::string &name)

Friends

- class CBus
- class CInstance
- class CAudioConverter

14.25.1 Detailed Description

Once you loaded the library with Load(), if it succeed you can use all the standard C functions from this library.

Definition at line 314 of file sound4cl.hpp.

14.25.2 Constructor & Destructor Documentation

14.25.2.1 CProcessor()

```
sound4::CProcessor::CProcessor ( ) [default]
```

14.25.3 Member Function Documentation

14.25.3.1 GetAudioInputCount()

```
unsigned int sound4::CProcessor::GetAudioInputCount ( ) [inline]
```

Get the number of inputs for this process

Remarks

All inputs have GetChannelCount() channels

Returns

The process input count

Definition at line 803 of file sound4cl.hpp.

14.25.3.2 GetAudioOutputCount()

```
unsigned int sound4::CProcessor::GetAudioOutputCount ( ) [inline]
```

Get the number of outputs for this process

Remarks

All outputs have GetChannelCount() channels

Returns

The process outputs count

Definition at line 813 of file sound4cl.hpp.

14.25.3.3 GetBytesFromFormat()

```
unsigned int sound4::CProcessor::GetBytesFromFormat (
            const SampleFormat fmt ) [inline]
```

Get the format byte size

Parameters

fmt	the format

Returns

the number of bytes used by this format for a single channel audio sample

Definition at line 850 of file sound4cl.hpp.

14.25.3.4 GetChannelCount()

```
unsigned int sound4::CProcessor::GetChannelCount ( ) [inline]
```

Get the number of channels needed by this process

Returns

The process channels count

Definition at line 793 of file sound4cl.hpp.

14.25.3.5 GetChunkSizeInFrames()

```
unsigned int sound4::CProcessor::GetChunkSizeInFrames ( ) [inline]
```

Get the default number of frames in a process chunk.

The output will be available only by chunks of this size.

Note

A Frame is a set of GetChannelCount samples

Returns

The process chunk size in frame

Deprecated Use GetPossibleChunkSizeInFrames

Definition at line 764 of file sound4cl.hpp.

14.25.3.6 GetFormatFromName()

```
SampleFormat sound4::CProcessor::GetFormatFromName (
            const std::string & name ) [inline]
```

Convert string to format

Parameters

name	the format string

Returns

the matching format, or INVALID_FORMAT if invalid.

Definition at line 841 of file sound4cl.hpp.

14.25.3.7 GetFormatName()

```
std::string sound4::CProcessor::GetFormatName (
            const SampleFormat fmt ) [inline]
```

Convert format to string

Parameters

fmt	the format

Returns

the string name of the format

Definition at line 832 of file sound4cl.hpp.

14.25.3.8 GetPossibleChunkSizeInFrames()

```
std::vector< unsigned int > sound4::CProcessor::GetPossibleChunkSizeInFrames ( ) [inline]
```

Get the possibles number of frames in a process chunk.

The output will be available only by chunks of this size.

Note

A Frame is a set of GetChannelCount samples

Returns

An vector of possible process chunk size in frame

Definition at line 775 of file sound4cl.hpp.

14.25.3.9 GetPrefixSymbol()

```
template<typename T >
helper::DynFuncHolder< T > sound4::CProcessor::GetPrefixSymbol (
            const std::string & name )  [inline], [protected]
```

Definition at line 421 of file sound4cl.hpp.

14.25.3.10 GetSampleRate()

```
unsigned int sound4::CProcessor::GetSampleRate ( )  [inline]
```

Get the processing sample-rate

Remarks

For now, always return 48000, but should be checked for backward compatibility

Returns

The process sample-rate in Hz

Definition at line 823 of file sound4cl.hpp.

14.25.3.11 GetVersion()

```
std::string sound4::CProcessor::GetVersion ( )  [inline]
```

Get the process version string

Returns

version string

Definition at line 751 of file sound4cl.hpp.

14.25.3.12 IsOk()

```
bool sound4::CProcessor::IsOk ( ) const  [inline]
```

Returns

true if OK.

false if not OK.

Definition at line 638 of file sound4cl.hpp.

14.25.3.13 Load()

```
bool sound4::CProcessor::Load (
            const std::filesystem::path & filepath )  [inline]
```

Parameters

filepath	the path of the library to load.

Returns

true if library was loaded correctly.

false if library load failed. Do not use in this case !

Definition at line 436 of file sound4cl.hpp.

14.25.3.14 SetLoggerCallback()

```
void sound4::CProcessor::SetLoggerCallback (
            log_cb_t cb ) [inline]
```

Sets the log callback. If not set, console output will be used.

Definition at line 862 of file sound4cl.hpp.

14.25.3.15 SetLogSeverity()

```
void sound4::CProcessor::SetLogSeverity (
            LogSeverity severity ) [inline]
```

Sets the log severity (global)

Definition at line 856 of file sound4cl.hpp.

14.25.4 Friends And Related Symbol Documentation

14.25.4.1 CAudioConverter

```
friend class CAudioConverter [friend]
```

Definition at line 322 of file sound4cl.hpp.

14.25.4.2 CBus

```
friend class CBus [friend]
```

Definition at line 320 of file sound4cl.hpp.

14.25.4.3 CInstance

```
friend class CInstance [friend]
```

Definition at line 321 of file sound4cl.hpp.

The documentation for this class was generated from the following file:

- sound4cl.hpp

14.26 sound4::bigvoice::dyn::helper::DynFuncHolder< T > Class Template Reference

Helper to wrap a function pointer.

```
#include <sound4.bigvoice.cl_dyn.hpp>
```

Public Member Functions

- DynFuncHolder ()=default
- DynFuncHolder (DynFunc_t a_ptr)
- operator bool () const
- bool IsOk () const
- operator T* () const

14.26.1 Detailed Description

template<typename T>
class sound4::bigvoice::dyn::helper::DynFuncHolder< T >

Parameters

T	is the function type, you may use decltype(fn)

Definition at line 87 of file sound4.bigvoice.cl_dyn.hpp.

14.26.2 Constructor & Destructor Documentation

14.26.2.1 DynFuncHolder() [1/2]

```
template<typename T >
sound4::bigvoice::dyn::helper::DynFuncHolder< T >::DynFuncHolder ( ) [default]
```

14.26.2.2 DynFuncHolder() [2/2]

```
template<typename T >
sound4::bigvoice::dyn::helper::DynFuncHolder< T >::DynFuncHolder (
            DynFunc_t a_ptr ) [inline]
```

Definition at line 98 of file sound4.bigvoice.cl_dyn.hpp.

14.26.3 Member Function Documentation

14.26.3.1 IsOk()

```
template<typename T >
bool sound4::bigvoice::dyn::helper::DynFuncHolder< T >::IsOk ( ) const [inline]
```

Definition at line 100 of file sound4.bigvoice.cl_dyn.hpp.

14.26.3.2 operator bool()

```
template<typename T >
sound4::bigvoice::dyn::helper::DynFuncHolder< T >::operator bool ( ) const [inline]
```

Definition at line 99 of file sound4.bigvoice.cl_dyn.hpp.

14.26.3.3 operator T∗()

```
template<typename T >
sound4::bigvoice::dyn::helper::DynFuncHolder< T >::operator T* ( ) const [inline]
```

Definition at line 101 of file sound4.bigvoice.cl_dyn.hpp.

The documentation for this class was generated from the following file:

- sound4.bigvoice.cl_dyn.hpp

14.27 sound4::helper::DynFuncHolder< T > Class Template Reference

Helper to wrap a function pointer.

```
#include <sound4cl.hpp>
```

Public Member Functions

- DynFuncHolder ()=default
- DynFuncHolder (DynFunc_t a_ptr)
- operator bool () const
- bool IsOk () const
- operator T∗ () const

14.27.1 Detailed Description

template<typename T>
class sound4::helper::DynFuncHolder< T >

Parameters

T	is the function type, you may use decltype(fn)

Definition at line 134 of file sound4cl.hpp.

14.27.2 Constructor & Destructor Documentation

14.27.2.1 DynFuncHolder() [1/2]

```
template<typename T >
sound4::helper::DynFuncHolder< T >::DynFuncHolder ( ) [default]
```

14.27.2.2 DynFuncHolder() [2/2]

```
template<typename T >
sound4::helper::DynFuncHolder< T >::DynFuncHolder (
            DynFunc_t a_ptr ) [inline]
```

Definition at line 145 of file sound4cl.hpp.

14.27.3 Member Function Documentation

14.27.3.1 IsOk()

```
template<typename T >
bool sound4::helper::DynFuncHolder< T >::IsOk ( ) const [inline]
```

Definition at line 147 of file sound4cl.hpp.

14.27.3.2 operator bool()

```
template<typename T >
sound4::helper::DynFuncHolder< T >::operator bool ( ) const [inline]
```

Definition at line 146 of file sound4cl.hpp.

14.27.3.3 operator T*()

```
template<typename T >
sound4::helper::DynFuncHolder< T >::operator T* ( ) const [inline]
```

Definition at line 148 of file sound4cl.hpp.

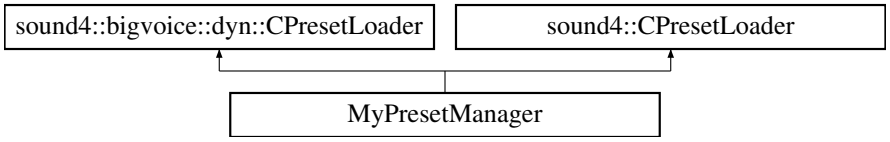
The documentation for this class was generated from the following file:

- sound4cl.hpp

14.28 MyPresetManager Class Reference

[Custom preset manager]

Inheritance diagram for MyPresetManager:



Public Member Functions

- MyPresetManager ()=default
- virtual ~MyPresetManager ()=default
- bool SetupPath (const std::filesystem::path &a_preset_path)
- virtual bool IsReadOnly () override
- virtual bool Exists (const std::filesystem::path &name) override
- virtual bool Remove (const std::filesystem::path &name) override
- virtual bool Rename (const std::filesystem::path &from, const std::filesystem::path &to) override
- virtual std::vector< std::filesystem::path > GetAll () override
- virtual std::string Read (const std::filesystem::path &filename) override
- virtual bool Write (const std::filesystem::path &filename, const std::string &content) override
- MyPresetManager ()=default
- virtual ~MyPresetManager ()=default
- bool SetupPath (const std::filesystem::path &a_preset_path)
- virtual bool IsReadOnly () override
- virtual bool Exists (const std::filesystem::path &name) override
- virtual bool Remove (const std::filesystem::path &name) override
- virtual bool Rename (const std::filesystem::path &from, const std::filesystem::path &to) override
- virtual std::vector< std::filesystem::path > GetAll () override
- virtual std::string Read (const std::filesystem::path &filename) override
- virtual bool Write (const std::filesystem::path &filename, const std::string &content) override

Public Member Functions inherited from sound4::bigvoice::dyn::CPresetLoader

- CPresetLoader ()=default
- virtual ~CPresetLoader ()=default

Public Member Functions inherited from sound4::CPresetLoader

- CPresetLoader ()=default
- virtual ~CPresetLoader ()=default

14.28.1 Detailed Description

Definition at line 120 of file sound4.bigvoice.cl-pipe-dyn.cpp.

14.28.2 Constructor & Destructor Documentation

14.28.2.1 MyPresetManager() [1/2]

```
MyPresetManager::MyPresetManager ( ) [default]
```

14.28.2.2 ~MyPresetManager() [1/2]

```
virtual MyPresetManager::~MyPresetManager ( ) [virtual], [default]
```

14.28.2.3 MyPresetManager() [2/2]

```
MyPresetManager::MyPresetManager ( ) [default]
```

14.28.2.4 ~MyPresetManager() [2/2]

```
virtual MyPresetManager::~MyPresetManager ( ) [virtual], [default]
```

14.28.3 Member Function Documentation

14.28.3.1 Exists() [1/2]

```
virtual bool MyPresetManager::Exists (
            const std::filesystem::path & name ) [inline], [override], [virtual]
```

Implements sound4::bigvoice::dyn::CPresetLoader.

Definition at line 138 of file sound4.bigvoice.cl-pipe-dyn.cpp.

14.28.3.2 Exists() [2/2]

```
virtual bool MyPresetManager::Exists (
            const std::filesystem::path & name ) [inline], [override], [virtual]
```

Implements sound4::bigvoice::dyn::CPresetLoader.

Definition at line 122 of file sound4cl-pipe.cpp.

14.28.3.3 GetAll() [1/2]

```
virtual std::vector< std::filesystem::path > MyPresetManager::GetAll ( ) [inline], [override],
[virtual]
```

Implements sound4::bigvoice::dyn::CPresetLoader.

Definition at line 154 of file sound4.bigvoice.cl-pipe-dyn.cpp.

14.28.3.4 GetAll() [2/2]

```
virtual std::vector< std::filesystem::path > MyPresetManager::GetAll ( ) [inline], [override],
[virtual]
```

Implements sound4::bigvoice::dyn::CPresetLoader.

Definition at line 138 of file sound4cl-pipe.cpp.

14.28.3.5 IsReadOnly() [1/2]

```
virtual bool MyPresetManager::IsReadOnly ( ) [inline], [override], [virtual]
```

Implements sound4::bigvoice::dyn::CPresetLoader.

Definition at line 137 of file sound4.bigvoice.cl-pipe-dyn.cpp.

14.28.3.6 IsReadOnly() [2/2]

```
virtual bool MyPresetManager::IsReadOnly ( ) [inline], [override], [virtual]
```

Implements sound4::bigvoice::dyn::CPresetLoader.

Definition at line 121 of file sound4cl-pipe.cpp.

14.28.3.7 Read() [1/2]

```
virtual std::string MyPresetManager::Read (
            const std::filesystem::path & filename ) [inline], [override], [virtual]
```

Implements sound4::bigvoice::dyn::CPresetLoader.

Definition at line 168 of file sound4.bigvoice.cl-pipe-dyn.cpp.

14.28.3.8 Read() [2/2]

```
virtual std::string MyPresetManager::Read (
            const std::filesystem::path & filename ) [inline], [override], [virtual]
```

Implements sound4::bigvoice::dyn::CPresetLoader.

Definition at line 152 of file sound4cl-pipe.cpp.

14.28.3.9 Remove() [1/2]

```
virtual bool MyPresetManager::Remove (
            const std::filesystem::path & name ) [inline], [override], [virtual]
```

Implements sound4::bigvoice::dyn::CPresetLoader.

Definition at line 143 of file sound4.bigvoice.cl-pipe-dyn.cpp.

14.28.3.10 Remove() [2/2]

```
virtual bool MyPresetManager::Remove (
            const std::filesystem::path & name )  [inline], [override], [virtual]
```

Implements sound4::bigvoice::dyn::CPresetLoader.

Definition at line 127 of file sound4cl-pipe.cpp.

14.28.3.11 Rename() [1/2]

```
virtual bool MyPresetManager::Rename (
            const std::filesystem::path & from,
            const std::filesystem::path & to )  [inline], [override], [virtual]
```

Implements sound4::bigvoice::dyn::CPresetLoader.

Definition at line 148 of file sound4.bigvoice.cl-pipe-dyn.cpp.

14.28.3.12 Rename() [2/2]

```
virtual bool MyPresetManager::Rename (
            const std::filesystem::path & from,
            const std::filesystem::path & to )  [inline], [override], [virtual]
```

Implements sound4::bigvoice::dyn::CPresetLoader.

Definition at line 132 of file sound4cl-pipe.cpp.

14.28.3.13 SetupPath() [1/2]

```
bool MyPresetManager::SetupPath (
            const std::filesystem::path & a_preset_path )  [inline]
```

Definition at line 125 of file sound4.bigvoice.cl-pipe-dyn.cpp.

14.28.3.14 SetupPath() [2/2]

```
bool MyPresetManager::SetupPath (
            const std::filesystem::path & a_preset_path )  [inline]
```

Definition at line 109 of file sound4cl-pipe.cpp.

14.28.3.15 Write() [1/2]

```
virtual bool MyPresetManager::Write (
            const std::filesystem::path & filename,
            const std::string & content )  [inline], [override], [virtual]
```

Implements sound4::bigvoice::dyn::CPresetLoader.

Definition at line 178 of file sound4.bigvoice.cl-pipe-dyn.cpp.

14.28.3.16 Write() [2/2]

```
virtual bool MyPresetManager::Write (
            const std::filesystem::path & filename,
            const std::string & content )  [inline], [override], [virtual]
```

Implements sound4::bigvoice::dyn::CPresetLoader.

Definition at line 162 of file sound4cl-pipe.cpp.

The documentation for this class was generated from the following files:

- sound4.bigvoice.cl-pipe-dyn.cpp
- sound4cl-pipe.cpp

14.29 sound4::bigvoice::dyn::helper::SampleFormat< T > Struct Template Reference

Helper for Sample format types.

```
#include <sound4.bigvoice.cl_dyn.hpp>
```

14.29.1 Detailed Description

template<typename T>
struct sound4::bigvoice::dyn::helper::SampleFormat< T >

Template Parameters

T	the C type for one audio sample

Definition at line 584 of file sound4.bigvoice.cl_dyn.hpp.

The documentation for this struct was generated from the following file:

- sound4.bigvoice.cl_dyn.hpp

14.30 sound4::bigvoice::helper::SampleFormat< T > Struct Template Reference

Helper for Sample format types.

```
#include <sound4.bigvoice.cl.hpp>
```

14.30.1 Detailed Description

template<typename T>
struct sound4::bigvoice::helper::SampleFormat< T >

Template Parameters

T	the C type for one audio sample

Definition at line 132 of file sound4.bigvoice.cl.hpp.

The documentation for this struct was generated from the following file:

- sound4.bigvoice.cl.hpp

14.31 sound4::helper::SampleFormat< T > Struct Template Reference

Helper for Sample format types.

```
#include <sound4cl.hpp>
```

14.31.1 Detailed Description

template<typename T>
struct sound4::helper::SampleFormat< T >

Template Parameters

T	the C type for one audio sample

Definition at line 113 of file sound4cl.hpp.

The documentation for this struct was generated from the following file:

- sound4cl.hpp

14.32 SOUND4_AuxiliaryOutputInfos Struct Reference

```
#include <sound4.bigvoice.cl.h>
```

Public Attributes

- char * id

  The ID of the output (fixed across versions)
- char * description

  The description of the output.
- unsigned int sample_rate

  The sampling rate of this output.
- unsigned int channel_count

  The number of channels of this output.
- const float * buffer

  The output buffer of the output. See bigvoice_ProcessAudio for format.

14.32.1 Detailed Description

Structure holding information on an auxiliary output

Definition at line 811 of file sound4.bigvoice.cl.h.

14.32.2 Member Data Documentation

14.32.2.1 buffer

```
const float* SOUND4_AuxiliaryOutputInfos::buffer
```

Definition at line 816 of file sound4.bigvoice.cl.h.

14.32.2.2 channel_count

```
unsigned int SOUND4_AuxiliaryOutputInfos::channel_count
```

Definition at line 815 of file sound4.bigvoice.cl.h.

14.32.2.3 description

```
char* SOUND4_AuxiliaryOutputInfos::description
```

Definition at line 813 of file sound4.bigvoice.cl.h.

14.32.2.4 id

```
char* SOUND4_AuxiliaryOutputInfos::id
```

Definition at line 812 of file sound4.bigvoice.cl.h.

14.32.2.5 sample_rate

```
unsigned int SOUND4_AuxiliaryOutputInfos::sample_rate
```

Definition at line 814 of file sound4.bigvoice.cl.h.

The documentation for this struct was generated from the following file:

- sound4.bigvoice.cl.h

14.33 SOUND4_ProcessInfo Struct Reference

```
#include <sound4.bigvoice.cl.h>
```

Public Attributes

- size_t struct_size

  The size of total this structure, for compatibility checking.
- const char * name

  The name of the processor.
- const char * prefix

  The prefix of this processor functions.
- const char * shortname

  A short name of the processor, single word.
- const char * version

  Library version.

14.33.1 Detailed Description

Information on this processor.

See also

SOUND4_GetProcessInfo

Definition at line 77 of file sound4.bigvoice.cl.h.

14.33.2 Member Data Documentation

14.33.2.1 name

```
const char* SOUND4_ProcessInfo::name
```

Definition at line 79 of file sound4.bigvoice.cl.h.

14.33.2.2 prefix

```
const char* SOUND4_ProcessInfo::prefix
```

Definition at line 80 of file sound4.bigvoice.cl.h.

14.33.2.3 shortname

```
const char* SOUND4_ProcessInfo::shortname
```

Definition at line 81 of file sound4.bigvoice.cl.h.

14.33.2.4 struct_size

```
size_t SOUND4_ProcessInfo::struct_size
```

Definition at line 78 of file sound4.bigvoice.cl.h.

14.33.2.5 version

```
const char* SOUND4_ProcessInfo::version
```

Definition at line 82 of file sound4.bigvoice.cl.h.

The documentation for this struct was generated from the following file:

- sound4.bigvoice.cl.h

Chapter 15

File Documentation

15.1 doc_examples.h File Reference

15.2 doc_examples.h

Go to the documentation of this file.

```
00001
00022 // ------------------------------------------------------------
```

15.3 doc_gencpp.h File Reference

Namespaces

- namespace sound4

15.4 doc_gencpp.h

Go to the documentation of this file.

```
00001 namespace sound4 {
00002
00059 }; // namespace sound4
```

15.5 doc_json.h File Reference

15.6 doc_json.h

Go to the documentation of this file.

```
00001
```

15.7 doc_main.h File Reference

15.8 doc_main.h

Go to the documentation of this file.

```
00001
```

15.9 doc_params.h File Reference

15.10 doc_params.h

Go to the documentation of this file.

```
00001
00002 // ------------------------------------------------------------
```

15.11 doc_only/documentation.h File Reference

15.12 doc_only/documentation.h

Go to the documentation of this file.

```
00001
```

15.13 documentation.h File Reference

15.14 documentation.h

Go to the documentation of this file.

```
00001
```

15.15 sound4.bigvoice.cl-pipe-cxx.cpp File Reference

C++ sample using C++ interface wrapper.

```
#include <unistd.h>
#include <iostream>
#include <strings.h>
#include <sys/types.h>
#include <filesystem>
#include <io.h>
#include <fcntl.h>
#include "sound4.bigvoice.cl.hpp"
```

Functions

- std::string GetEnv (const std::string &name)
- void ProcessLoop (sound4::bigvoice::CInstance &instance)
- void Usage (const char *progname)
- void MyLogger (sound4::bigvoice::LogSeverity severity, const std::string &msg)
- int main (int argc, const char **argv)

15.15.1 Function Documentation

15.15.1.1 GetEnv()

```
std::string GetEnv (
            const std::string & name )
```

Definition at line 41 of file sound4.bigvoice.cl-pipe-cxx.cpp.

15.15.1.2 main()

```
int main (
            int argc,
            const char ** argv )
```

[Setup and sanity checks]

[Setup and sanity checks]

[Create the processing instance]

[Create the processing instance]

[Communicating with the instance]

[Communicating with the instance]

Definition at line 106 of file sound4.bigvoice.cl-pipe-cxx.cpp.

15.15.1.3 MyLogger()

```
void MyLogger (
            sound4::bigvoice::LogSeverity severity,
            const std::string & msg )
```

Definition at line 101 of file sound4.bigvoice.cl-pipe-cxx.cpp.

15.15.1.4 ProcessLoop()

```
void ProcessLoop (
            sound4::bigvoice::CInstance & instance )
```

[Processing Loop]

[Processing Loop]

Definition at line 50 of file sound4.bigvoice.cl-pipe-cxx.cpp.

15.15.1.5 Usage()

```
void Usage (
            const char * progname )
```

Definition at line 81 of file sound4.bigvoice.cl-pipe-cxx.cpp.

15.16 sound4.bigvoice.cl-pipe-cxx.cpp

Go to the documentation of this file.

```
00001
00004 #include <unistd.h>
00005 #include <iostream>
00006 #include <strings.h>
00007 #include <sys/types.h>
00008 #include <filesystem>
00009 #if defined(_WIN32) || defined(WIN32)
00010     #include <io.h>
00011     #include <fcntl.h>
00012 #endif
00013
00014 #include "sound4.bigvoice.cl.hpp"
00015
00016 // ------------------------------------------------------------
00041 std::string GetEnv(const std::string& name)
00042 {
00043     char *data=getenv(name.c_str());
00044     if (!data) return {};
00045     return std::string(data);
00046 }
00047
00048
00049 // Reads from stdin, write to stdout
00050 void ProcessLoop(sound4::bigvoice::CInstance &instance)
00051 {
00052 bool stopthread=false;
00053
00054     #if defined(_WIN32) || defined(WIN32)
00055         // Windows: The stdin, stdout, and stderr streams always open in text mode by default
00056         _setmode(_fileno(stdin), _O_BINARY);
00057         _setmode(_fileno(stdout), _O_BINARY);
00058     #endif
00059
00061     while (!stopthread)
00062     {
00063         // Read a chunk from stdin
00064         if (std::fread(instance.GetBufferIn().data(), sizeof(float),
      sound4::bigvoice::InputSampleSize, stdin) != sound4::bigvoice::InputSampleSize) {
00065             std::cerr « "ProcessLoop: input stopped"« std::endl;
00066             stopthread=true;
00067             break;
00068         }
00069         if (stopthread) break;
00070         // Process it
00071         instance.ProcessAudio();
00072         // Write it to stdout
00073         if (fwrite(instance.GetBufferOut().data(), sizeof(float), sound4::bigvoice::OutputSampleSize,
      stdout) != sound4::bigvoice::OutputSampleSize) {
00074             std::cerr « "Failed to write audio output" « std::endl;
00075             stopthread=true;
00076         }
00077     }
00079 }
00080
00081 void Usage(const char *progname)
00082 {
00083     std::cerr « "Usage: " « progname « std::endl;;
00084     std::cerr « "  Reads audio from stdin and return processed audio in stdout" « std::endl;
00085     std::cerr « "Environment:"« std::endl;;
00086     std::cerr « " - S4STORE_PATH            : path to store config [default: (no storage)]"«
      std::endl;;
00087     std::cerr « " - S4LOGINKEY              : SOUND4 Login key (or S4USERID)"« std::endl;;
00088     std::cerr « " - RADIO_NAME              : SOUND4 Radio Name"« std::endl;;
00089     std::cerr « " - ACCESS_KEY_ID           : SOUND4 Access Key ID"« std::endl;;
00090     std::cerr « " - ACCESS_KEY_SECRET       : SOUND4 Access Key Secret"« std::endl;;
00091     std::cerr « std::endl;
00092     std::cerr « "Example:"« std::endl;
```

```
    std::cerr « "ffmpeg -re -i file.wav -ar "«sound4::bigvoice::GetSampleRate()«" -ac "«sound4::bigvoice::GetChannelCount()«" -f f32le - | "«progname«" | ffplay -f f32le -ar "«sound4::bigvoice::GetSampleRate()«" -ac "«sound4::bigvoice::GetChannelCount()«" -i -" « std::endl;;
    #if defined(_WIN32) || defined(WIN32)
        std::cerr « "ffmpeg -f dshow -i audio=\"Microphone\" -ar "«sound4::bigvoice::GetSampleRate()«" -ac "«sound4::bigvoice::GetChannelCount()«" -f f32le - | "«progname«" | ffplay -f f32le -ar "«sound4::bigvoice::GetSampleRate()«" -ac "«sound4::bigvoice::GetChannelCount()«" -i -" « std::endl;;
    #else
        std::cerr « "ffmpeg -f pulse -i default -ar "«sound4::bigvoice::GetSampleRate()«" -ac "«sound4::bigvoice::GetChannelCount()«" -f f32le - | "«progname«" | ffplay -f f32le -ar "«sound4::bigvoice::GetSampleRate()«" -ac "«sound4::bigvoice::GetChannelCount()«" -i -" « std::endl;;
    #endif
}

void MyLogger(sound4::bigvoice::LogSeverity severity,const std::string& msg)
{
    std::cerr « msg « std::endl;
}

int main(int argc, const char **argv)
{
#if (BIGVOICE_HAS_WEBSERVER)
    int listen_port = 8080;
#endif // (BIGVOICE_HAS_WEBSERVER)
    auto store_path_str=GetEnv("S4STORE_PATH");

    // Get credentials from environment
    auto LoginKey=GetEnv("S4LOGINKEY");
    if (LoginKey.empty()) {
        LoginKey=GetEnv("S4USERID");
    }
    auto RadioName=GetEnv("RADIO_NAME");
    auto KeyId=GetEnv("ACCESS_KEY_ID");
    auto AccessKey=GetEnv("ACCESS_KEY_SECRET");

    const char *progname=argv[0];

    if (argc>1) {
        if ((strcasecmp(argv[1],"-h")==0) || (strcasecmp(argv[1],"--help")==0)) {
            Usage(progname);
            return 0;
        }
    }
    if (LoginKey.empty() || RadioName.empty() || KeyId.empty() || AccessKey.empty()) {
        std::cerr « "Missing credentials in environment" « std::endl;
        Usage(progname);
        return 1;
    }
    std::filesystem::path store_path;
    if (!store_path_str.empty()) {
        std::error_code ec;
        store_path = std::filesystem::path(store_path_str);
        if (!std::filesystem::exists(store_path,ec) || !std::filesystem::is_directory(store_path,ec)) {
            std::cerr « "Storage folder '"«(const char*)store_path.u8string().c_str()«"' is not a valid directory" « std::endl;
            Usage(progname);
            return 1;
        }
    }

    sound4::bigvoice::SetLogSeverity(verbose5);
    sound4::bigvoice::SetLoggerCallback(MyLogger);

    sound4::bigvoice::CInstance instance;
    instance.SetParam("ADMIN_USER","admin");
    instance.SetParam("ADMIN_SECRET","admin");

    std::cerr « "Creating" « std::endl;
    if (!instance.Create(LoginKey, RadioName, KeyId, AccessKey, store_path)) {
        std::cerr « "Failed to create the processing instance" « std::endl;
        return 1;
    }

#if (BIGVOICE_HAS_WEBSERVER)
    std::cerr « "Starting web server" « std::endl;
    if (!instance.StartWebServer(listen_port,0)) {
        std::cerr « "Failed to create the web server on port " « listen_port « std::endl;
        return 1;
    }
#endif // (BIGVOICE_HAS_WEBSERVER)

    {
        auto client = instance.NewClient();
        auto answer = client->ProcessJson(R"JSON({"get":{"processorname":null}})JSON");
        std::cerr « "Request for processor name returned "«answer«std::endl;
    }
```

```
00180
00181     ProcessLoop(instance);
00182
00183     std::cerr « "Stopping now" « std::endl;
00184     instance.Stop();
00185
00186     std::cerr « "End" « std::endl;
00187     return 0;
00188 }
```

15.17 sound4.bigvoice.cl-pipe-dyn.cpp File Reference

C++ sample using C++ interface wrapper with dynamic library loading.

```
#include <unistd.h>
#include <iostream>
#include <strings.h>
#include <sys/types.h>
#include <filesystem>
#include <fstream>
#include <sstream>
#include <io.h>
#include <fcntl.h>
#include "sound4.bigvoice.cl_dyn.hpp"
```

Classes

- class MyPresetManager

  [Custom preset manager]

Functions

- std::string GetEnv (const std::string &name)
- void ProcessLoop (sound4::bigvoice::dyn::CInstance &instance)
- void Usage (const char ∗progname, sound4::bigvoice::dyn::CDynLib &dynlib)
- void MyLogger (sound4::bigvoice::dyn::LogSeverity severity, const std::string &msg)
- int main (int argc, const char ∗∗argv)

  [Custom preset manager]

15.17.1 Function Documentation

15.17.1.1 GetEnv()

```
std::string GetEnv (
            const std::string & name )
```

Definition at line 52 of file sound4.bigvoice.cl-pipe-dyn.cpp.

15.17.1.2 main()

```
int main (
            int argc,
            const char ** argv )
```

[Dynamic loading]

[Dynamic loading]

[Setup and sanity checks]

[Setup and sanity checks]

[Custom preset manager loading]

[Custom preset manager loading]

[Create the processing instance]

[Create the processing instance]

[Communicating with the instance]

[Communicating with the instance]

Definition at line 199 of file sound4.bigvoice.cl-pipe-dyn.cpp.

15.17.1.3 MyLogger()

```
void MyLogger (
            sound4::bigvoice::dyn::LogSeverity severity,
            const std::string & msg )
```

Definition at line 114 of file sound4.bigvoice.cl-pipe-dyn.cpp.

15.17.1.4 ProcessLoop()

```
void ProcessLoop (
            sound4::bigvoice::dyn::CInstance & instance )
```

[Processing Loop]

[Processing Loop]

Definition at line 61 of file sound4.bigvoice.cl-pipe-dyn.cpp.

15.17.1.5 Usage()

```
void Usage (
            const char * progname,
            sound4::bigvoice::dyn::CDynLib & dynlib )
```

Definition at line 92 of file sound4.bigvoice.cl-pipe-dyn.cpp.

15.18 sound4.bigvoice.cl-pipe-dyn.cpp

Go to the documentation of this file.

```
#include <unistd.h>
#include <iostream>
#include <strings.h>
#include <sys/types.h>
#include <filesystem>
#include <fstream>
#include <sstream>
#if defined(_WIN32) || defined(WIN32)
    #include <io.h>
    #include <fcntl.h>
#endif

#include "sound4.bigvoice.cl_dyn.hpp"

// ------------------------------------------------------------
std::string GetEnv(const std::string& name)
{
    char *data=getenv(name.c_str());
    if (!data) return {};
    return std::string(data);
}


// Reads from stdin, write to stdout
void ProcessLoop(sound4::bigvoice::dyn::CInstance &instance)
{
bool stopthread=false;

    #if defined(_WIN32) || defined(WIN32)
        // Windows: The stdin, stdout, and stderr streams always open in text mode by default
        _setmode(_fileno(stdin), _O_BINARY);
        _setmode(_fileno(stdout), _O_BINARY);
    #endif

    while (!stopthread)
    {
        // Read a chunk from stdin
        if (std::fread(instance.GetBufferIn().data(), sizeof(float), sound4::bigvoice::dyn::InputSampleSize, stdin) != sound4::bigvoice::dyn::InputSampleSize) {
            std::cerr « "ProcessLoop: input stopped"« std::endl;
            stopthread=true;
            break;
        }
        if (stopthread) break;
        // Process it
        instance.ProcessAudio();
        // Write it to stdout
        if (fwrite(instance.GetBufferOut().data(), sizeof(float), sound4::bigvoice::dyn::OutputSampleSize, stdout) != sound4::bigvoice::dyn::OutputSampleSize) {
            std::cerr « "Failed to write audio output" « std::endl;
            stopthread=true;
        }
    }
}

void Usage(const char *progname, sound4::bigvoice::dyn::CDynLib &dynlib)
{
    std::cerr « "Usage: " « progname « std::endl;;
    std::cerr « "  Reads audio from stdin and return processed audio in stdout" « std::endl;
    std::cerr « "Environment:"« std::endl;;
    std::cerr « " - S4STORE_PATH            : path to store config [default: (no storage)]"« std::endl;;
    std::cerr « " - S4LOGINKEY              : SOUND4 Login key (or S4USERID)"« std::endl;;
    std::cerr « " - RADIO_NAME              : SOUND4 Radio Name"« std::endl;;
    std::cerr « " - ACCESS_KEY_ID           : SOUND4 Access Key ID"« std::endl;;
    std::cerr « " - ACCESS_KEY_SECRET       : SOUND4 Access Key Secret"« std::endl;;
    if (dynlib.IsOk()) {
        std::cerr « std::endl;
        std::cerr « "Example:"« std::endl;
        std::cerr « "ffmpeg -re -i file.wav -ar "«dynlib.GetSampleRate()«" -ac "«dynlib.GetChannelCount()«" -f f32le - | "«progname«" | ffplay -f f32le -ar "«dynlib.GetSampleRate()«" -ac "«dynlib.GetChannelCount()«" -i -" « std::endl;;
        #if defined(_WIN32) || defined(WIN32)
            std::cerr « "ffmpeg -f dshow -i audio=\"Microphone\" -ar "«dynlib.GetSampleRate()«" -ac "«dynlib.GetChannelCount()«" -f f32le - | "«progname«" | ffplay -f f32le -ar "«dynlib.GetSampleRate()«" -ac "«dynlib.GetChannelCount()«" -i -" « std::endl;;
        #else
            std::cerr « "ffmpeg -f pulse -i default -ar "«dynlib.GetSampleRate()«" -ac "«dynlib.GetChannelCount()«" -f f32le - | "«progname«" | ffplay -f f32le -ar "«dynlib.GetSampleRate()«" -ac "«dynlib.GetChannelCount()«" -i -" « std::endl;;
        #endif
```

```
    }
}

void MyLogger(sound4::bigvoice::dyn::LogSeverity severity,const std::string& msg)
{
    std::cerr « msg « std::endl;
}

class MyPresetManager : public sound4::bigvoice::dyn::CPresetLoader {
public:
    MyPresetManager() = default;
    virtual ~MyPresetManager() = default;

    bool SetupPath(const std::filesystem::path& a_preset_path)
        {
            m_preset_path=a_preset_path;
            std::error_code ec;
            if ( !std::filesystem::exists(m_preset_path,ec ) ) {
                return false;
            }
            if ( !std::filesystem::is_directory(m_preset_path, ec) ) {
                return false;
            }
            return true;
        }
    virtual bool IsReadOnly() override { return false; };
    virtual bool Exists(const std::filesystem::path &name) override
        {
            std::error_code ec;
            return std::filesystem::exists(GetRealPath(name), ec);
        }
    virtual bool Remove(const std::filesystem::path &name) override
        {
            std::error_code ec;
            return std::filesystem::remove(GetRealPath(name), ec);
        }
    virtual bool Rename(const std::filesystem::path &from, const std::filesystem::path &to) override
        {
            std::error_code ec;
            std::filesystem::rename(GetRealPath(from), GetRealPath(to), ec);
            return (!ec);
        }
    virtual std::vector<std::filesystem::path> GetAll() override
        {
            std::vector<std::filesystem::path> list;
            std::error_code ec;
            for (auto it = std::filesystem::directory_iterator(m_preset_path.c_str(),
std::filesystem::directory_options::skip_permission_denied, ec);
                !ec && it != std::filesystem::directory_iterator{};
                 it.increment(ec) )
            {
                if (it->is_regular_file(ec)) {
                    list.push_back(it->path().lexically_relative(m_preset_path));
                }
            }
            return list;
        }
    virtual std::string Read(const std::filesystem::path &filename) override
        {
            std::ifstream f(GetRealPath(filename));
            if ( f.fail() ) {
                return std::string();
            }
            std::ostringstream ss;
            ss « f.rdbuf();
            return ss.str();
        }
    virtual bool Write(const std::filesystem::path &filename, const std::string &content) override
        {
            std::ofstream f(GetRealPath(filename));
            if ( f.fail() ) {
                return false;
            }
            f « content;
            if ( f.fail() ) {
                return false;
            }
            return true;
        }
private:
    std::filesystem::path m_preset_path;
    std::filesystem::path GetRealPath(const std::filesystem::path &name)
        {
            return m_preset_path / name;
        }
};

```

```
int main(int argc, const char **argv)
{
#if (BIGVOICE_HAS_WEBSERVER)
    int listen_port = 8080;
#endif // (BIGVOICE_HAS_WEBSERVER)
    auto store_path_str=GetEnv("S4STORE_PATH");

    // Get credentials from environment
    auto LoginKey=GetEnv("S4LOGINKEY");
    if (LoginKey.empty()) {
        LoginKey=GetEnv("S4USERID");
    }
    auto RadioName=GetEnv("RADIO_NAME");
    auto KeyId=GetEnv("ACCESS_KEY_ID");
    auto AccessKey=GetEnv("ACCESS_KEY_SECRET");

    const char *progname=argv[0];


    sound4::bigvoice::dyn::CDynLib dynlib;
    if (!dynlib.Load()) {
        std::cerr « "Failed to load processing library" « std::endl;
        return 1;
    }

    if (argc>1) {
        if ((strcasecmp(argv[1],"-h")==0) || (strcasecmp(argv[1],"--help")==0)) {
            Usage(progname,dynlib);
            return 0;
        }
    }
    if (LoginKey.empty() || RadioName.empty() || KeyId.empty() || AccessKey.empty()) {
        std::cerr « "Missing credentials in environment" « std::endl;
        Usage(progname,dynlib);
        return 1;
    }
    std::filesystem::path store_path;
    if (!store_path_str.empty()) {
        std::error_code ec;
        store_path = std::filesystem::path(store_path_str);
        if (!std::filesystem::exists(store_path,ec) || !std::filesystem::is_directory(store_path,ec))
{
            std::cerr « "Storage folder '"«(const char*)store_path.u8string().c_str()«"' is not a
valid directory" « std::endl;
            Usage(progname,dynlib);
            return 1;
        }
    }

    sound4::bigvoice::dyn::SetLogSeverity(dynlib, verbose5);
    sound4::bigvoice::dyn::SetLoggerCallback(dynlib, MyLogger);

    sound4::bigvoice::dyn::CInstance instance(dynlib);
    instance.SetParam("ADMIN_USER","admin");
    instance.SetParam("ADMIN_SECRET","admin");

    MyPresetManager preset_manager;
    if (!store_path.empty()) {
        if (!preset_manager.SetupPath(store_path)) {
            std::cerr « "Failed to setup the custom preset manager on path " « (const
char*)store_path.u8string().c_str() « std::endl;
            return 1;
        }
        instance.SetPresetManager(&preset_manager);
    }

    std::cerr « "Creating" « std::endl;
    if (!instance.Create(LoginKey, RadioName, KeyId, AccessKey, {})) {
        std::cerr « "Failed to create the processing instance" « std::endl;
        return 1;
    }

#if (BIGVOICE_HAS_WEBSERVER)
    std::cerr « "Starting web server" « std::endl;
    if (!instance.StartWebServer(listen_port,0)) {
        std::cerr « "Failed to create the web server on port " « listen_port « std::endl;
        return 1;
    }
#endif // (BIGVOICE_HAS_WEBSERVER)

    {
        auto client = instance.NewClient();
        auto answer = client->ProcessJson(R"JSON({"get":{"processorname":null}})JSON");
        std::cerr « "Request for processor name returned "«answer«std::endl;
    }

    ProcessLoop(instance);
```

```

    std::cerr « "Stopping now" « std::endl;
    instance.Stop();

    std::cerr « "End" « std::endl;
    return 0;
}
```

15.19 sound4.bigvoice.cl-pipe.cpp File Reference

C++ sample using only C interface.

```
#include <unistd.h>
#include <iostream>
#include <strings.h>
#include <sys/types.h>
#include <thread>
#include <filesystem>
#include <io.h>
#include <fcntl.h>
#include <stringapiset.h>
#include <sound4.bigvoice.cl.h>
```

Macros

- #define SAMPLE_RATE 48000
- #define CHUNK_SIZE 64
- #define CHANNEL_COUNT 2

Functions

- void ProcessLoop (struct bigvoice_CInstance ∗pInstance)
- void Usage (const char ∗progname)
- void MyLogger (bigvoice_LogSeverity severe, const char ∗str)
- int main (int argc, char ∗const argv[ ])

15.19.1 Macro Definition Documentation

15.19.1.1 CHANNEL_COUNT

```
#define CHANNEL_COUNT 2
```

Definition at line 22 of file sound4.bigvoice.cl-pipe.cpp.

15.19.1.2 CHUNK_SIZE

```
#define CHUNK_SIZE 64
```

Definition at line 21 of file sound4.bigvoice.cl-pipe.cpp.

15.19.1.3 SAMPLE_RATE

```
#define SAMPLE_RATE 48000
```

Definition at line 20 of file sound4.bigvoice.cl-pipe.cpp.

15.19.2 Function Documentation

15.19.2.1 main()

```
int main (
            int argc,
            char *const argv[] )
```

[Setup and sanity checks]

[Setup and sanity checks]

[Create the processing instance]

[Create the processing instance]

[Stopping the processing instance]

[Stopping the processing instance]

Definition at line 84 of file sound4.bigvoice.cl-pipe.cpp.

15.19.2.2 MyLogger()

```
void MyLogger (
            bigvoice_LogSeverity severe,
            const char * str )
```

Definition at line 78 of file sound4.bigvoice.cl-pipe.cpp.

15.19.2.3 ProcessLoop()

```
void ProcessLoop (
            struct bigvoice_CInstance * pInstance )
```

[Processing Loop]

[Processing Loop]

Definition at line 25 of file sound4.bigvoice.cl-pipe.cpp.

15.19.2.4 Usage()

```
void Usage (
            const char * progname )
```

Definition at line 58 of file sound4.bigvoice.cl-pipe.cpp.

15.20 sound4.bigvoice.cl-pipe.cpp

Go to the documentation of this file.

```

#include <unistd.h>
#include <iostream>
#include <strings.h>
#include <sys/types.h>
#include <thread>           // NOTE: needs pthread link
#if (__cplusplus<201703L)
    #error "Need C++17 for this example"
#endif
#include <filesystem>
#if defined(_WIN32) || defined(WIN32)
    #include <io.h>
    #include <fcntl.h>
    #include <stringapiset.h>   // UTF-8 conversion
#endif
#include <sound4.bigvoice.cl.h>

#define SAMPLE_RATE       48000
#define CHUNK_SIZE        64
#define CHANNEL_COUNT     2

// Reads from stdin, write to stdout
void ProcessLoop(struct bigvoice_CInstance *pInstance)
{
bool stopthread=false;
alignas(64) float audio_in[CHUNK_SIZE*CHANNEL_COUNT];
alignas(64) float audio_out[CHUNK_SIZE*CHANNEL_COUNT];

    #if defined(_WIN32) || defined(WIN32)
        // Windows: The stdin, stdout, and stderr streams always open in text mode by default
        _setmode(_fileno(stdin), _O_BINARY);
        _setmode(_fileno(stdout), _O_BINARY);
    #endif

    while (!stopthread)
    {
        // Read a chunk from stdin
        if (std::fread(&audio_in[0], sizeof(float), CHUNK_SIZE*CHANNEL_COUNT, stdin) !=
CHUNK_SIZE*CHANNEL_COUNT) {
            std::cerr « "ProcessLoop: input stopped"« std::endl;
            stopthread=true;
            break;
        }
        if (stopthread) break;
        // Process it
        bigvoice_ProcessAudio(pInstance, audio_in, audio_out);
        // Write it to stdout
        if (fwrite(&audio_out[0], sizeof(float), CHUNK_SIZE*CHANNEL_COUNT, stdout) !=
CHUNK_SIZE*CHANNEL_COUNT) {
            std::cerr « "Failed to write audio output" « std::endl;
            stopthread=true;
        }
    }
}

void Usage(const char *progname)
{
    std::cerr « "Usage: " « progname « std::endl;;
    std::cerr « "  Reads audio from stdin and return processed audio in stdout" « std::endl;
    std::cerr « "Environment:"« std::endl;;
    std::cerr « " - S4STORE_PATH            : path to store config [default: ./state]"« std::endl;;
    std::cerr « " - S4LOGINKEY              : SOUND4 Login key (or S4USERID)"« std::endl;;
    std::cerr « " - RADIO_NAME              : SOUND4 Radio Name"« std::endl;;
    std::cerr « " - ACCESS_KEY_ID           : SOUND4 Access Key ID"« std::endl;;
    std::cerr « " - ACCESS_KEY_SECRET       : SOUND4 Access Key Secret"« std::endl;;
    std::cerr « std::endl;
    std::cerr « "Example:"« std::endl;
    std::cerr « "ffmpeg -re -i file.wav -ar "«SAMPLE_RATE«" -ac "«CHANNEL_COUNT«" -f f32le - |
"«progname«" | ffplay -f f32le -ar "«SAMPLE_RATE«" -ac "«CHANNEL_COUNT«" -i -" « std::endl;;
    #if defined(_WIN32) || defined(WIN32)
        std::cerr « "ffmpeg -f dshow -i audio=\"Microphone\" -ar "«SAMPLE_RATE«" -ac "«CHANNEL_COUNT«"
-f f32le - | "«progname«" | ffplay -f f32le -ar "«SAMPLE_RATE«" -ac "«CHANNEL_COUNT«" -i -" «
std::endl;;
    #else
        std::cerr « "ffmpeg -f pulse -i default -ar "«SAMPLE_RATE«" -ac "«CHANNEL_COUNT«" -f f32le - |
"«progname«" | ffplay -f f32le -ar "«SAMPLE_RATE«" -ac "«CHANNEL_COUNT«" -i -" « std::endl;;
    #endif
}

void MyLogger(bigvoice_LogSeverity severe [[maybe_unused]], const char *str)
{
    std::cerr « str « std::endl;
```

```
}


int main(int argc, char *const argv[])
{
    struct bigvoice_CInstance *pInstance = NULL;
    const char *store_path_str=getenv("S4STORE_PATH");
    // Get credentials from environment
    char *pLoginKey=getenv("S4LOGINKEY");
    if (!pLoginKey) {
        pLoginKey=getenv("S4USERID");
    }
    char *pRadioName=getenv("RADIO_NAME");
    char *pKeyId=getenv("ACCESS_KEY_ID");
    char *pAccessKey=getenv("ACCESS_KEY_SECRET");

    const char *progname=argv[0];

    if (argc>1) {
        if ((strcasecmp(argv[1],"-h")==0) || (strcasecmp(argv[1],"--help")==0)) {
            Usage(progname);
            return 0;
        }
    }
    if (!pLoginKey || !pRadioName || !pKeyId || !pAccessKey) {
        std::cerr « "Missing credentials in environment" « std::endl;
        Usage(progname);
        return 1;
    }
    std::error_code ec;
    std::filesystem::path fs_store_path;
    if (!store_path_str || store_path_str[0]==0) {
        fs_store_path=std::filesystem::current_path(ec) / "state";
    } else {
        fs_store_path = std::filesystem::path(store_path_str);
    }
    if (!std::filesystem::exists(fs_store_path,ec) || !std::filesystem::is_directory(fs_store_path,ec)) {
        std::cerr « "Storage folder '"«(const char*)fs_store_path.u8string().c_str()«"' is not a valid directory" « std::endl;
        Usage(progname);
        return 1;
    }
    std::string store_path;
    #ifdef _WIN32
    {
        // Convert path to UTF-8
        std::wstring wstr(fs_store_path.wstring());
        if (wstr.empty()) return {};
        int size = WideCharToMultiByte(CP_UTF8, 0, &wstr[0], (int)wstr.size(), NULL, 0, NULL, NULL);
        std::string str(size, 0);
        WideCharToMultiByte(CP_UTF8, 0, &wstr[0], (int)wstr.size(), &str[0], size, NULL, NULL);
        store_path=str;
    }
    #else // !_WIN32
        store_path=fs_store_path;
    #endif // !_WIN32

    // Optional: Use our own logging, instead of default color output to stderr.
    //bigvoice_SetLoggerCallback(&MyLogger);

    //bigvoice_SetLogSeverity(bigvoice_LogSeverity::info);
    bigvoice_SetLogSeverity(bigvoice_LogSeverity::verbose5);

    std::cerr « "Process version: " « bigvoice_GetVersion() « std::endl;
    // Do some sanity checks
    if (bigvoice_GetSampleRate()!=SAMPLE_RATE) {
      std::cerr « "Bad library sampling rate, expecting '"«SAMPLE_RATE«"' but has "« bigvoice_GetSampleRate() « std::endl;
      return 1;
    }
    if (bigvoice_GetChunkSizeInFrames()!=CHUNK_SIZE) {
      std::cerr « "Bad library frame size, expecting '"«CHUNK_SIZE«"' but has "« bigvoice_GetChunkSizeInFrames() « std::endl;
      return 1;
    }
    if (bigvoice_GetChannelCount()!=CHANNEL_COUNT) {
      std::cerr « "Bad library channel count, expecting '"«CHANNEL_COUNT«"' but has "« bigvoice_GetChannelCount() « std::endl;
      return 1;
    }

    // Setup parameters
    struct bigvoice_CParameters *params = bigvoice_NewParameters();
    // Optional: activate web authentication, set admin password
    // This creates the authentication only for a new storage path
    bigvoice_SetParameter(params,"ADMIN_USER", "admin");
```

```
    bigvoice_SetParameter(params,"ADMIN_SECRET", "admin");

    // Create the processing instance
    pInstance=bigvoice_InitProcess2(pLoginKey,pRadioName,pKeyId,pAccessKey,store_path.c_str(),params);
    bigvoice_FreeParameters(params);
    if (!pInstance) {
      std::cerr « "Failed to create the process instance"« std::endl;
      return 1;
    }

    // Start the update thread, without JSON server (low priority)
    std::thread updater([pInstance](){
       // will returned when stopped or destroyed
       std::cerr « "bigvoice_StartUpdateThread (no json port)" « std::endl;
       bigvoice_StartUpdateThread(pInstance, 0);
       std::cerr « "bigvoice_StartUpdateThread END" « std::endl;
     });

    // This is not mandatory, but better be sure we are ready right now
    std::cerr « "Waiting update thread" « std::endl;
    if (bigvoice_WaitUpdateThreadReady(pInstance, 5000)<0) {
        std::cerr « "Timeout to create the process instance"« std::endl;
    }
    std::cerr « "Waiting update thread DONE" « std::endl;

#if (BIGVOICE_HAS_WEBSERVER)
    // Starts a web server, listening on port http://localhost:8080, https://localhost:8443
    std::cerr « "Starting web server" « std::endl;
    int listenport= 8080;
    int listenport_secure= 8443;
    uint64_t webserver= SOUND4_INVALID_WEBSERVER_ID;
    if (listenport || listenport_secure) {
        webserver = bigvoice_Webserver(listenport,listenport_secure,pInstance);
        if (webserver==SOUND4_INVALID_WEBSERVER_ID) {
            std::cerr « "Starting web server FAILED" « std::endl;
        } else {
            int web_status=bigvoice_Webserver_Status(webserver);
            if (listenport) {
                if (web_status & SOUND4_WEBSERVER_HTTP_OK) {
                    std::cerr « "Web server listening on port " « listenport;
                } else {
                    std::cerr « "Web server failed to listen on port " « listenport;
                }
            }
            if (listenport_secure) {
                if (web_status & SOUND4_WEBSERVER_HTTPS_OK) {
                    std::cerr « "Web server listening on secure port " « listenport_secure;
                } else {
                    std::cerr « "Web server failed to listen on secure port " « listenport_secure;
                }
            }
            std::cerr « "Starting web server DONE" « std::endl;
        }
    }
#endif // (BIGVOICE_HAS_WEBSERVER)

     // Force load a factory preset now
     // Could be used instead of setting a store_path
     /*{
         bigvoice_CClientInstance *pClient=bigvoice_NewClient(pInstance);
         const char *answer=bigvoice_ProcessJson(pClient, "{ \"factoryload\": \"All Programs\" }", NULL);
         std::cerr « "Loaded factory preset answer: " « answer« std::endl;
         bigvoice_FreeJsonAnswer(answer);
         bigvoice_DeleteClient(pClient);
     }*/

    std::cerr « "Estimated delay " « ( bigvoice_GetEstimatedDelay(pInstance)*1000.0/SAMPLE_RATE ) « " ms" « std::endl;

    ProcessLoop(pInstance);

#if (BIGVOICE_HAS_WEBSERVER)
    // Stopping the webserver
    std::cerr « "Stopping web server" « std::endl;
    bigvoice_Webserver_Stop(webserver, 1000);
    std::cerr « "Stopping web server DONE" « std::endl;
#endif // (BIGVOICE_HAS_WEBSERVER)

    // Stopping the processing instance
    std::cerr « "Stopping Update thread" « std::endl;
    bigvoice_StopUpdateThread(pInstance); // this will exit the update thread
    std::cerr « "Stopping Update thread DONE" « std::endl;

    updater.join();

```

```
    bigvoice_ExitProcess(pInstance);

    return 0;
}
```

15.21 sound4cl-pipe.cpp File Reference

C++ sample using C++ interface wrapper with dynamic library loading Works with any SOUND4 processor provided.

```
#include <unistd.h>
#include <iostream>
#include <strings.h>
#include <sys/types.h>
#include <filesystem>
#include <fstream>
#include <sstream>
#include <io.h>
#include <fcntl.h>
#include "sound4cl.hpp"
```

Classes

- class MyPresetManager

  [Custom preset manager]

Functions

- std::string GetEnv (const std::string &name)
- void ProcessLoop (sound4::CInstance &instance, sound4::CProcessor &processor)
- int main (int argc, const char **argv)

  [Custom preset manager]

15.21.1 Function Documentation

15.21.1.1 GetEnv()

```
std::string GetEnv (
            const std::string & name )
```

Definition at line 61 of file sound4cl-pipe.cpp.

15.21.1.2 main()

```
int main (
            int argc,
            const char ** argv )
```

[Dynamic loading config]

[Dynamic loading config]

[Dynamic loading]

[Dynamic loading]

[Setup and configure]

[Setup and configure]

[Custom preset manager loading]

[Custom preset manager loading]

[Create the processing instance]

[Create the processing instance]

[Starting a web-server]

[Starting a web-server]

[Communicating with the instance]

[Communicating with the instance]

Definition at line 183 of file sound4cl-pipe.cpp.

15.21.1.3 ProcessLoop()

```
void ProcessLoop (
            sound4::CInstance & instance,
            sound4::CProcessor & processor )
```

[Processing Loop]

[Processing Loop]

Definition at line 70 of file sound4cl-pipe.cpp.

15.22 sound4cl-pipe.cpp

Go to the documentation of this file.

```
#include <unistd.h>
#include <iostream>
#include <strings.h>
#include <sys/types.h>
#include <filesystem>
#include <fstream>
#include <sstream>
#if defined(_WIN32) || defined(WIN32)
    #include <io.h>
    #include <fcntl.h>
#endif

#include "sound4cl.hpp"

// ------------------------------------------------------------
std::string GetEnv(const std::string& name)
{
    char *data=getenv(name.c_str());
    if (!data) return {};
    return std::string(data);
}


// Reads from stdin, write to stdout
void ProcessLoop(sound4::CInstance &instance, sound4::CProcessor &processor)
{
bool stopthread=false;

    #if defined(_WIN32) || defined(WIN32)
        // Windows: The stdin, stdout, and stderr streams always open in text mode by default
        _setmode(_fileno(stdin), _O_BINARY);
        _setmode(_fileno(stdout), _O_BINARY);
    #endif

    size_t input_sample_count = instance.GetChunkFrames() * processor.GetChannelCount();
    size_t output_sample_count = instance.GetChunkFrames() * processor.GetChannelCount();
    while (!stopthread)
    {
        // Read a chunk from stdin
        if (std::fread(instance.GetBufferIn(), sizeof(float), input_sample_count, stdin) !=
input_sample_count) {
            std::cerr « "ProcessLoop: input stopped"« std::endl;
            stopthread=true;
            break;
        }
        if (stopthread) break;
        // Process it
        instance.ProcessAudio();
        // Write it to stdout
        if (fwrite(instance.GetBufferOut(), sizeof(float), output_sample_count, stdout) !=
output_sample_count) {
            std::cerr « "Failed to write audio output" « std::endl;
            stopthread=true;
        }
    }
}

class MyPresetManager : public sound4::CPresetLoader {
public:
    MyPresetManager() = default;
    virtual ~MyPresetManager() = default;

    bool SetupPath(const std::filesystem::path& a_preset_path)
        {
            m_preset_path=a_preset_path;
            std::error_code ec;
            if ( !std::filesystem::exists(m_preset_path,ec ) ) {
                return false;
            }
            if ( !std::filesystem::is_directory(m_preset_path, ec) ) {
                return false;
            }
            return true;
        }
    virtual bool IsReadOnly() override { return false; };
    virtual bool Exists(const std::filesystem::path &name) override
        {
            std::error_code ec;
            return std::filesystem::exists(GetRealPath(name), ec);
        }
    virtual bool Remove(const std::filesystem::path &name) override
```

```
        {
            std::error_code ec;
            return std::filesystem::remove(GetRealPath(name), ec);
        }
    virtual bool Rename(const std::filesystem::path &from, const std::filesystem::path &to) override
        {
            std::error_code ec;
            std::filesystem::rename(GetRealPath(from), GetRealPath(to), ec);
            return (!ec);
        }
    virtual std::vector<std::filesystem::path> GetAll() override
        {
            std::vector<std::filesystem::path> list;
            std::error_code ec;
            for (auto it = std::filesystem::directory_iterator(m_preset_path.c_str(),
std::filesystem::directory_options::skip_permission_denied, ec);
                !ec && it != std::filesystem::directory_iterator{};
                 it.increment(ec) )
            {
                if (it->is_regular_file(ec)) {
                    list.push_back(it->path().lexically_relative(m_preset_path));
                }
            }
            return list;
        }
    virtual std::string Read(const std::filesystem::path &filename) override
        {
            std::ifstream f(GetRealPath(filename));
            if ( f.fail() ) {
                return std::string();
            }
            std::ostringstream ss;
            ss « f.rdbuf();
            return ss.str();
        }
    virtual bool Write(const std::filesystem::path &filename, const std::string &content) override
        {
            std::ofstream f(GetRealPath(filename));
            if ( f.fail() ) {
                return false;
            }
            f « content;
            if ( f.fail() ) {
                return false;
            }
            return true;
        }
private:
    std::filesystem::path m_preset_path;
    std::filesystem::path GetRealPath(const std::filesystem::path &name)
        {
            return m_preset_path / name;
        }
};

int main(int argc, const char **argv)
{
    int listen_port = 8080;
    auto store_path_str=GetEnv("S4STORE_PATH");
    std::string libname =  "libsound4.bigvoice.cl.so";


    // Get credentials from environment
    auto LoginKey=GetEnv("S4LOGINKEY");
    if (LoginKey.empty()) {
        LoginKey=GetEnv("S4USERID");
    }
    auto RadioName=GetEnv("RADIO_NAME");
    auto KeyId=GetEnv("ACCESS_KEY_ID");
    auto AccessKey=GetEnv("ACCESS_KEY_SECRET");

    const char *progname=argv[0];
    for (int n=1;n<argc;n++) {
        std::string arg = argv[n];
        if (arg=="-p" || arg=="--port") {
            if (argc<n+1) {
                std::cerr « "--port needs a number"« std::endl;
                return 1;
            }
            n++;
            listen_port=atoi(argv[n]);
        } else if (arg=="-l" || arg=="--lib") {
            if (argc<n+1) {
                std::cerr « "--port needs a number"« std::endl;
                return 1;
            }
            n++;
```

```
            libname=argv[n];
        } else if (arg=="-h" || arg=="--help") {
            std::cerr « "Usage: " « progname « " [-p port] [-l libname.so]"«std::endl;;
            std::cerr « "  Reads audio from stdin and return processed audio in stdout" « std::endl;
            std::cerr « "   -l, --lib   : library to load ["«libname«"]" « std::endl;
            std::cerr « "   -p, --port  : port for web server ["«listen_port«"]" « std::endl;
            std::cerr « std::endl;
            std::cerr « "Environment:"« std::endl;;
            std::cerr « " - S4STORE_PATH            : path to store config [default: (no storage)]"« std::endl;;
            std::cerr « " - S4LOGINKEY              : SOUND4 Login key (or S4USERID)"« std::endl;;
            std::cerr « " - RADIO_NAME              : SOUND4 Radio Name"« std::endl;;
            std::cerr « " - ACCESS_KEY_ID           : SOUND4 Access Key ID"« std::endl;;
            std::cerr « " - ACCESS_KEY_SECRET       : SOUND4 Access Key Secret"« std::endl;
            std::cerr « std::endl;
            std::cerr « "Example:"« std::endl;
            std::cerr « "  ffmpeg -re -i file.wav -ar 48000 -ac 1 -f f32le - | "«progname«" | ffplay -f f32le -ar 48000 -ac 1 -i -" « std::endl;;
            #if defined(_WIN32) || defined(WIN32)
            std::cerr « "  ffmpeg -f dshow -i audio=\"Microphone\" -ar 48000 -ac 1 -f f32le - | "«progname«" | ffplay -f f32le -ar 48000 -ac 1 -i -" « std::endl;;
            #else
            std::cerr « "  ffmpeg -f pulse -i default -ar 48000 -ac 1 -f f32le - | "«progname«" | ffplay -f f32le -ar 48000 -ac 1 -i -" « std::endl;;
            #endif
            return 0;
        } else {
            std::cerr « "unknown argument '"«arg«"'"« std::endl;
            return 1;
        }
    }


    sound4::CProcessor processor;
    if (!processor.Load(libname)) {
        std::cerr « "Failed to load processing library" « std::endl;
        return 1;
    }

    if (LoginKey.empty() || RadioName.empty() || KeyId.empty() || AccessKey.empty()) {
        std::cerr « "Missing credentials in environment" « std::endl;
        return 1;
    }
    std::filesystem::path store_path;
    if (!store_path_str.empty()) {
        store_path = std::filesystem::path(store_path_str);
        std::error_code ec;
        if (!std::filesystem::exists(store_path,ec) || !std::filesystem::is_directory(store_path,ec)) {
            std::cerr « "Storage folder '"«(const char*)store_path.u8string().c_str()«"' is not a valid directory" « std::endl;
            return 1;
        }
    }

    processor.SetLogSeverity(sound4::verbose5);
    processor.SetLoggerCallback([](sound4::LogSeverity severity,const std::string& msg) {
            std::cerr « msg « std::endl;
        });

    sound4::CInstance instance(processor);
    instance.SetParam("ADMIN_USER","admin");
    instance.SetParam("ADMIN_SECRET","admin");

    MyPresetManager preset_manager;
    if (!store_path.empty()) {
        if (!preset_manager.SetupPath(store_path)) {
            std::cerr « "Failed to setup the custom preset manager on path " « (const char*)store_path.u8string().c_str() « std::endl;
            return 1;
        }
        instance.SetPresetManager(&preset_manager);
    }

    std::cerr « "Creating" « std::endl;
    if (!instance.Create(LoginKey, RadioName, KeyId, AccessKey, {})) {
        std::cerr « "Failed to create the processing instance" « std::endl;
        return 1;
    }

    std::cerr « "Starting web server" « std::endl;
    if (!instance.StartWebServer(listen_port,0)) {
        std::cerr « "Failed to create the web server on port " « listen_port « std::endl;
        return 1;
    }

    {
```

```
        auto client = instance.NewClient();
        auto answer = client->ProcessJson(R"JSON({"get":{"processorname":null}})JSON");
        std::cerr « "Request for processor name returned "«answer«std::endl;
    }

    ProcessLoop(instance, processor);

    std::cerr « "Stopping now" « std::endl;
    instance.Stop();

    std::cerr « "End" « std::endl;
    return 0;
}
```

15.23 sound4.bigvoice.cl.h File Reference

C interface for library.

```
#include <windows.h>
#include <stdint.h>
```

Classes

- struct SOUND4_ProcessInfo
- struct SOUND4_AuxiliaryOutputInfos

Macros

- #define BIGVOICE_DECL __declspec(dllimport)
- #define BIGVOICE_HAS_WEBSERVER 1
- #define BIGVOICE_HAS_CLOUDBUS 1
- #define BIGVOICE_AUDIOFRAME_COUNT 12
- #define BIGVOICE_CHANNEL_COUNT 1
- #define BIGVOICE_AUDIO_INPUT_COUNT 1
- #define BIGVOICE_AUDIO_OUTPUT_COUNT 1
- #define BIGVOICE_SAMPLE_RATE 48000
- #define SOUND4_INVALID_WEBSERVER_ID ((uint64_t)-1)
- #define SOUND4_WEBSERVER_HTTP_OK (1<<0)
- #define SOUND4_WEBSERVER_HTTPS_OK (1<<1)

Typedefs

- typedef void(∗ bigvoice_loggerfn) (enum bigvoice_LogSeverity, const char ∗)
- typedef struct _tlgProvider_t const ∗ TraceLoggingHProvider
- typedef wchar_t fs_char
- typedef char ∗(∗ bigvoice_storage_reader) (const fs_char ∗filename, void ∗userdata)
- typedef void(∗ bigvoice_storage_reader_free) (char ∗content, void ∗userdata)
- typedef int(∗ bigvoice_storage_writer) (const fs_char ∗filename, const char ∗content, void ∗userdata)
- typedef int(∗ bigvoice_storage_exists) (const fs_char ∗filename, void ∗userdata)
- typedef fs_char ∗∗(∗ bigvoice_storage_getall) (void ∗userdata)
- typedef void(∗ bigvoice_storage_getall_free) (fs_char ∗∗all, void ∗userdata)
- typedef int(∗ bigvoice_storage_remove) (const fs_char ∗filename, void ∗userdata)
- typedef int(∗ bigvoice_storage_rename) (const fs_char ∗from, const fs_char ∗to, void ∗userdata)

Enumerations

- enum bigvoice_LogSeverity {
  none = 0 , fatal = 1 , error = 2 , warning = 3 ,
  info = 4 , verbose = 5 , verbose2 = 6 , verbose3 = 7 ,
  verbose4 = 8 , verbose5 = 9 }
- enum bigvoice_PresetChange_Kind { change_kind_created = 1 , change_kind_modified , change_kind_deleted }
- enum bigvoice_SampleFormat {
  INVALID_FORMAT =0 , S16_LE , S16_BE , S24_LE ,
  S24_BE , S32_LE , S32_BE , F32_LE ,
  F32_BE , S16_NATIVE =S16_LE , S24_NATIVE =S24_LE , S32_NATIVE =S32_LE ,
  F32_NATIVE =F32_LE }
- enum bigvoice_ConverterTargetMode {
  ConverterTargetMode_AsInput = 0 , ConverterTargetMode_Mono , ConverterTargetMode_Stereo ,
  ConverterTargetMode_StereoToMono ,
  ConverterTargetMode_MonoToStereo }

Functions

- const struct SOUND4_ProcessInfo ∗ SOUND4_GetProcessInfo ()
- const char ∗ bigvoice_GetVersion ()
- unsigned int bigvoice_GetChunkSizeInFrames ()
- unsigned int ∗ bigvoice_GetPossibleChunkSizeInFrames ()
- unsigned int bigvoice_GetChannelCount ()
- unsigned int bigvoice_GetAudioInputCount ()
- unsigned int bigvoice_GetAudioOutputCount ()
- unsigned int bigvoice_GetSampleRate ()
- void bigvoice_SetLoggerCallback (bigvoice_loggerfn logger)
- void bigvoice_SetLogSeverity (enum bigvoice_LogSeverity severity)
- struct bigvoice_CParameters ∗ bigvoice_NewParameters ()
- void bigvoice_FreeParameters (struct bigvoice_CParameters ∗params)
- void bigvoice_SetParameter (struct bigvoice_CParameters ∗params, const char ∗name, const char ∗value)
- const char ∗ bigvoice_GetParameter (struct bigvoice_CParameters ∗params, const char ∗name)
- void bigvoice_FreeParameterValue (const char ∗value)
- struct bigvoice_CInstance ∗ bigvoice_InitProcess (const char ∗LoginKey, const char ∗RadioName, const char ∗Access_Key_ID, const char ∗Access_Key_Secret, const char ∗save_path)
- struct bigvoice_CInstance ∗ bigvoice_InitProcess2 (const char ∗LoginKey, const char ∗RadioName, const char ∗Access_Key_ID, const char ∗Access_Key_Secret, const char ∗save_path, const struct bigvoice_CParameters ∗parameters)
- struct bigvoice_CInstance ∗ bigvoice_InitProcess3 (const char ∗LoginKey, const char ∗RadioName, const char ∗Access_Key_ID, const char ∗Access_Key_Secret, const char ∗save_path, const struct bigvoice_CParameters ∗parameters, unsigned int frames_per_chunk)
- unsigned int bigvoice_GetProcessChunkFrames (struct bigvoice_CInstance ∗instance)
- int bigvoice_TerminateProcess (struct bigvoice_CInstance ∗instance)
- void bigvoice_ExitProcess (struct bigvoice_CInstance ∗instance)
- struct bigvoice_CBus ∗ bigvoice_NewBus ()
- void bigvoice_FreeBus (struct bigvoice_CBus ∗bus)
- void bigvoice_SetInstanceBus (struct bigvoice_CParameters ∗params, struct bigvoice_CBus ∗bus)
- void bigvoice_SetInstanceTracing (struct bigvoice_CParameters ∗params, TraceLoggingHProvider tracing↩_provider, GUID activity_guid)
- void bigvoice_SetInstanceTracingProcessActivity (struct bigvoice_CInstance ∗instance, GUID activity_guid)
- void bigvoice_SetPresetManager (struct bigvoice_CParameters ∗params, bigvoice_storage_reader reader, bigvoice_storage_reader_free, bigvoice_storage_writer writer, bigvoice_storage_exists exists, bigvoice_storage_getall getall, bigvoice_storage_getall_free getall_free, bigvoice_storage_remove remove, bigvoice_storage_rename rename, int IsReadOnly, void ∗userdata)

- void bigvoice_PresetManager_InformChange (struct bigvoice_CInstance *instance, const fs_char *relative↩_path, enum bigvoice_PresetChange_Kind change_kind)
- void bigvoice_SetMetadata (struct bigvoice_CInstance *instance, const char *key, const char *value)
- void bigvoice_SetMetadataMulti (struct bigvoice_CInstance *instance, const char **keyvalue)
- const char ** bigvoice_GetMetadataInfos (struct bigvoice_CInstance *instance)
- void bigvoice_FreeMetadataInfos (struct bigvoice_CInstance *instance, const char **infos)
- void bigvoice_StartUpdateThread (struct bigvoice_CInstance *instance, unsigned int port)
- void bigvoice_StopUpdateThread (struct bigvoice_CInstance *instance)
- int bigvoice_WaitUpdateThreadReady (struct bigvoice_CInstance *instance, int milliseconds)
- void bigvoice_ProcessAudio (struct bigvoice_CInstance *instance, const float *input, float *output)
- void bigvoice_ProcessAudio_Planar (struct bigvoice_CInstance *instance, float const *const *input, float *const *output)
- float * bigvoice_GetBufferIn (struct bigvoice_CInstance *instance)
- float * bigvoice_GetBufferOut (struct bigvoice_CInstance *instance)
- unsigned int bigvoice_GetEstimatedDelay (struct bigvoice_CInstance *instance)
- struct SOUND4_AuxiliaryOutputInfos ** bigvoice_GetAuxiliaryAudioOutputInfos (struct bigvoice_CInstance *instance)
- void bigvoice_FreeAuxiliaryAudioInfos (struct SOUND4_AuxiliaryOutputInfos **infos)
- int bigvoice_ActivateAuxiliaryAudioID (struct bigvoice_CInstance *instance, const char *id)
- unsigned int bigvoice_GetAuxiliaryAudioEstimatedDelay (struct bigvoice_CInstance *instance, const char *id)
- const char * bigvoice_GetFormatName (const enum bigvoice_SampleFormat fmt)
- enum bigvoice_SampleFormat bigvoice_GetFormatFromName (const char *name)
- unsigned int bigvoice_GetBytesFromFormat (const enum bigvoice_SampleFormat fmt)
- unsigned int bigvoice_GetMaxPacketFrame (struct bigvoice_CInstance *instance)
- unsigned int bigvoice_AddAudio (struct bigvoice_CInstance *instance, const uint8_t *payload, unsigned int nFrame, enum bigvoice_SampleFormat fmt)
- unsigned int bigvoice_AddPadAudio (struct bigvoice_CInstance *instance)
- unsigned int bigvoice_GetOutputCount (struct bigvoice_CInstance *instance)
- unsigned int bigvoice_GetAudio (struct bigvoice_CInstance *instance, uint8_t *payload, unsigned int max↩_nFrame, enum bigvoice_SampleFormat fmt)
- void bigvoice_AudioConvertFrom (const uint8_t *payload, float *output, size_t nSpl, enum bigvoice_SampleFormat fmt)
- void bigvoice_AudioConvertTo (const float *input, uint8_t *payload, size_t nSpl, enum bigvoice_SampleFormat fmt)
- void bigvoice_StereoToMono (const float *input, float *output, size_t nFrame)
- void bigvoice_MonoToStereo (const float *input, float *output, size_t nFrame)
- void bigvoice_StereoToMono_Planar (const float *inputL, const float *inputR, float *output, size_t nFrame)
- void bigvoice_MonoToStereo_Planar (const float *input, float *outputL, float *outputR, size_t nFrame)
- void bigvoice_AudioMonoFromLiveStereo (const uint8_t *payload, float *output)
- void bigvoice_AudioMonoToLiveStereo (const float *input, uint8_t *payload)
- struct bigvoice_CAudioConverter * bigvoice_GetAudioConverter (enum bigvoice_SampleFormat fmt, size_t nFrame, size_t payl_ch, size_t payl_ch_offset, enum bigvoice_ConverterTargetMode target_mode)
- void bigvoice_FreeAudioConverter (struct bigvoice_CAudioConverter *converter)
- void bigvoice_AudioConverter_From (struct bigvoice_CAudioConverter *converter, const uint8_t *payload, float *output)
- void bigvoice_AudioConverter_To (struct bigvoice_CAudioConverter *converter, const float *input, uint8_t *payload)
- struct bigvoice_CClientInstance * bigvoice_NewClient (struct bigvoice_CInstance *instance)
- void bigvoice_DeleteClient (struct bigvoice_CClientInstance *client)
- const char * bigvoice_ProcessJson (struct bigvoice_CClientInstance *client, const char *json_str, int *need_save)
- void bigvoice_FreeJsonAnswer (const char *json_str)
- int bigvoice_SaveState (struct bigvoice_CInstance *instance)
- uint64_t bigvoice_Webserver_tcp (unsigned int listenport, unsigned int listenport_secure, const char *socket_ip, unsigned int socket_port)

- uint64_t bigvoice_Webserver_tcp2 (unsigned int listenport, unsigned int listenport_secure, const char *socket_ip, unsigned int socket_port, const struct bigvoice_CParameters *parameters)
- uint64_t bigvoice_Webserver (unsigned int listenport, unsigned int listenport_secure, struct bigvoice_CInstance *instance)
- int bigvoice_Webserver_Stop (uint64_t id, int timeout_ms)
- int bigvoice_Webserver_Status (uint64_t id)
- void bigvoice_Webserver_SetAppHealth (struct bigvoice_CInstance *instance, int httpcode, const char *contenttype, const char *content)
- void bigvoice_Webserver_GetAppHealth (struct bigvoice_CInstance *instance, int *httpcode, char **contenttype, char **content)
- void bigvoice_Webserver_FreeString (char *str)

15.23.1 Macro Definition Documentation

15.23.1.1 BIGVOICE_DECL

```
#define BIGVOICE_DECL __declspec(dllimport)
```

Definition at line 14 of file sound4.bigvoice.cl.h.

15.23.1.2 BIGVOICE_HAS_CLOUDBUS

```
#define BIGVOICE_HAS_CLOUDBUS 1
```

Definition at line 26 of file sound4.bigvoice.cl.h.

15.23.1.3 BIGVOICE_HAS_WEBSERVER

```
#define BIGVOICE_HAS_WEBSERVER 1
```

Definition at line 25 of file sound4.bigvoice.cl.h.

15.23.2 Typedef Documentation

15.23.2.1 TraceLoggingHProvider

```
typedef struct _tlgProvider_t const* TraceLoggingHProvider
```

Definition at line 419 of file sound4.bigvoice.cl.h.

15.24 sound4.bigvoice.cl.h

Go to the documentation of this file.

```
#pragma once

#ifdef __unix__
    #include <sys/types.h>
    #define BIGVOICE_DECL       __attribute__ ((visibility ("default")))
#elif defined(_WIN32) || defined(WIN32)
    #include <windows.h>
    #ifdef BUILDING_BIGVOICE_DLL
        #define BIGVOICE_DECL   __declspec(dllexport)
    #else
        #define BIGVOICE_DECL   __declspec(dllimport)
    #endif
    #ifdef _MSC_VER
        #pragma warning(disable : 4996)
    #endif
#elif defined(__APPLE__)
    #include <sys/types.h>
    #define BIGVOICE_DECL       __attribute__ ((visibility ("default")))
#endif
#include <stdint.h>

#define BIGVOICE_HAS_WEBSERVER 1
#define BIGVOICE_HAS_CLOUDBUS 1

#ifdef __cplusplus
extern "C" {
#endif // __cplusplus

// ---------------------------------------------------------------
#define BIGVOICE_AUDIOFRAME_COUNT      12
#define BIGVOICE_CHANNEL_COUNT          1
#define BIGVOICE_AUDIO_INPUT_COUNT      1
#define BIGVOICE_AUDIO_OUTPUT_COUNT     1
#define BIGVOICE_SAMPLE_RATE            48000

struct SOUND4_ProcessInfo {
    size_t struct_size;
    const char *name;
    const char *prefix;
    const char *shortname;
    const char *version;
};

BIGVOICE_DECL const struct SOUND4_ProcessInfo* SOUND4_GetProcessInfo();

BIGVOICE_DECL const char *bigvoice_GetVersion();

BIGVOICE_DECL unsigned int bigvoice_GetChunkSizeInFrames();

BIGVOICE_DECL unsigned int* bigvoice_GetPossibleChunkSizeInFrames();

BIGVOICE_DECL unsigned int bigvoice_GetChannelCount();

BIGVOICE_DECL unsigned int bigvoice_GetAudioInputCount();

BIGVOICE_DECL unsigned int bigvoice_GetAudioOutputCount();

BIGVOICE_DECL unsigned int bigvoice_GetSampleRate();

enum bigvoice_LogSeverity {
    none     = 0,
    fatal    = 1,
    error    = 2,
    warning  = 3,
    info     = 4,
    verbose  = 5,
    verbose2 = 6,
    verbose3 = 7,
    verbose4 = 8,
    verbose5 = 9,
};

typedef void (*bigvoice_loggerfn) (enum bigvoice_LogSeverity, const char *);

BIGVOICE_DECL void bigvoice_SetLoggerCallback( bigvoice_loggerfn logger );

BIGVOICE_DECL void bigvoice_SetLogSeverity( enum bigvoice_LogSeverity severity );

// ---------------------------------------------------------------
// ---------------------------------------------------------------
struct bigvoice_CInstance;
```

```
struct bigvoice_CParameters;

BIGVOICE_DECL struct bigvoice_CParameters *bigvoice_NewParameters();

BIGVOICE_DECL void bigvoice_FreeParameters(struct bigvoice_CParameters *params);

BIGVOICE_DECL void bigvoice_SetParameter(struct bigvoice_CParameters *params, const char *name, const char *value);

BIGVOICE_DECL const char *bigvoice_GetParameter(struct bigvoice_CParameters *params, const char *name);

BIGVOICE_DECL void bigvoice_FreeParameterValue(const char *value);

BIGVOICE_DECL struct bigvoice_CInstance *bigvoice_InitProcess(
        const char *LoginKey,
        const char *RadioName,
        const char *Access_Key_ID,
        const char *Access_Key_Secret,
        const char *save_path
    );

BIGVOICE_DECL struct bigvoice_CInstance *bigvoice_InitProcess2(
        const char *LoginKey,
        const char *RadioName,
        const char *Access_Key_ID,
        const char *Access_Key_Secret,
        const char *save_path,
        const struct bigvoice_CParameters *parameters
    );

BIGVOICE_DECL struct bigvoice_CInstance *bigvoice_InitProcess3(
        const char *LoginKey,
        const char *RadioName,
        const char *Access_Key_ID,
        const char *Access_Key_Secret,
        const char *save_path,
        const struct bigvoice_CParameters *parameters,
        unsigned int frames_per_chunk
    );

BIGVOICE_DECL unsigned int bigvoice_GetProcessChunkFrames(struct bigvoice_CInstance *instance);

BIGVOICE_DECL int bigvoice_TerminateProcess(struct bigvoice_CInstance *instance);

BIGVOICE_DECL void bigvoice_ExitProcess(struct bigvoice_CInstance *instance);

#if BIGVOICE_HAS_CLOUDBUS
// ---------------------------------------------------------------
struct bigvoice_CBus;

BIGVOICE_DECL struct bigvoice_CBus* bigvoice_NewBus();

BIGVOICE_DECL void bigvoice_FreeBus(struct bigvoice_CBus *bus);

BIGVOICE_DECL void bigvoice_SetInstanceBus(struct bigvoice_CParameters *params, struct bigvoice_CBus *bus);


#endif // BIGVOICE_HAS_CLOUDBUS

// ---------------------------------------------------------------
//   Tracing (Windows only)
// ---------------------------------------------------------------
#ifdef _WIN32
#ifndef TLG_HAVE_EVENT_SET_INFORMATION // TraceLoggingProvider.h has not been included
    struct _tlgProvider_t;
    typedef struct _tlgProvider_t const* TraceLoggingHProvider;
#endif // !TLG_HAVE_EVENT_SET_INFORMATION
// ---------------------------------------------------------------
BIGVOICE_DECL void bigvoice_SetInstanceTracing(struct bigvoice_CParameters *params, TraceLoggingHProvider tracing_provider, GUID activity_guid);

BIGVOICE_DECL void bigvoice_SetInstanceTracingProcessActivity(struct bigvoice_CInstance *instance, GUID activity_guid);

#endif // _WIN32

// ---------------------------------------------------------------
// ---------------------------------------------------------------

// OS dependent filesystem path char type
#ifdef _WIN32
    typedef wchar_t fs_char;
#else // !_WIN32
    typedef char fs_char;
```

```
#endif // !_WIN32

typedef char * (*bigvoice_storage_reader) (const fs_char *filename, void* userdata);

typedef void (*bigvoice_storage_reader_free) (char *content, void* userdata);

typedef int (*bigvoice_storage_writer) (const fs_char *filename, const char *content, void* userdata);

typedef int (*bigvoice_storage_exists) (const fs_char *filename, void* userdata);

typedef fs_char** (*bigvoice_storage_getall) (void* userdata);

typedef void (*bigvoice_storage_getall_free) (fs_char**all, void* userdata);

typedef int (*bigvoice_storage_remove) (const fs_char *filename, void* userdata);

typedef int (*bigvoice_storage_rename) (const fs_char *from, const fs_char *to, void* userdata);

BIGVOICE_DECL void bigvoice_SetPresetManager(struct bigvoice_CParameters *params
    , bigvoice_storage_reader reader, bigvoice_storage_reader_free
    , bigvoice_storage_writer writer
    , bigvoice_storage_exists exists
    , bigvoice_storage_getall getall, bigvoice_storage_getall_free getall_free
    , bigvoice_storage_remove remove
    , bigvoice_storage_rename rename
    , int IsReadOnly
    , void* userdata
    );

enum bigvoice_PresetChange_Kind {
    change_kind_created = 1,
    change_kind_modified   ,
    change_kind_deleted    ,
};

BIGVOICE_DECL void bigvoice_PresetManager_InformChange(struct bigvoice_CInstance *instance, const fs_char *relative_path, enum bigvoice_PresetChange_Kind change_kind);

// ---------------------------------------------------------------
// ---------------------------------------------------------------

BIGVOICE_DECL void bigvoice_SetMetadata(struct bigvoice_CInstance *instance, const char* key, const char* value);

BIGVOICE_DECL void bigvoice_SetMetadataMulti(struct bigvoice_CInstance *instance, const char** keyvalue);

BIGVOICE_DECL const char** bigvoice_GetMetadataInfos(struct bigvoice_CInstance *instance);

BIGVOICE_DECL void bigvoice_FreeMetadataInfos(struct bigvoice_CInstance *instance, const char** infos);

// ---------------------------------------------------------------
// ---------------------------------------------------------------

BIGVOICE_DECL void bigvoice_StartUpdateThread(struct bigvoice_CInstance *instance, unsigned int port);

BIGVOICE_DECL void bigvoice_StopUpdateThread(struct bigvoice_CInstance *instance);

BIGVOICE_DECL int bigvoice_WaitUpdateThreadReady(struct bigvoice_CInstance *instance, int milliseconds);

// ---------------------------------------------------------------
// ---------------------------------------------------------------
BIGVOICE_DECL void bigvoice_ProcessAudio(struct bigvoice_CInstance *instance, const float *input, float *output );

BIGVOICE_DECL void bigvoice_ProcessAudio_Planar(struct bigvoice_CInstance *instance
    , float const * const *input
    , float * const *output);

BIGVOICE_DECL float *bigvoice_GetBufferIn(struct bigvoice_CInstance *instance);

BIGVOICE_DECL float *bigvoice_GetBufferOut(struct bigvoice_CInstance *instance);

BIGVOICE_DECL unsigned int bigvoice_GetEstimatedDelay(struct bigvoice_CInstance *instance);

// ---------------------------------------------------------------
// ---------------------------------------------------------------
struct SOUND4_AuxiliaryOutputInfos {
    char *id;
    char *description;
    unsigned int sample_rate;
    unsigned int channel_count;
    const float *buffer;
};
```

```
BIGVOICE_DECL struct SOUND4_AuxiliaryOutputInfos** bigvoice_GetAuxiliaryAudioOutputInfos(struct bigvoice_CInstance *instance);

BIGVOICE_DECL void bigvoice_FreeAuxiliaryAudioInfos(struct SOUND4_AuxiliaryOutputInfos** infos);

BIGVOICE_DECL int bigvoice_ActivateAuxiliaryAudioID(struct bigvoice_CInstance *instance, const char* id);

BIGVOICE_DECL unsigned int bigvoice_GetAuxiliaryAudioEstimatedDelay(struct bigvoice_CInstance *instance, const char* id);

// ------------------------------------------------------------
// ------------------------------------------------------------
    #ifdef _MSC_VER
        #define __BYTE_ORDER__  REG_DWORD
        #define __ORDER_LITTLE_ENDIAN__ REG_DWORD_LITTLE_ENDIAN
        #define __ORDER_BIG_ENDIAN__    REG_DWORD_BIG_ENDIAN
    #endif

enum bigvoice_SampleFormat {
    INVALID_FORMAT=0,
    S16_LE,
    S16_BE,
    S24_LE,
    S24_BE,
    S32_LE,
    S32_BE,
    F32_LE,
    F32_BE,

    // Native definitions, only links to the physical ones
    #if __BYTE_ORDER__ == __ORDER_LITTLE_ENDIAN__
        S16_NATIVE=S16_LE,
        S24_NATIVE=S24_LE,
        S32_NATIVE=S32_LE,
        F32_NATIVE=F32_LE,
    #else
        S16_NATIVE=S16_BE,
        S24_NATIVE=S24_BE,
        S32_NATIVE=S32_BE,
        F32_NATIVE=F32_BE,
    #endif
};

BIGVOICE_DECL const char *bigvoice_GetFormatName(const enum bigvoice_SampleFormat fmt);

BIGVOICE_DECL enum bigvoice_SampleFormat bigvoice_GetFormatFromName(const char *name);

BIGVOICE_DECL unsigned int bigvoice_GetBytesFromFormat(const enum bigvoice_SampleFormat fmt);


BIGVOICE_DECL unsigned int bigvoice_GetMaxPacketFrame(struct bigvoice_CInstance *instance);

BIGVOICE_DECL unsigned int bigvoice_AddAudio(struct bigvoice_CInstance *instance, const uint8_t *payload, unsigned int nFrame, enum bigvoice_SampleFormat fmt );

BIGVOICE_DECL unsigned int bigvoice_AddPadAudio(struct bigvoice_CInstance *instance);

BIGVOICE_DECL unsigned int bigvoice_GetOutputCount(struct bigvoice_CInstance *instance);

BIGVOICE_DECL unsigned int bigvoice_GetAudio(struct bigvoice_CInstance *instance, uint8_t *payload, unsigned int max_nFrame, enum bigvoice_SampleFormat fmt );

// ------------------------------------------------------------
// ------------------------------------------------------------
BIGVOICE_DECL void bigvoice_AudioConvertFrom(const uint8_t *payload, float *output, size_t nSpl, enum bigvoice_SampleFormat fmt);

BIGVOICE_DECL void bigvoice_AudioConvertTo(const float *input, uint8_t *payload, size_t nSpl, enum bigvoice_SampleFormat fmt);

BIGVOICE_DECL void bigvoice_StereoToMono(const float *input, float *output, size_t nFrame);

BIGVOICE_DECL void bigvoice_MonoToStereo(const float *input, float *output, size_t nFrame);

BIGVOICE_DECL void bigvoice_StereoToMono_Planar(const float *inputL, const float *inputR, float *output, size_t nFrame);

BIGVOICE_DECL void bigvoice_MonoToStereo_Planar(const float *input, float *outputL, float *outputR, size_t nFrame);

BIGVOICE_DECL void bigvoice_AudioMonoFromLiveStereo(const uint8_t *payload, float *output);

BIGVOICE_DECL void bigvoice_AudioMonoToLiveStereo(const float *input, uint8_t *payload);

struct bigvoice_CAudioConverter;

```

```
enum bigvoice_ConverterTargetMode {
    ConverterTargetMode_AsInput = 0,
    ConverterTargetMode_Mono,
    ConverterTargetMode_Stereo,
    ConverterTargetMode_StereoToMono,
    ConverterTargetMode_MonoToStereo,
};

BIGVOICE_DECL struct bigvoice_CAudioConverter* bigvoice_GetAudioConverter(enum bigvoice_SampleFormat fmt, size_t nFrame
    , size_t payl_ch, size_t payl_ch_offset
    , enum bigvoice_ConverterTargetMode target_mode);

BIGVOICE_DECL void bigvoice_FreeAudioConverter(struct bigvoice_CAudioConverter *converter);

BIGVOICE_DECL void bigvoice_AudioConverter_From(struct bigvoice_CAudioConverter *converter, const uint8_t *payload, float *output);

BIGVOICE_DECL void bigvoice_AudioConverter_To(struct bigvoice_CAudioConverter *converter, const float *input, uint8_t *payload);

// ------------------------------------------------------------
// ------------------------------------------------------------
struct bigvoice_CClientInstance;

BIGVOICE_DECL struct bigvoice_CClientInstance *bigvoice_NewClient(struct bigvoice_CInstance *instance);

BIGVOICE_DECL void bigvoice_DeleteClient(struct bigvoice_CClientInstance *client);

BIGVOICE_DECL const char *bigvoice_ProcessJson(struct bigvoice_CClientInstance *client, const char *json_str, int *need_save);

BIGVOICE_DECL void bigvoice_FreeJsonAnswer(const char *json_str);

BIGVOICE_DECL int bigvoice_SaveState(struct bigvoice_CInstance *instance);

#if BIGVOICE_HAS_WEBSERVER
// ------------------------------------------------------------
// ------------------------------------------------------------
BIGVOICE_DECL uint64_t bigvoice_Webserver_tcp(unsigned int listenport, unsigned int listenport_secure, const char *socket_ip, unsigned int socket_port);

// ------------------------------------------------------------
BIGVOICE_DECL uint64_t bigvoice_Webserver_tcp2(unsigned int listenport, unsigned int listenport_secure, const char *socket_ip, unsigned int socket_port, const struct bigvoice_CParameters *parameters);

BIGVOICE_DECL uint64_t bigvoice_Webserver(unsigned int listenport, unsigned int listenport_secure, struct bigvoice_CInstance *instance);

BIGVOICE_DECL int bigvoice_Webserver_Stop(uint64_t id, int timeout_ms);

BIGVOICE_DECL int bigvoice_Webserver_Status(uint64_t id);

BIGVOICE_DECL void bigvoice_Webserver_SetAppHealth(struct bigvoice_CInstance *instance, int httpcode, const char *contenttype, const char *content);

BIGVOICE_DECL void bigvoice_Webserver_GetAppHealth(struct bigvoice_CInstance *instance, int* httpcode, char** contenttype, char** content);

BIGVOICE_DECL void bigvoice_Webserver_FreeString(char *str);

#define SOUND4_INVALID_WEBSERVER_ID            ((uint64_t)-1)

#define SOUND4_WEBSERVER_HTTP_OK               (1«0)
#define SOUND4_WEBSERVER_HTTPS_OK              (1«1)

#endif // BIGVOICE_HAS_WEBSERVER

#ifdef __cplusplus
} // extern "C"
#endif // __cplusplus
```

15.25 sound4.bigvoice.cl.hpp File Reference

C++ wrapper for library.

```
#include <string>
#include <exception>
```

```
#include <thread>
#include <functional>
#include <memory>
#include <array>
#include <assert.h>
#include <stdexcept>
#include <filesystem>
#include <string.h>
#include "sound4.bigvoice.cl.h"
#include <stringapiset.h>
#include <wchar.h>
```

Classes

- struct sound4::AuxiliaryOutputInfos
- struct sound4::bigvoice::helper::SampleFormat< T >

  Helper for Sample format types.
- class sound4::bigvoice::CBus

  Shared Bus.
- class sound4::bigvoice::CPresetLoader

  Custom preset handler helper.
- class sound4::bigvoice::CInstance

  Instance handling class.
- class sound4::bigvoice::CInstance::CClient
- class sound4::bigvoice::CAudioConverter

  Audio converter helper.

Namespaces

- namespace sound4
- namespace sound4::bigvoice
- namespace sound4::bigvoice::helper

Typedefs

- using sound4::bigvoice::SampleFormat = bigvoice_SampleFormat
- using sound4::bigvoice::LogSeverity = bigvoice_LogSeverity
- using sound4::bigvoice::log_cb_t = std::function< void(LogSeverity, const std::string &)>
- using sound4::bigvoice::PresetChange_Kind = bigvoice_PresetChange_Kind

Functions

- static char * bigvoice_custom_reader (const fs_char *filename, void *userdata)
- static void bigvoice_custom_reader_free (char *content, void *userdata)
- static int bigvoice_custom_writer (const fs_char *filename, const char *content, void *userdata)
- static int bigvoice_custom_exists (const fs_char *filename, void *userdata)
- static fs_char ** bigvoice_custom_getall (void *userdata)
- static void bigvoice_custom_getall_free (fs_char **all, void *userdata)
- static int bigvoice_custom_remove (const fs_char *filename, void *userdata)
- static int bigvoice_custom_rename (const fs_char *from, const fs_char *to, void *userdata)

- static std::string sound4::bigvoice::helper::WStringToUTF8 (const std::wstring &wstr)
- static std::wstring sound4::bigvoice::helper::UTF8ToWString (const std::string &str)
- static void sound4::bigvoice::helper::AudioConvertFrom (const uint8_t ∗payload, float ∗output, size_t nSpl, bigvoice_SampleFormat fmt)
- static void sound4::bigvoice::helper::AudioConvertTo (const float ∗input, uint8_t ∗payload, size_t nSpl, bigvoice_SampleFormat fmt)
- static void sound4::bigvoice::helper::StereoToMono (const float ∗input, float ∗output, size_t nFrame)
- static void sound4::bigvoice::helper::MonoToStereo (const float ∗input, float ∗output, size_t nFrame)
- static void sound4::bigvoice::helper::StereoToMono_Planar (const float ∗inputL, const float ∗inputR, float ∗output, size_t nFrame)
- static void sound4::bigvoice::helper::MonoToStereo_Planar (const float ∗input, float ∗outputL, float ∗outputR, size_t nFrame)
- static void sound4::bigvoice::helper::AudioMonoFromLiveStereo (const uint8_t ∗payload, float ∗output)
- static void sound4::bigvoice::helper::AudioMonoToLiveStereo (const float ∗input, uint8_t ∗payload)
- static std::string sound4::bigvoice::GetVersion ()
- static unsigned int sound4::bigvoice::GetChunkSizeInFrames ()
- static std::vector< unsigned int > sound4::bigvoice::GetPossibleChunkSizeInFrames ()
- static unsigned int sound4::bigvoice::GetChannelCount ()
- static unsigned int sound4::bigvoice::GetAudioInputCount ()
- static unsigned int sound4::bigvoice::GetAudioOutputCount ()
- static unsigned int sound4::bigvoice::GetSampleRate ()
- static void sound4::bigvoice::SanityCheck (bool a_bCheckFrames=true)
- static std::string sound4::bigvoice::GetFormatName (const SampleFormat fmt)
- static SampleFormat sound4::bigvoice::GetFormatFromName (const std::string &name)
- static unsigned int sound4::bigvoice::GetBytesFromFormat (const SampleFormat fmt)
- static void sound4::bigvoice::_log_cb_c (bigvoice_LogSeverity severity, const char ∗c_msg)
- static void sound4::bigvoice::SetLogSeverity (LogSeverity severity)
- static void sound4::bigvoice::SetLoggerCallback (log_cb_t cb)

Variables

- static constexpr const char ∗ sound4::bigvoice::process_name = "SOUND4 BIGVOICE.CL"
- static constexpr const char ∗ sound4::bigvoice::process_shortname = "bigvoice"
- const size_t sound4::bigvoice::ChunkFrames = 12
- const size_t sound4::bigvoice::InputChannels = 1 ∗ 1
- const size_t sound4::bigvoice::OutputChannels = 1 ∗ 1
- const size_t sound4::bigvoice::InputSampleSize =ChunkFrames∗InputChannels
- const size_t sound4::bigvoice::OutputSampleSize =ChunkFrames∗OutputChannels
- const size_t sound4::bigvoice::SampleRate = 48000
- static log_cb_t sound4::bigvoice::_log_cb

15.25.1 Function Documentation

15.25.1.1 bigvoice_custom_exists()

```
static int bigvoice_custom_exists (
            const fs_char * filename,
            void * userdata )  [static]
```

Definition at line 1198 of file sound4.bigvoice.cl.hpp.

15.25.1.2 bigvoice_custom_getall()

```
static fs_char ** bigvoice_custom_getall (
            void * userdata )  [static]
```

Definition at line 1203 of file sound4.bigvoice.cl.hpp.

15.25.1.3 bigvoice_custom_getall_free()

```
static void bigvoice_custom_getall_free (
            fs_char ** all,
            void * userdata )  [static]
```

Definition at line 1213 of file sound4.bigvoice.cl.hpp.

15.25.1.4 bigvoice_custom_reader()

```
static char * bigvoice_custom_reader (
            const fs_char * filename,
            void * userdata )  [static]
```

Definition at line 1184 of file sound4.bigvoice.cl.hpp.

15.25.1.5 bigvoice_custom_reader_free()

```
static void bigvoice_custom_reader_free (
            char * content,
            void * userdata )  [static]
```

Definition at line 1189 of file sound4.bigvoice.cl.hpp.

15.25.1.6 bigvoice_custom_remove()

```
static int bigvoice_custom_remove (
            const fs_char * filename,
            void * userdata )  [static]
```

Definition at line 1220 of file sound4.bigvoice.cl.hpp.

15.25.1.7 bigvoice_custom_rename()

```
static int bigvoice_custom_rename (
            const fs_char * from,
            const fs_char * to,
            void * userdata )  [static]
```

Definition at line 1225 of file sound4.bigvoice.cl.hpp.

15.25.1.8 bigvoice_custom_writer()

```
static int bigvoice_custom_writer (
            const fs_char * filename,
            const char * content,
            void * userdata )  [static]
```

Definition at line 1193 of file sound4.bigvoice.cl.hpp.

15.26 sound4.bigvoice.cl.hpp

Go to the documentation of this file.

```
00001
00004 #pragma once
00005
00006 #include <string>
00007 #include <exception>
00008 #include <thread>
00009 #include <functional>
00010 #include <memory>
00011 #include <array>
00012 #include <assert.h>
00013 #include <stdexcept>
00014 #include <filesystem>
00015 #include <string.h>
00016
00017 #include "sound4.bigvoice.cl.h"
00018
00019
00020 // Filesystem path char type
00021 #ifdef _WIN32
00022     #include <stringapiset.h>
00023     #include <wchar.h>
00025     #define fs_strdup wcsdup
00026     #ifdef _MSC_VER
00027         #pragma warning(disable : 4996)
00028     #endif
00029 #else // !_WIN32
00031     #define fs_strdup strdup
00032 #endif // !_WIN32
00033
00034 // bridge C callbacks to CPresetLoader
00035 extern "C" {
00036     static char *bigvoice_custom_reader(const fs_char *filename, void* userdata);
00037     static void bigvoice_custom_reader_free(char *content, void* userdata);
00038     static int bigvoice_custom_writer(const fs_char *filename, const char *content, void* userdata);
00039     static int bigvoice_custom_exists(const fs_char *filename, void* userdata);
00040     static fs_char** bigvoice_custom_getall(void* userdata);
00041     static void bigvoice_custom_getall_free(fs_char** all, void* userdata);
00042     static int bigvoice_custom_remove(const fs_char *filename, void* userdata);
00043     static int bigvoice_custom_rename(const fs_char *from, const fs_char *to, void* userdata);
00044 };
00045
00049 namespace sound4 {
00050     struct AuxiliaryOutputInfos {
00051         std::string id;
00052         std::string description;
00053         unsigned int sample_rate;
00054         unsigned int channel_count;
00055         const float *buffer;
00056     };
00060 namespace bigvoice {
00061     static constexpr const char *process_name = "SOUND4 BIGVOICE.CL";
00062     static constexpr const char *process_shortname = "bigvoice";
00063     using SampleFormat = bigvoice_SampleFormat;
00068     const size_t ChunkFrames=BIGVOICE_AUDIOFRAME_COUNT;
00073     const size_t InputChannels=BIGVOICE_CHANNEL_COUNT*BIGVOICE_AUDIO_INPUT_COUNT;
00078     const size_t OutputChannels=BIGVOICE_CHANNEL_COUNT*BIGVOICE_AUDIO_OUTPUT_COUNT;
00083     const size_t InputSampleSize=ChunkFrames*InputChannels;
00088     const size_t OutputSampleSize=ChunkFrames*OutputChannels;
00093     const size_t SampleRate=BIGVOICE_SAMPLE_RATE;
00094
00098     namespace helper {
00099         #ifdef _WIN32
00105         static inline std::string WStringToUTF8(const std::wstring& wstr) {
00106             if (wstr.empty()) return {};
```

```
            int size = WideCharToMultiByte(CP_UTF8, 0, &wstr[0], (int)wstr.size(), NULL, 0, NULL, NULL);
            std::string str(size, 0);
            WideCharToMultiByte(CP_UTF8, 0, &wstr[0], (int)wstr.size(), &str[0], size, NULL, NULL);
            return str;
        }
        static inline std::wstring UTF8ToWString(const std::string& str) {
            if (str.empty()) return std::wstring();
            int size = MultiByteToWideChar(CP_UTF8, 0, &str[0], (int)str.size(), NULL, 0);
            std::wstring wstr(size, 0);
            MultiByteToWideChar(CP_UTF8, 0, &str[0], (int)str.size(), &wstr[0], size);
            return wstr;
        }
        #endif // _WIN32

            template<typename T>
        struct SampleFormat {
        };
            template<>
        struct SampleFormat<int16_t> {
            const bigvoice_SampleFormat format = S16_NATIVE;
        };
            template<>
        struct SampleFormat<int32_t> {
            const bigvoice_SampleFormat format = S32_NATIVE;
        };
            template<>
        struct SampleFormat<float> {
            const bigvoice_SampleFormat format = F32_NATIVE;
        };

        // ------------------------------------------------------------
        static inline void AudioConvertFrom(const uint8_t *payload, float *output, size_t nSpl, bigvoice_SampleFormat fmt) {
            bigvoice_AudioConvertFrom(payload, output, nSpl, fmt);
        }

        static inline void AudioConvertTo(const float *input, uint8_t *payload, size_t nSpl, bigvoice_SampleFormat fmt) {
            bigvoice_AudioConvertTo(input, payload, nSpl, fmt);
        }

        static inline void StereoToMono(const float *input, float *output, size_t nFrame) {
            bigvoice_StereoToMono(input, output, nFrame);
        }

        static inline void MonoToStereo(const float *input, float *output, size_t nFrame) {
            bigvoice_MonoToStereo(input, output, nFrame);
        }

        static inline void StereoToMono_Planar(const float *inputL, const float *inputR, float *output, size_t nFrame) {
            bigvoice_StereoToMono_Planar(inputL, inputR, output, nFrame);
        }

        static inline void MonoToStereo_Planar(const float *input, float *outputL, float *outputR, size_t nFrame) {
            bigvoice_MonoToStereo_Planar(input, outputL, outputR, nFrame);
        }

        static inline void AudioMonoFromLiveStereo(const uint8_t *payload, float *output) {
            bigvoice_AudioMonoFromLiveStereo(payload, output);
        }

        static inline void AudioMonoToLiveStereo(const float *input, uint8_t *payload) {
            bigvoice_AudioMonoToLiveStereo(input, payload);
        }

    }; // namespace helper

    static inline std::string GetVersion()
        {
            return std::string(bigvoice_GetVersion());
        }

    static inline unsigned int GetChunkSizeInFrames()
        {
            return bigvoice_GetChunkSizeInFrames();
        }

    static inline std::vector<unsigned int> GetPossibleChunkSizeInFrames()
        {
            std::vector<unsigned int> list;
            for (unsigned int* src=bigvoice_GetPossibleChunkSizeInFrames();*src;src++) {
                list.push_back(*src);
            }
            return list;
```

```
        }

    static inline unsigned int GetChannelCount()
        {
            return bigvoice_GetChannelCount();
        }

    static inline unsigned int GetAudioInputCount()
        {
            return bigvoice_GetAudioInputCount();
        }

    static inline unsigned int GetAudioOutputCount()
        {
            return bigvoice_GetAudioOutputCount();
        }

    static inline unsigned int GetSampleRate()
        {
            return bigvoice_GetSampleRate();
        }

    static inline void SanityCheck(bool a_bCheckFrames = true)
    {
        // Do some sanity checks
        if (bigvoice_GetSampleRate()!=BIGVOICE_SAMPLE_RATE) {
            throw std::runtime_error("Bad library sampling rate");
        }
        if (a_bCheckFrames && bigvoice_GetChunkSizeInFrames()!=ChunkFrames) {
            throw std::runtime_error("Bad library frame size");
        }
        if (bigvoice_GetChannelCount()!=BIGVOICE_CHANNEL_COUNT) {
            throw std::runtime_error("Bad library channel count");
        }
        if (bigvoice_GetAudioInputCount()!=BIGVOICE_AUDIO_INPUT_COUNT) {
            throw std::runtime_error("Bad library input count");
        }
        if (bigvoice_GetAudioOutputCount()!=BIGVOICE_AUDIO_OUTPUT_COUNT) {
            throw std::runtime_error("Bad library output count");
        }
    }

    static inline std::string GetFormatName(const SampleFormat fmt)
        {
            return std::string(bigvoice_GetFormatName(fmt));
        }

    static inline SampleFormat GetFormatFromName(const std::string& name)
        {
            return bigvoice_GetFormatFromName(name.c_str());
        }

    static inline unsigned int GetBytesFromFormat(const SampleFormat fmt)
        {
            return bigvoice_GetBytesFromFormat(fmt);
        }

    using LogSeverity = bigvoice_LogSeverity;
    using log_cb_t = std::function<void(LogSeverity,const std::string&)>;

    static log_cb_t _log_cb;
    extern "C" {
        static inline void _log_cb_c(bigvoice_LogSeverity severity, const char *c_msg) {
            _log_cb(severity, std::string(c_msg));
        }
    }
    static inline void SetLogSeverity(LogSeverity severity)
        {
            bigvoice_SetLogSeverity(severity);
        }
    static inline void SetLoggerCallback(log_cb_t cb)
        {
            _log_cb=cb;
            bigvoice_SetLoggerCallback(&_log_cb_c);
        }

#if BIGVOICE_HAS_CLOUDBUS
    class CBus {
        public:
            CBus()
                : m_bus(bigvoice_NewBus()) {}
            ~CBus()
                {
                    bigvoice_FreeBus(m_bus);
                    m_bus = nullptr;
                }
            bigvoice_CBus *Get() const { return m_bus; }
```

```
        private:
            bigvoice_CBus *m_bus;
    };
#endif // BIGVOICE_HAS_CLOUDBUS

    class CPresetLoader {
    public:
        CPresetLoader() = default;
        virtual ~CPresetLoader() = default;

        virtual bool IsReadOnly() = 0;
        virtual bool Exists(const std::filesystem::path &name) = 0;
        virtual bool Remove(const std::filesystem::path &name) = 0;
        virtual bool Rename(const std::filesystem::path &from, const std::filesystem::path &to) = 0;
        virtual std::vector<std::filesystem::path> GetAll() = 0;
        virtual std::string Read(const std::filesystem::path &filename) = 0;
        virtual bool Write(const std::filesystem::path &filename, const std::string &content) =0;
    };
    using PresetChange_Kind = bigvoice_PresetChange_Kind;

    class CInstance {
    public:
        CInstance()
            {
                params = bigvoice_NewParameters();
                if (!params) throw std::bad_alloc();
            }
        // non-copyable
        CInstance( const CInstance& ) = delete;
        CInstance& operator=( const CInstance& ) = delete;
        virtual ~CInstance()
            {
                Stop();
                if (params) bigvoice_FreeParameters(params);
            }
       bool IsOk() const { return instance!=nullptr; }
        void SetParam(const std::string& name, const std::string& value)
            {
                assert(params);
                bigvoice_SetParameter(params, name.c_str(), value.c_str());
            }
        std::string GetParam(const std::string& name)
            {
                assert(params);
                auto c_value=bigvoice_GetParameter(params, name.c_str());
                std::string ret(c_value);
                bigvoice_FreeParameterValue(c_value);
                return ret;
            }

#if BIGVOICE_HAS_CLOUDBUS
            void SetBus(const CBus& bus) {
                assert(params);
                bigvoice_SetInstanceBus(params,bus.Get());
            }
#endif // BIGVOICE_HAS_CLOUDBUS

        void SetPresetManager(CPresetLoader *preset_manager)
            {
                if (!preset_manager) return;
                assert(params);
                bigvoice_SetPresetManager(params,
                    bigvoice_custom_reader,
                    bigvoice_custom_reader_free,
                    bigvoice_custom_writer,
                    bigvoice_custom_exists,
                    bigvoice_custom_getall,
                    bigvoice_custom_getall_free,
                    bigvoice_custom_remove,
                    bigvoice_custom_rename,
                    preset_manager->IsReadOnly(),
                    preset_manager
                );
            }

        bool Create(const std::string& LoginKey, const std::string& RadioName, const std::string&
    Access_Key_ID, const std::string& Access_Key_Secret, const std::filesystem::path& save_path, int
    json_port = 0, unsigned int frames_per_chunk=12)
            {
                assert(!instance);
                std::string l_save_path;
                if (!save_path.empty()) {
                    #if (__cplusplus<202002L)
                    l_save_path = save_path.u8string();
                    #else // C++20
                    l_save_path = (const char*)save_path.u8string().c_str();
                    #endif // C++20
```

```
                }
                instance = bigvoice_InitProcess3(LoginKey.c_str(), RadioName.c_str(), Access_Key_ID.c_str(), Access_Key_Secret.c_str(), l_save_path.c_str(), params, frames_per_chunk);
                if (!instance) return false;
                if (!init_metadata.empty()) {
                    for (auto&& [key,value]: init_metadata) {
                        bigvoice_SetMetadata(instance, key.c_str(), value.c_str());
                    }
                    init_metadata.clear();
                }
                update_thread = std::thread([this, json_port](){
                    OnUpdateThreadStart();
                    bigvoice_StartUpdateThread(instance, json_port);
                    OnUpdateThreadStop();
                });
                int timeout=5000;
                #ifdef DEBUG
                    timeout=60*1000; // For debugger pauses
                #endif
                if (bigvoice_WaitUpdateThreadReady(instance, timeout)<0) {
                    return false;
                }
                return true;
            }

        unsigned int GetChunkFrames() {
            if (instance) {
                return bigvoice_GetProcessChunkFrames(instance);
            }
            return 0;
        }

        void PresetManager_InformChange(const std::filesystem::path& relative_path, PresetChange_Kind change_kind)
            {
                bigvoice_PresetManager_InformChange(instance, relative_path.c_str(), (bigvoice_PresetChange_Kind) change_kind);
            }

        void SetMetadata(const std::string& key, const char* value)
            {
                if (instance) {
                    bigvoice_SetMetadata(instance, key.c_str(), value);
                } else {
                    init_metadata.push_back( {key, value} );
                }
            }

        void SetMetadataMulti(const std::unordered_map<std::string, const char*>& list)
            {
                if (instance) {
                    typedef const char* pchar;
                    pchar* keyvalue=new pchar[2*list.size()+1];
                    size_t n=0;
                    for (auto&& [key,value]: list) {
                        keyvalue[2*n+0]=key.c_str();
                        keyvalue[2*n+1]=value;
                        n++;
                    }
                    keyvalue[2*n+0]=nullptr;

                    bigvoice_SetMetadataMulti(instance, keyvalue);

                    delete[] keyvalue;
                } else {
                    for (auto&& [key,value]: list) {
                        if (value) {
                            init_metadata.push_back( {key, value} );
                        }
                    }
                }
            }

        std::vector< std::tuple<std::string,std::string> > GetMetadataInfos()
            {
                std::vector< std::tuple<std::string,std::string> > values;
                const char** c_values = bigvoice_GetMetadataInfos(instance);
                if (c_values) {
                    for (const char** c_value=c_values; *c_value; ) {
                        std::string key(*c_value);
                        c_value++;
                        if (*c_value) {
                            std::string descr(*c_value);
                            c_value++;
                            values.push_back( {key,descr} );
                        }
                    }
```

```
                    bigvoice_FreeMetadataInfos(instance, c_values);
                }
                return values;
            }

        std::vector<AuxiliaryOutputInfos> GetAuxiliaryAudioOutputInfos()
            {
                std::vector<AuxiliaryOutputInfos> values;
                SOUND4_AuxiliaryOutputInfos** c_values = bigvoice_GetAuxiliaryAudioOutputInfos(instance);
                if (c_values) {
                    for (SOUND4_AuxiliaryOutputInfos** c_value=c_values; *c_value; c_value++) {
                        auto c_info=*c_value;
                        values.emplace_back( AuxiliaryOutputInfos{
                            .id            = c_info->id           ,
                            .description   = c_info->description  ,
                            .sample_rate   = c_info->sample_rate  ,
                            .channel_count = c_info->channel_count,
                            .buffer        = c_info->buffer       ,
                        });
                    }
                    bigvoice_FreeAuxiliaryAudioInfos(c_values);
                }
                return values;
            }
        void ActivateAuxiliaryAudioID(const std::string& id)
            {
                bigvoice_ActivateAuxiliaryAudioID(instance, id.c_str());
            }
        virtual void OnUpdateThreadStart() {}
        virtual void OnUpdateThreadStop() {}

#if BIGVOICE_HAS_WEBSERVER
        bool StartWebServer(int http_port, int https_port=0)
            {
                assert(instance);
                assert(webserver==SOUND4_INVALID_WEBSERVER_ID);
                webserver = bigvoice_Webserver(http_port,https_port,instance);
                if (webserver==SOUND4_INVALID_WEBSERVER_ID) {
                    return false;
                }
                int web_status=bigvoice_Webserver_Status(webserver);
                if (http_port && (web_status & SOUND4_WEBSERVER_HTTP_OK) == 0) {
                    return false;
                }
                if (https_port && (web_status & SOUND4_WEBSERVER_HTTPS_OK) == 0) {
                    return false;
                }
                return true;
            }

            void StopWebServer(int timeout_ms = 1000)
            {
                if (webserver != SOUND4_INVALID_WEBSERVER_ID) {
                    bigvoice_Webserver_Stop(webserver, timeout_ms);
                    webserver = SOUND4_INVALID_WEBSERVER_ID;
                }
            }

        void SetWebServerAppHealth(int httpcode, const std::string& contenttype, const std::string& content)
            {
                assert(instance);
                bigvoice_Webserver_SetAppHealth(instance, httpcode, contenttype.c_str(), content.c_str());
            }
        void GetWebServerAppHealth(int &httpcode, std::string& contenttype, std::string& content)
            {
                assert(instance);
                char* c_contenttype=nullptr;
                char* c_content=nullptr;
                bigvoice_Webserver_GetAppHealth(instance, &httpcode, &c_contenttype, &c_content);
                contenttype=c_contenttype;
                content=c_content;
                bigvoice_Webserver_FreeString(c_contenttype);
                bigvoice_Webserver_FreeString(c_content);
        }
#endif // BIGVOICE_HAS_WEBSERVER

        int Terminate()
            {
                if (!instance) return 0;
                return bigvoice_TerminateProcess(instance);
            }

        void Stop()
            {
```

```
                if (!instance) return;
#if BIGVOICE_HAS_WEBSERVER
                StopWebServer();
#endif // BIGVOICE_HAS_WEBSERVER
                if (update_thread.joinable()) {
                    bigvoice_StopUpdateThread(instance); // this will exit the update thread
                    update_thread.join();
                }
                bigvoice_ExitProcess(instance);
                instance=nullptr;
            }

        unsigned int GetEstimatedDelay()
            {
                assert(instance);
                return bigvoice_GetEstimatedDelay(instance);
            }

        std::array<float,InputSampleSize>& GetBufferIn()
            {
                assert(instance);
                float *buf=bigvoice_GetBufferIn(instance);
                return reinterpret_cast< std::array<float,InputSampleSize>& >(*buf);

            }
        std::array<float,OutputSampleSize>& GetBufferOut()
            {
                assert(instance);
                float *buf= bigvoice_GetBufferOut(instance);
                return reinterpret_cast< std::array<float,OutputSampleSize>& >(*buf);
            }
        void ProcessAudio()
            {
                assert(instance);
                bigvoice_ProcessAudio(instance, bigvoice_GetBufferIn(instance),
    bigvoice_GetBufferOut(instance));
            }
        void ProcessAudio_Planar(float const * const *input, float * const *output)
            {
                assert(instance);
                bigvoice_ProcessAudio_Planar(instance, input, output);
            }

            template<typename T>
        std::vector<T> ProcessAnyAudio(const std::vector<T> input)
            {
                assert(instance);
                std::vector<T> output;
                unsigned int out_offset=0;
                unsigned int in_offset=0;
                unsigned int todo = input.size();
                while (todo>0) {
                    unsigned int left = AddAudio(&input[in_offset], todo);
                    unsigned int out_avail = bigvoice_GetOutputCount(instance);
                    output.resize(out_offset + out_avail);
                    GetAudio(&output[out_offset], out_avail);
                    out_offset+=out_avail;
                    in_offset += todo-left;
                    todo=left;
                }
                return output;
            }

        class CClient {
            public:
                CClient(bigvoice_CInstance* instance)
                    {
                        assert(instance);
                        client=bigvoice_NewClient(instance);
                        if (!client) throw std::bad_alloc();
                    }
                // non-copyable
                CClient( const CInstance& ) = delete;
                CClient& operator=( const CInstance& ) = delete;
                ~CClient()
                    {
                        if (client) {
                            bigvoice_DeleteClient(client);
                            client=nullptr;
                        }
                    }
                std::string ProcessJson(const std::string &request, bool *NeedSave = nullptr)
                    {
                        assert(client);
                        int need_save=0;
                        const char *canswer = bigvoice_ProcessJson(client, request.c_str(),
    &need_save);
```

```
                        if (!canswer) return {};
                        std::string answer(canswer);
                        bigvoice_FreeJsonAnswer (canswer);
                        if (NeedSave) {
                            *NeedSave=(need_save!=0);
                        }
                        return answer;
                    }
            private:
                bigvoice_CClientInstance *client = nullptr;
        };
        std::shared_ptr<CClient> NewClient()
            {
                assert(instance);
                return std::make_shared<CClient>(instance);
            }

        bool SaveState() {
            assert(instance);
            if (bigvoice_SaveState(instance)!=0) {
                return false;
            }
            return true;
        }
#ifdef _WIN32
        void SetInstanceTracing(TraceLoggingHProvider tracing_provider, GUID activity_guid = {}) {
            bigvoice_SetInstanceTracing(params, tracing_provider, activity_guid);
        }
        void SetInstanceTracingProcessActivity(GUID activity_guid) {
            assert(instance);
            bigvoice_SetInstanceTracingProcessActivity(instance, activity_guid);
        }
#endif // _WIN32
    protected:
            template<typename T>
        unsigned int AddAudio(const T* payload, unsigned int nFrame)
            {
                assert(instance);
                return bigvoice_AddAudio(instance, reinterpret_cast<const T*>(payload), nFrame, helper::SampleFormat<T>::format);
            }
            template<typename T>
        unsigned int GetAudio(T* payload, unsigned int max_nFrame)
            {
                assert(instance);
                return bigvoice_GetAudio(instance, reinterpret_cast<T*>(payload), max_nFrame, helper::SampleFormat<T>::format);
            }

    private:
        bigvoice_CParameters* params = nullptr;
        bigvoice_CInstance* instance = nullptr;
        std::thread update_thread;
        std::vector< std::pair<std::string,std::string> > init_metadata;
#if BIGVOICE_HAS_WEBSERVER
        uint64_t webserver = SOUND4_INVALID_WEBSERVER_ID;
#endif // BIGVOICE_HAS_WEBSERVER
    };

    class CAudioConverter {
        public:
            CAudioConverter() = default;

            virtual ~CAudioConverter()
                {
                    Delete();
                }

            bool Configure(SampleFormat fmt, size_t nFrame, size_t payl_ch, size_t payl_ch_offset, bigvoice_ConverterTargetMode target_mode)
                {
                    Delete();
                    m_cvt = bigvoice_GetAudioConverter((bigvoice_SampleFormat)fmt, nFrame, payl_ch, payl_ch_offset, target_mode);
                    return IsOK();
                }
            void Delete()
                {
                    if (m_cvt) {
                        bigvoice_FreeAudioConverter(m_cvt);
                    }
                    m_cvt = nullptr;
                }
            bool IsOK() const { return (m_cvt!=nullptr); }

            void ConvertFrom(const uint8_t *payload, float *output)
                { bigvoice_AudioConverter_From(m_cvt, payload, output); }
```

```
            void ConvertTo(const float *input, uint8_t *payload)
                { bigvoice_AudioConverter_To(m_cvt, input, payload); }

        private:
            bigvoice_CAudioConverter *m_cvt = nullptr;
    };

}; // namespace bigvoice
}; // namespace sound4

// bridge C callbacks to CPresetLoader
extern "C" {
    static char *bigvoice_custom_reader(const fs_char *filename, void* userdata) {
        sound4::bigvoice::CPresetLoader *preset_loader=reinterpret_cast<sound4::bigvoice::CPresetLoader*>(userdata);
        std::string content=preset_loader->Read(filename);
        return strdup(content.c_str());
    }
    static void bigvoice_custom_reader_free(char *content, void* userdata) {
        if (!content) return;
        free(content);
    }
    static int bigvoice_custom_writer(const fs_char *filename, const char *content, void* userdata) {
        sound4::bigvoice::CPresetLoader *preset_loader=reinterpret_cast<sound4::bigvoice::CPresetLoader*>(userdata);
        auto res=preset_loader->Write(filename,content);
        return res?0:-1;
    }
    static int bigvoice_custom_exists(const fs_char *filename, void* userdata) {
        sound4::bigvoice::CPresetLoader *preset_loader=reinterpret_cast<sound4::bigvoice::CPresetLoader*>(userdata);
        auto res=preset_loader->Exists(filename);
        return res?0:-1;
    }
    static fs_char** bigvoice_custom_getall(void* userdata) {
        sound4::bigvoice::CPresetLoader *preset_loader=reinterpret_cast<sound4::bigvoice::CPresetLoader*>(userdata);
        auto res=preset_loader->GetAll();
        fs_char**all=(fs_char**)malloc((res.size()+1)*sizeof(const fs_char*));
        for (size_t n=0;n<res.size();n++) {
            all[n]=fs_strdup(res[n].c_str());
        }
        all[res.size()]=nullptr;
        return all;
    }
    static void bigvoice_custom_getall_free(fs_char** all, void* userdata) {
        if (!all) return;
        for (fs_char** one=all;*one;one++) {
            free(*one);
        }
        free(all);
    }
    static int bigvoice_custom_remove(const fs_char *filename, void* userdata) {
        sound4::bigvoice::CPresetLoader *preset_loader=reinterpret_cast<sound4::bigvoice::CPresetLoader*>(userdata);
        auto res=preset_loader->Remove(filename);
        return res?0:-1;
    }
    static int bigvoice_custom_rename(const fs_char *from, const fs_char *to, void* userdata) {
        sound4::bigvoice::CPresetLoader *preset_loader=reinterpret_cast<sound4::bigvoice::CPresetLoader*>(userdata);
        auto res=preset_loader->Rename(from,to);
        return res?0:-1;
    }

};
```

15.27 sound4.bigvoice.cl_dyn.hpp File Reference

C++ wrapper for dynamic loading library.

```
#include <string>
#include <exception>
#include <thread>
#include <functional>
#include <memory>
#include <array>
```

```
#include <assert.h>
#include <stdexcept>
#include <filesystem>
#include <string.h>
#include <libloaderapi.h>
#include "sound4.bigvoice.cl.h"
#include <stringapiset.h>
#include <wchar.h>
```

Classes

- class sound4::bigvoice::dyn::helper::DynFuncHolder< T >

  Helper to wrap a function pointer.
- class sound4::bigvoice::dyn::helper::CDynLoader

  Helper to load dynamic library.
- class sound4::bigvoice::dyn::CDynLib

  Dynamic library interface.
- struct sound4::bigvoice::dyn::helper::SampleFormat< T >

  Helper for Sample format types.
- class sound4::bigvoice::dyn::CBus

  Shared Bus.
- class sound4::bigvoice::dyn::CPresetLoader

  Custom preset handler helper.
- class sound4::bigvoice::dyn::CInstance

  Instance handling class.
- class sound4::bigvoice::dyn::CInstance::CClient
- class sound4::bigvoice::dyn::CAudioConverter

  Audio converter helper.

Namespaces

- namespace sound4
- namespace sound4::bigvoice
- namespace sound4::bigvoice::dyn
- namespace sound4::bigvoice::dyn::helper

Macros

- #define UNIXLIKE 0

Typedefs

- using sound4::bigvoice::dyn::SampleFormat = bigvoice_SampleFormat
- using sound4::bigvoice::dyn::LogSeverity = bigvoice_LogSeverity
- using sound4::bigvoice::dyn::log_cb_t = std::function< void(LogSeverity, const std::string &)>
- using sound4::bigvoice::dyn::PresetChange_Kind = bigvoice_PresetChange_Kind

Functions

- static char * bigvoice_custom_reader (const fs_char *filename, void *userdata)
- static void bigvoice_custom_reader_free (char *content, void *userdata)
- static int bigvoice_custom_writer (const fs_char *filename, const char *content, void *userdata)
- static int bigvoice_custom_exists (const fs_char *filename, void *userdata)
- static fs_char ** bigvoice_custom_getall (void *userdata)
- static void bigvoice_custom_getall_free (fs_char **all, void *userdata)
- static int bigvoice_custom_remove (const fs_char *filename, void *userdata)
- static int bigvoice_custom_rename (const fs_char *from, const fs_char *to, void *userdata)
- static std::string sound4::bigvoice::dyn::helper::WStringToUTF8 (const std::wstring &wstr)
- static std::wstring sound4::bigvoice::dyn::helper::UTF8ToWString (const std::string &str)
- static void sound4::bigvoice::dyn::helper::AudioConvertFrom (CDynLib &dynlib, const uint8_t *payload, float *output, size_t nSpl, bigvoice_SampleFormat fmt)
- static void sound4::bigvoice::dyn::helper::AudioConvertTo (CDynLib &dynlib, const float *input, uint8_t *payload, size_t nSpl, bigvoice_SampleFormat fmt)
- static void sound4::bigvoice::dyn::helper::StereoToMono (CDynLib &dynlib, const float *input, float *output, size_t nFrame)
- static void sound4::bigvoice::dyn::helper::MonoToStereo (CDynLib &dynlib, const float *input, float *output, size_t nFrame)
- static void sound4::bigvoice::dyn::helper::StereoToMono_Planar (CDynLib &dynlib, const float *inputL, const float *inputR, float *output, size_t nFrame)
- static void sound4::bigvoice::dyn::helper::MonoToStereo_Planar (CDynLib &dynlib, const float *input, float *outputL, float *outputR, size_t nFrame)
- static void sound4::bigvoice::dyn::helper::AudioMonoFromLiveStereo (CDynLib &dynlib, const uint8_t *payload, float *output)
- static void sound4::bigvoice::dyn::helper::AudioMonoToLiveStereo (CDynLib &dynlib, const float *input, uint8_t *payload)
- static std::string sound4::bigvoice::dyn::GetVersion (CDynLib &dynlib)
- static unsigned int sound4::bigvoice::dyn::GetChunkSizeInFrames (CDynLib &dynlib)
- static std::vector< unsigned int > sound4::bigvoice::dyn::GetPossibleChunkSizeInFrames (CDynLib &dynlib)
- static unsigned int sound4::bigvoice::dyn::GetChannelCount (CDynLib &dynlib)
- static unsigned int sound4::bigvoice::dyn::GetAudioInputCount (CDynLib &dynlib)
- static unsigned int sound4::bigvoice::dyn::GetAudioOutputCount (CDynLib &dynlib)
- static unsigned int sound4::bigvoice::dyn::GetSampleRate (CDynLib &dynlib)
- static void sound4::bigvoice::dyn::SanityCheck (CDynLib &dynlib, bool a_bCheckFrames=true)
- static std::string sound4::bigvoice::dyn::GetFormatName (CDynLib &dynlib, const SampleFormat fmt)
- static SampleFormat sound4::bigvoice::dyn::GetFormatFromName (CDynLib &dynlib, const std::string &name)
- static unsigned int sound4::bigvoice::dyn::GetBytesFromFormat (CDynLib &dynlib, const SampleFormat fmt)
- static void sound4::bigvoice::dyn::_log_cb_c (bigvoice_LogSeverity severity, const char *c_msg)
- static void sound4::bigvoice::dyn::SetLogSeverity (CDynLib &dynlib, LogSeverity severity)
- static void sound4::bigvoice::dyn::SetLoggerCallback (CDynLib &dynlib, log_cb_t cb)

Variables

- static constexpr const char * sound4::bigvoice::dyn::process_name = "SOUND4 BIGVOICE.CL"
- static constexpr const char * sound4::bigvoice::dyn::process_shortname = "bigvoice"
- const size_t sound4::bigvoice::dyn::ChunkFrames = 12
- const size_t sound4::bigvoice::dyn::InputChannels = 1 * 1
- const size_t sound4::bigvoice::dyn::OutputChannels = 1 * 1
- const size_t sound4::bigvoice::dyn::InputSampleSize =ChunkFrames*InputChannels
- const size_t sound4::bigvoice::dyn::OutputSampleSize =ChunkFrames*OutputChannels
- const size_t sound4::bigvoice::dyn::SampleRate = 48000
- static log_cb_t sound4::bigvoice::dyn::_log_cb

15.27.1 Detailed Description

You need to load the dynamic library, and if it succeed you can use it.

Definition in file sound4.bigvoice.cl_dyn.hpp.

15.27.2 Macro Definition Documentation

15.27.2.1 UNIXLIKE

```
#define UNIXLIKE 0
```

Definition at line 23 of file sound4.bigvoice.cl_dyn.hpp.

15.27.3 Function Documentation

15.27.3.1 bigvoice_custom_exists()

```
static int bigvoice_custom_exists (
            const fs_char * filename,
            void * userdata )  [static]
```

Definition at line 1692 of file sound4.bigvoice.cl_dyn.hpp.

15.27.3.2 bigvoice_custom_getall()

```
static fs_char ** bigvoice_custom_getall (
            void * userdata )  [static]
```

Definition at line 1697 of file sound4.bigvoice.cl_dyn.hpp.

15.27.3.3 bigvoice_custom_getall_free()

```
static void bigvoice_custom_getall_free (
            fs_char ** all,
            void * userdata )  [static]
```

Definition at line 1707 of file sound4.bigvoice.cl_dyn.hpp.

15.27.3.4 bigvoice_custom_reader()

```
static char * bigvoice_custom_reader (
            const fs_char * filename,
            void * userdata )  [static]
```

Definition at line 1678 of file sound4.bigvoice.cl_dyn.hpp.

15.27.3.5 bigvoice_custom_reader_free()

```
static void bigvoice_custom_reader_free (
            char * content,
            void * userdata )  [static]
```

Definition at line 1683 of file sound4.bigvoice.cl_dyn.hpp.

15.27.3.6 bigvoice_custom_remove()

```
static int bigvoice_custom_remove (
            const fs_char * filename,
            void * userdata )  [static]
```

Definition at line 1714 of file sound4.bigvoice.cl_dyn.hpp.

15.27.3.7 bigvoice_custom_rename()

```
static int bigvoice_custom_rename (
            const fs_char * from,
            const fs_char * to,
            void * userdata )  [static]
```

Definition at line 1719 of file sound4.bigvoice.cl_dyn.hpp.

15.27.3.8 bigvoice_custom_writer()

```
static int bigvoice_custom_writer (
            const fs_char * filename,
            const char * content,
            void * userdata )  [static]
```

Definition at line 1687 of file sound4.bigvoice.cl_dyn.hpp.

15.28 sound4.bigvoice.cl_dyn.hpp

Go to the documentation of this file.

```
00001
00007 #pragma once
00008
00009 #include <string>
00010 #include <exception>
00011 #include <thread>
00012 #include <functional>
00013 #include <memory>
00014 #include <array>
00015 #include <assert.h>
00016 #include <stdexcept>
00017 #include <filesystem>
00018 #include <string.h>
00019
00020 #if defined(__unix__) || defined(__APPLE__)
00021     #define UNIXLIKE 1
00022 #else
00023     #define UNIXLIKE 0
00024 #endif
00025
```

```
#if UNIXLIKE
    #include <dlfcn.h>
#elif defined(_WIN32)
    #include <libloaderapi.h>
#else
    #error "Unsupported OS"
#endif

// Needed to have function declarations
#include "sound4.bigvoice.cl.h"


#ifdef _WIN32
    #include <stringapiset.h>
    #include <wchar.h>
    #define fs_strdup wcsdup
    #ifdef _MSC_VER
        #pragma warning(disable : 4996)
    #endif
#else // !_WIN32
    #define fs_strdup strdup
#endif // !_WIN32

// bridge C callbacks to CPresetLoader
extern "C" {
    static char *bigvoice_custom_reader(const fs_char *filename, void* userdata);
    static void bigvoice_custom_reader_free(char *content, void* userdata);
    static int bigvoice_custom_writer(const fs_char *filename, const char *content, void* userdata);
    static int bigvoice_custom_exists(const fs_char *filename, void* userdata);
    static fs_char** bigvoice_custom_getall(void* userdata);
    static void bigvoice_custom_getall_free(fs_char** all, void* userdata);
    static int bigvoice_custom_remove(const fs_char *filename, void* userdata);
    static int bigvoice_custom_rename(const fs_char *from, const fs_char *to, void* userdata);
};

namespace sound4 {
namespace bigvoice {
namespace dyn {

    namespace helper {

            template <typename T>
        class DynFuncHolder {
            // Storage definition, depending on OS
            #if UNIXLIKE
                using DynFunc_t = void *;
            #else
                using DynFunc_t = FARPROC;
            #endif
        private:
            DynFunc_t m_ptr = NULL;
        public:
            DynFuncHolder() = default;
            DynFuncHolder(DynFunc_t a_ptr) : m_ptr(a_ptr) {}
            operator bool() const { return (m_ptr!=NULL); }
            bool IsOk() const { return m_ptr!=NULL; }
            operator T* () const { return reinterpret_cast<T*>(m_ptr); }
        };

        class CDynLoader {
            // Storage definition, depending on OS
            #if UNIXLIKE
                using DynLib_t = void *;
            #else
                using DynLib_t = HMODULE;
            #endif
            private:
                DynLib_t m_lib {};
            public:
                CDynLoader() = default;
                CDynLoader(CDynLoader&& other) noexcept : m_lib(other.m_lib) { other.m_lib = NULL; }
                CDynLoader& operator=(CDynLoader&& other) noexcept {
                    if (this != &other) { Close(); m_lib = other.m_lib; other.m_lib = NULL; }
                    return *this;
                }
                // No copy allowed
                CDynLoader(const CDynLoader&) = delete;
                CDynLoader& operator=(CDynLoader const&) = delete;
                operator bool() const {
                    return (m_lib!=NULL);
                }
                bool IsOk() const {
                    return (m_lib!=NULL);
                }
                #if UNIXLIKE
                    void Close() {
                        if (IsOk()) {
```

```
                            #ifndef __SANITIZE_ADDRESS__ // avoid unloading to keep call stack
                            dlclose(m_lib);
                            #endif // __SANITIZE_ADDRESS__
                            m_lib=NULL;
                        }
                    }
                    bool Load(const std::filesystem::path& dynlib)
                    {
                        Close();
                        m_lib=dlopen(dynlib.c_str(), RTLD_NOW|RTLD_LOCAL);
                        return IsOk();
                    }
                        template <typename T>
                    DynFuncHolder<T> GetSymbol(const std::string& name) {
                        auto ptr=dlsym(m_lib, name.c_str());
                        if (!ptr) {
                            throw std::runtime_error("Missing function in library");
                        }
                        return DynFuncHolder<T>(ptr);
                    }
                        template <typename T>
                    DynFuncHolder<T> GetSymbol_safe(const std::string& name) {
                        auto ptr=dlsym(m_lib, name.c_str());
                        return DynFuncHolder<T>(ptr);
                    }
                    static std::filesystem::path GetThisLibraryPath(void) {
                        Dl_info info;   // local: static would be a data race across concurrent callers
                        if (! dladdr((void *) GetThisLibraryPath, & info)) return {};
                        auto rp=realpath(info.dli_fname, NULL);
                        if (!rp) {
                            #if defined(__unix__)
                                rp=realpath("/proc/self/exe", NULL);
                            #elif defined(__APPLE__)
                                // How to solve this for Apple ?
                            #endif
                        }
                        if (!rp) return {};
                        std::filesystem::path p(rp);
                        free(rp);
                        return p;
                    }
                #else
                    bool Load(const std::filesystem::path& dynlib, uint32_t loadflags = LOAD_LIBRARY_SEARCH_DLL_LOAD_DIR|LOAD_LIBRARY_SEARCH_APPLICATION_DIR|LOAD_LIBRARY_SEARCH_USER_DIRS|LOAD_LIBRARY_SEARCH_S
                    {
                        Close();
                        m_lib=LoadLibraryExW(dynlib.c_str(), NULL, loadflags);
                        return IsOk();
                    }
                    void Close() {
                        if (IsOk()) {
                            // NOTE: On Windows, FreeLibrary may create a lot of troubles, should use FreeLibraryAndExitThread but...
                            // So define SOUND4_CALL_FREELIBRARY before including this file if you really want to unload the library dynamically
                            #if defined(SOUND4_CALL_FREELIBRARYANDEXITTHREAD)
                                FreeLibraryAndExitThread(m_lib, 0);
                            #elif defined(SOUND4_CALL_FREELIBRARY)
                                FreeLibrary(m_lib);
                            #endif // SOUND4_CALL_FREELIBRARY
                            m_lib=NULL;
                        }
                    }
                        template <typename T>
                    DynFuncHolder<T> GetSymbol(const std::string& name) {
                        auto ptr=GetProcAddress(m_lib, name.c_str());
                        if (!ptr) {
                            throw std::runtime_error("Missing function in library");
                        }
                        return DynFuncHolder<T>(ptr);
                    }
                        template <typename T>
                    DynFuncHolder<T> GetSymbol_safe(const std::string& name) {
                        auto ptr=GetProcAddress(m_lib, name.c_str());
                        return DynFuncHolder<T>(ptr);
                    }
                    static std::filesystem::path GetThisLibraryPath(void) {
                        static wchar_t path[MAX_PATH]={};
                        HMODULE hm = NULL;
                        if (GetModuleHandleExW(GET_MODULE_HANDLE_EX_FLAG_FROM_ADDRESS |
                                GET_MODULE_HANDLE_EX_FLAG_UNCHANGED_REFCOUNT,
                                (LPCWSTR) &GetThisLibraryPath, &hm))
                        {
                            if (GetModuleFileNameW(hm, path, MAX_PATH) > 0) {
                                return std::filesystem::path(path);
                            }
```

```
                        }
                        return {};
                    }
                #endif
                virtual ~CDynLoader() {
                    Close();
                }
        }; // class CDynLoader
    }; // namespace helper

    class CDynLib {
    private:
        helper::CDynLoader m_lib;
        bool m_bOK = false;
    public:
        CDynLib() = default;

        // All those wrapped functions have the same signature as there C bigvoice_XXX
        helper::DynFuncHolder< decltype(bigvoice_GetVersion              ) > GetVersion              ;
        helper::DynFuncHolder< decltype(bigvoice_GetChunkSizeInFrames    ) > GetChunkSizeInFrames    ;
        helper::DynFuncHolder< decltype(bigvoice_GetChannelCount         ) > GetChannelCount         ;
        helper::DynFuncHolder< decltype(bigvoice_GetAudioInputCount      ) > GetAudioInputCount      ;
        helper::DynFuncHolder< decltype(bigvoice_GetAudioOutputCount     ) > GetAudioOutputCount     ;
        helper::DynFuncHolder< decltype(bigvoice_GetSampleRate           ) > GetSampleRate           ;
        helper::DynFuncHolder< decltype(bigvoice_SetLoggerCallback       ) > SetLoggerCallback       ;
        helper::DynFuncHolder< decltype(bigvoice_SetLogSeverity          ) > SetLogSeverity          ;
        helper::DynFuncHolder< decltype(bigvoice_NewParameters           ) > NewParameters           ;
        helper::DynFuncHolder< decltype(bigvoice_FreeParameters          ) > FreeParameters          ;
        helper::DynFuncHolder< decltype(bigvoice_SetParameter            ) > SetParameter            ;
        helper::DynFuncHolder< decltype(bigvoice_GetParameter            ) > GetParameter            ;
        helper::DynFuncHolder< decltype(bigvoice_FreeParameterValue      ) > FreeParameterValue      ;
        helper::DynFuncHolder< decltype(bigvoice_InitProcess             ) > InitProcess             ;
        helper::DynFuncHolder< decltype(bigvoice_InitProcess2            ) > InitProcess2            ;
        helper::DynFuncHolder< decltype(bigvoice_TerminateProcess        ) > TerminateProcess        ;
        helper::DynFuncHolder< decltype(bigvoice_ExitProcess             ) > ExitProcess             ;
        helper::DynFuncHolder< decltype(bigvoice_StartUpdateThread       ) > StartUpdateThread       ;
        helper::DynFuncHolder< decltype(bigvoice_StopUpdateThread        ) > StopUpdateThread        ;
        helper::DynFuncHolder< decltype(bigvoice_WaitUpdateThreadReady   ) > WaitUpdateThreadReady   ;
        helper::DynFuncHolder< decltype(bigvoice_ProcessAudio            ) > ProcessAudio            ;
        helper::DynFuncHolder< decltype(bigvoice_ProcessAudio_Planar     ) > ProcessAudio_Planar     ;
        helper::DynFuncHolder< decltype(bigvoice_GetBufferIn             ) > GetBufferIn             ;
        helper::DynFuncHolder< decltype(bigvoice_GetBufferOut            ) > GetBufferOut            ;
        helper::DynFuncHolder< decltype(bigvoice_GetEstimatedDelay       ) > GetEstimatedDelay       ;
        helper::DynFuncHolder< decltype(bigvoice_GetFormatName           ) > GetFormatName           ;
        helper::DynFuncHolder< decltype(bigvoice_GetFormatFromName       ) > GetFormatFromName       ;
        helper::DynFuncHolder< decltype(bigvoice_GetBytesFromFormat      ) > GetBytesFromFormat      ;
        helper::DynFuncHolder< decltype(bigvoice_GetMaxPacketFrame       ) > GetMaxPacketFrame       ;
        helper::DynFuncHolder< decltype(bigvoice_AddAudio                ) > AddAudio                ;
        helper::DynFuncHolder< decltype(bigvoice_AddPadAudio             ) > AddPadAudio             ;
        helper::DynFuncHolder< decltype(bigvoice_GetOutputCount          ) > GetOutputCount          ;
        helper::DynFuncHolder< decltype(bigvoice_GetAudio                ) > GetAudio                ;
        helper::DynFuncHolder< decltype(bigvoice_AudioConvertFrom        ) > AudioConvertFrom        ;
        helper::DynFuncHolder< decltype(bigvoice_AudioConvertTo          ) > AudioConvertTo          ;
        helper::DynFuncHolder< decltype(bigvoice_StereoToMono            ) > StereoToMono            ;
        helper::DynFuncHolder< decltype(bigvoice_MonoToStereo            ) > MonoToStereo            ;
        helper::DynFuncHolder< decltype(bigvoice_AudioMonoFromLiveStereo) > AudioMonoFromLiveStereo;
        helper::DynFuncHolder< decltype(bigvoice_AudioMonoToLiveStereo   ) > AudioMonoToLiveStereo   ;
        helper::DynFuncHolder< decltype(bigvoice_NewClient               ) > NewClient               ;
        helper::DynFuncHolder< decltype(bigvoice_DeleteClient            ) > DeleteClient            ;
        helper::DynFuncHolder< decltype(bigvoice_ProcessJson             ) > ProcessJson             ;
        helper::DynFuncHolder< decltype(bigvoice_FreeJsonAnswer          ) > FreeJsonAnswer          ;
        helper::DynFuncHolder< decltype(bigvoice_SaveState               ) > SaveState               ;
#if BIGVOICE_HAS_WEBSERVER
        helper::DynFuncHolder< decltype(bigvoice_Webserver_tcp           ) > Webserver_tcp           ;
        helper::DynFuncHolder< decltype(bigvoice_Webserver_tcp2          ) > Webserver_tcp2          ;
        helper::DynFuncHolder< decltype(bigvoice_Webserver               ) > Webserver               ;
        helper::DynFuncHolder< decltype(bigvoice_Webserver_Stop          ) > Webserver_Stop          ;
        helper::DynFuncHolder< decltype(bigvoice_Webserver_Status        ) > Webserver_Status        ;
#endif // BIGVOICE_HAS_WEBSERVER

        // added 2023-03-22
        helper::DynFuncHolder< decltype(bigvoice_StereoToMono_Planar     ) > StereoToMono_Planar     ;
        helper::DynFuncHolder< decltype(bigvoice_MonoToStereo_Planar     ) > MonoToStereo_Planar     ;

        // added 2023-05-22
        helper::DynFuncHolder< decltype(bigvoice_SetMetadata             ) > SetMetadata             ;
        helper::DynFuncHolder< decltype(bigvoice_GetMetadataInfos        ) > GetMetadataInfos        ;
        helper::DynFuncHolder< decltype(bigvoice_FreeMetadataInfos       ) > FreeMetadataInfos       ;

        // added 2023-06-20
        helper::DynFuncHolder< decltype(bigvoice_SetPresetManager                ) > SetPresetManager
;
        helper::DynFuncHolder< decltype(bigvoice_PresetManager_InformChange      ) >
PresetManager_InformChange      ;

        // added 2023-09-21
        helper::DynFuncHolder< decltype(bigvoice_GetPossibleChunkSizeInFrames    ) >
```

```
GetPossibleChunkSizeInFrames   ;
        helper::DynFuncHolder< decltype(bigvoice_GetProcessChunkFrames           ) > GetProcessChunkFrames   ;
        helper::DynFuncHolder< decltype(bigvoice_InitProcess3                    ) > InitProcess3 ;

#if BIGVOICE_HAS_CLOUDBUS
        // added 2023-06-26
        helper::DynFuncHolder< decltype(bigvoice_NewBus                  ) > NewBus      ;
        helper::DynFuncHolder< decltype(bigvoice_FreeBus                 ) > FreeBus      ;
        helper::DynFuncHolder< decltype(bigvoice_SetInstanceBus          ) > SetInstanceBus      ;
#endif // BIGVOICE_HAS_CLOUDBUS

        // added 2024-02-19
        helper::DynFuncHolder< decltype(bigvoice_SetMetadataMulti        ) > SetMetadataMulti         ;

#if BIGVOICE_HAS_WEBSERVER
        // added 2024-05-23
        helper::DynFuncHolder< decltype(bigvoice_Webserver_SetAppHealth    ) > Webserver_SetAppHealth ;
        helper::DynFuncHolder< decltype(bigvoice_Webserver_GetAppHealth    ) > Webserver_GetAppHealth ;
        helper::DynFuncHolder< decltype(bigvoice_Webserver_FreeString      ) > Webserver_FreeString ;
#endif // BIGVOICE_HAS_WEBSERVER

#ifdef _WIN32
        // added 2025-05-28
        helper::DynFuncHolder< decltype(bigvoice_SetInstanceTracing                ) > SetInstanceTracing                ;
        helper::DynFuncHolder< decltype(bigvoice_SetInstanceTracingProcessActivity ) > SetInstanceTracingProcessActivity ;
#endif // _WIN32

        // added 2025-05-28
        helper::DynFuncHolder< decltype(bigvoice_GetAudioConverter      ) > GetAudioConverter      ;
        helper::DynFuncHolder< decltype(bigvoice_FreeAudioConverter     ) > FreeAudioConverter     ;
        helper::DynFuncHolder< decltype(bigvoice_AudioConverter_From    ) > AudioConverter_From    ;
        helper::DynFuncHolder< decltype(bigvoice_AudioConverter_To      ) > AudioConverter_To      ;

        bool Load(const std::filesystem::path& path = {}) {
            std::string filename;
            #if defined(__APPLE__)
                filename="libsound4.bigvoice.cl.dylib";
            #elif defined(__unix__)
                filename="libsound4.bigvoice.cl.so";
            #else
                filename="sound4.bigvoice.cl.dll";
            #endif
            m_lib.Close();
            // If a path is given, use it directly and do not try other path
            if (!path.empty() && !m_lib.Load(path / filename)) {
                return false;
            } else if (!m_lib.IsOk()) {
                auto thisdir=helper::CDynLoader::GetThisLibraryPath().parent_path();
                #ifndef _WIN32
                // Linux: if in a bin directory, try ../lib first
                if (!m_lib.IsOk() && thisdir.filename()=="bin") {
                    auto libdir = thisdir.parent_path() / "lib";
                    m_lib.Load(libdir / filename);
                }
                #endif // !_WIN32
                if (!m_lib.IsOk()) {
                    // Search in the same directory this code is in
                    m_lib.Load(thisdir / filename);
                }
                if (!m_lib.IsOk()) {
                    // Try current path
                    std::error_code ec;
                    auto p = std::filesystem::current_path(ec);
                    if (!ec) {
                        m_lib.Load(p / filename);
                    }
                }
                if (!m_lib.IsOk()) {
                    return false;
                }
            }
            // Load all C functions
            try {
                GetVersion              = m_lib.GetSymbol< decltype(bigvoice_GetVersion             ) >("bigvoice_GetVersion"             );
                GetChunkSizeInFrames    = m_lib.GetSymbol< decltype(bigvoice_GetChunkSizeInFrames   ) >("bigvoice_GetChunkSizeInFrames"   );
                GetChannelCount         = m_lib.GetSymbol< decltype(bigvoice_GetChannelCount        ) >("bigvoice_GetChannelCount"        );
                GetAudioInputCount      = m_lib.GetSymbol< decltype(bigvoice_GetAudioInputCount     )
```

```
>("bigvoice_GetAudioInputCount"      );
00393                GetAudioOutputCount      = m_lib.GetSymbol< decltype(bigvoice_GetAudioOutputCount     )
>("bigvoice_GetAudioOutputCount"     );
00394                GetSampleRate            = m_lib.GetSymbol< decltype(bigvoice_GetSampleRate           )
>("bigvoice_GetSampleRate"           );
00395                SetLoggerCallback        = m_lib.GetSymbol< decltype(bigvoice_SetLoggerCallback       )
>("bigvoice_SetLoggerCallback"       );
00396                SetLogSeverity           = m_lib.GetSymbol< decltype(bigvoice_SetLogSeverity          )
>("bigvoice_SetLogSeverity"          );
00397                NewParameters            = m_lib.GetSymbol< decltype(bigvoice_NewParameters           )
>("bigvoice_NewParameters"           );
00398                FreeParameters           = m_lib.GetSymbol< decltype(bigvoice_FreeParameters          )
>("bigvoice_FreeParameters"          );
00399                SetParameter             = m_lib.GetSymbol< decltype(bigvoice_SetParameter            )
>("bigvoice_SetParameter"            );
00400                GetParameter             = m_lib.GetSymbol< decltype(bigvoice_GetParameter            )
>("bigvoice_GetParameter"            );
00401                FreeParameterValue       = m_lib.GetSymbol< decltype(bigvoice_FreeParameterValue      )
>("bigvoice_FreeParameterValue"      );
00402                InitProcess              = m_lib.GetSymbol< decltype(bigvoice_InitProcess             )
>("bigvoice_InitProcess"             );
00403                InitProcess2             = m_lib.GetSymbol< decltype(bigvoice_InitProcess2            )
>("bigvoice_InitProcess2"            );
00404                TerminateProcess         = m_lib.GetSymbol< decltype(bigvoice_TerminateProcess        )
>("bigvoice_TerminateProcess"        );
00405                ExitProcess              = m_lib.GetSymbol< decltype(bigvoice_ExitProcess             )
>("bigvoice_ExitProcess"             );
00406                StartUpdateThread        = m_lib.GetSymbol< decltype(bigvoice_StartUpdateThread       )
>("bigvoice_StartUpdateThread"       );
00407                StopUpdateThread         = m_lib.GetSymbol< decltype(bigvoice_StopUpdateThread        )
>("bigvoice_StopUpdateThread"        );
00408                WaitUpdateThreadReady    = m_lib.GetSymbol< decltype(bigvoice_WaitUpdateThreadReady   )
>("bigvoice_WaitUpdateThreadReady"   );
00409                ProcessAudio             = m_lib.GetSymbol< decltype(bigvoice_ProcessAudio            )
>("bigvoice_ProcessAudio"            );
00410                ProcessAudio_Planar      = m_lib.GetSymbol< decltype(bigvoice_ProcessAudio_Planar     )
>("bigvoice_ProcessAudio_Planar"     );
00411                GetBufferIn              = m_lib.GetSymbol< decltype(bigvoice_GetBufferIn             )
>("bigvoice_GetBufferIn"             );
00412                GetBufferOut             = m_lib.GetSymbol< decltype(bigvoice_GetBufferOut            )
>("bigvoice_GetBufferOut"            );
00413                GetEstimatedDelay        = m_lib.GetSymbol< decltype(bigvoice_GetEstimatedDelay       )
>("bigvoice_GetEstimatedDelay"       );
00414                GetFormatName            = m_lib.GetSymbol< decltype(bigvoice_GetFormatName           )
>("bigvoice_GetFormatName"           );
00415                GetFormatFromName        = m_lib.GetSymbol< decltype(bigvoice_GetFormatFromName       )
>("bigvoice_GetFormatFromName"       );
00416                GetBytesFromFormat       = m_lib.GetSymbol< decltype(bigvoice_GetBytesFromFormat      )
>("bigvoice_GetBytesFromFormat"      );
00417                GetMaxPacketFrame        = m_lib.GetSymbol< decltype(bigvoice_GetMaxPacketFrame       )
>("bigvoice_GetMaxPacketFrame"       );
00418                AddAudio                 = m_lib.GetSymbol< decltype(bigvoice_AddAudio                )
>("bigvoice_AddAudio"                );
00419                AddPadAudio              = m_lib.GetSymbol< decltype(bigvoice_AddPadAudio             )
>("bigvoice_AddPadAudio"             );
00420                GetOutputCount           = m_lib.GetSymbol< decltype(bigvoice_GetOutputCount          )
>("bigvoice_GetOutputCount"          );
00421                GetAudio                 = m_lib.GetSymbol< decltype(bigvoice_GetAudio                )
>("bigvoice_GetAudio"                );
00422                AudioConvertFrom         = m_lib.GetSymbol< decltype(bigvoice_AudioConvertFrom        )
>("bigvoice_AudioConvertFrom"        );
00423                AudioConvertTo           = m_lib.GetSymbol< decltype(bigvoice_AudioConvertTo          )
>("bigvoice_AudioConvertTo"          );
00424                StereoToMono             = m_lib.GetSymbol< decltype(bigvoice_StereoToMono            )
>("bigvoice_StereoToMono"            );
00425                MonoToStereo             = m_lib.GetSymbol< decltype(bigvoice_MonoToStereo            )
>("bigvoice_MonoToStereo"            );
00426                AudioMonoFromLiveStereo = m_lib.GetSymbol< decltype(bigvoice_AudioMonoFromLiveStereo)
>("bigvoice_AudioMonoFromLiveStereo");
00427                AudioMonoToLiveStereo    = m_lib.GetSymbol< decltype(bigvoice_AudioMonoToLiveStereo   )
>("bigvoice_AudioMonoToLiveStereo"   );
00428                NewClient                = m_lib.GetSymbol< decltype(bigvoice_NewClient               )
>("bigvoice_NewClient"               );
00429                DeleteClient             = m_lib.GetSymbol< decltype(bigvoice_DeleteClient            )
>("bigvoice_DeleteClient"            );
00430                ProcessJson              = m_lib.GetSymbol< decltype(bigvoice_ProcessJson             )
>("bigvoice_ProcessJson"             );
00431                FreeJsonAnswer           = m_lib.GetSymbol< decltype(bigvoice_FreeJsonAnswer          )
>("bigvoice_FreeJsonAnswer"          );
00432                SaveState                = m_lib.GetSymbol< decltype(bigvoice_SaveState               )
>("bigvoice_SaveState"               );
00433 #if BIGVOICE_HAS_WEBSERVER
00434                Webserver_tcp            = m_lib.GetSymbol< decltype(bigvoice_Webserver_tcp           )
>("bigvoice_Webserver_tcp"           );
00435                Webserver_tcp2           = m_lib.GetSymbol< decltype(bigvoice_Webserver_tcp2          )
>("bigvoice_Webserver_tcp2"          );
00436                Webserver                = m_lib.GetSymbol< decltype(bigvoice_Webserver               )
```

```
>("bigvoice_Webserver"              );
                Webserver_Stop          = m_lib.GetSymbol< decltype(bigvoice_Webserver_Stop         )
>("bigvoice_Webserver_Stop"         );
                Webserver_Status        = m_lib.GetSymbol< decltype(bigvoice_Webserver_Status       )
>("bigvoice_Webserver_Status"       );
#endif // BIGVOICE_HAS_WEBSERVER

                // added 2023-03-22
                StereoToMono_Planar     = m_lib.GetSymbol< decltype(bigvoice_StereoToMono_Planar    )
>("bigvoice_StereoToMono_Planar"    );
                MonoToStereo_Planar     = m_lib.GetSymbol< decltype(bigvoice_MonoToStereo_Planar    )
>("bigvoice_MonoToStereo_Planar"    );

            } catch (std::runtime_error& ) {
                return false;
            }
            // C functions allowed to be missing
            try {
                // added 2023-05-22
                SetMetadata             = m_lib.GetSymbol< decltype(bigvoice_SetMetadata            )
>("bigvoice_SetMetadata"            );
                GetMetadataInfos        = m_lib.GetSymbol< decltype(bigvoice_GetMetadataInfos       )
>("bigvoice_GetMetadataInfos"       );
                FreeMetadataInfos       = m_lib.GetSymbol< decltype(bigvoice_FreeMetadataInfos      )
>("bigvoice_FreeMetadataInfos"      );
                // added 2023-06-20
                SetPresetManager            = m_lib.GetSymbol< decltype(bigvoice_SetPresetManager
) >("bigvoice_SetPresetManager"              );
                PresetManager_InformChange  = m_lib.GetSymbol<
decltype(bigvoice_PresetManager_InformChange     ) >("bigvoice_PresetManager_InformChange"    );

                // added 2023-09-21
                GetPossibleChunkSizeInFrames = m_lib.GetSymbol<
decltype(bigvoice_GetPossibleChunkSizeInFrames  ) >("bigvoice_GetPossibleChunkSizeInFrames"  );
                GetProcessChunkFrames        = m_lib.GetSymbol<
decltype(bigvoice_GetProcessChunkFrames         ) >("bigvoice_GetProcessChunkFrames"         );
                InitProcess3                 = m_lib.GetSymbol< decltype(bigvoice_InitProcess3
) >("bigvoice_InitProcess3"                  );

#if BIGVOICE_HAS_CLOUDBUS
                // added 2023-06-26
                NewBus                  = m_lib.GetSymbol< decltype(bigvoice_NewBus                 )
>("bigvoice_NewBus"                 );
                FreeBus                 = m_lib.GetSymbol< decltype(bigvoice_FreeBus                )
>("bigvoice_FreeBus"                );
                SetInstanceBus          = m_lib.GetSymbol< decltype(bigvoice_SetInstanceBus         )
>("bigvoice_SetInstanceBus"         );
#endif // BIGVOICE_HAS_CLOUDBUS

                // added 2024-02-19
                SetMetadataMulti        = m_lib.GetSymbol< decltype(bigvoice_SetMetadataMulti       )
>("bigvoice_SetMetadataMulti"       );

#if BIGVOICE_HAS_WEBSERVER
                // added 2024-05-23
                Webserver_SetAppHealth      = m_lib.GetSymbol<
decltype(bigvoice_Webserver_SetAppHealth      ) >("Webserver_SetAppHealth"     );
                Webserver_GetAppHealth      = m_lib.GetSymbol<
decltype(bigvoice_Webserver_GetAppHealth      ) >("Webserver_GetAppHealth"     );
                Webserver_FreeString        = m_lib.GetSymbol< decltype(bigvoice_Webserver_FreeString
) >("Webserver_FreeString"       );
                #endif // BIGVOICE_HAS_WEBSERVER

#ifdef _WIN32
                // added 2025-05-28
                SetInstanceTracing                = m_lib.GetSymbol<
decltype(bigvoice_SetInstanceTracing               ) >("SetInstanceTracing"               );
                SetInstanceTracingProcessActivity = m_lib.GetSymbol<
decltype(bigvoice_SetInstanceTracingProcessActivity) >("SetInstanceTracingProcessActivity");
#endif // _WIN32

                // added 2025-05-28
                GetAudioConverter                 = m_lib.GetSymbol<
decltype(bigvoice_GetAudioConverter                ) >("GetAudioConverter"                );
                FreeAudioConverter                = m_lib.GetSymbol<
decltype(bigvoice_FreeAudioConverter               ) >("FreeAudioConverter"               );
                AudioConverter_From               = m_lib.GetSymbol<
decltype(bigvoice_AudioConverter_From              ) >("AudioConverter_From"              );
                AudioConverter_To                 = m_lib.GetSymbol<
decltype(bigvoice_AudioConverter_To                ) >("AudioConverter_To"                );

            }  catch (std::runtime_error& ) {
                // Ignored, handler will take care
            }

            m_bOK=true;
            return true;
```

```
        }
        bool IsOk() const {
            return m_bOK;
        }

    };



    static constexpr const char *process_name = "SOUND4 BIGVOICE.CL";
    static constexpr const char *process_shortname = "bigvoice";
    using SampleFormat = bigvoice_SampleFormat;
    const size_t ChunkFrames=BIGVOICE_AUDIOFRAME_COUNT;
    const size_t InputChannels=BIGVOICE_CHANNEL_COUNT*BIGVOICE_AUDIO_INPUT_COUNT;
    const size_t OutputChannels=BIGVOICE_CHANNEL_COUNT*BIGVOICE_AUDIO_OUTPUT_COUNT;
    const size_t InputSampleSize=ChunkFrames*InputChannels;
    const size_t OutputSampleSize=ChunkFrames*OutputChannels;
    const size_t SampleRate=BIGVOICE_SAMPLE_RATE;

    namespace helper {
        #ifdef _WIN32
        static inline std::string WStringToUTF8(const std::wstring& wstr) {
            if (wstr.empty()) return {};
            int size = WideCharToMultiByte(CP_UTF8, 0, &wstr[0], (int)wstr.size(), NULL, 0, NULL, NULL);
            std::string str(size, 0);
            WideCharToMultiByte(CP_UTF8, 0, &wstr[0], (int)wstr.size(), &str[0], size, NULL, NULL);
            return str;
        }
        static inline std::wstring UTF8ToWString(const std::string& str) {
            if (str.empty()) return std::wstring();
            int size = MultiByteToWideChar(CP_UTF8, 0, &str[0], (int)str.size(), NULL, 0);
            std::wstring wstr(size, 0);
            MultiByteToWideChar(CP_UTF8, 0, &str[0], (int)str.size(), &wstr[0], size);
            return wstr;
        }
        #endif // _WIN32

            template<typename T>
        struct SampleFormat {
        };
            template<>
        struct SampleFormat<int16_t> {
            const bigvoice_SampleFormat format = S16_NATIVE;
        };
            template<>
        struct SampleFormat<int32_t> {
            const bigvoice_SampleFormat format = S32_NATIVE;
        };
            template<>
        struct SampleFormat<float> {
            const bigvoice_SampleFormat format = F32_NATIVE;
        };

        // ------------------------------------------------------------
        static inline void AudioConvertFrom(CDynLib& dynlib, const uint8_t *payload, float *output, size_t nSpl, bigvoice_SampleFormat fmt) {
            dynlib.AudioConvertFrom(payload, output, nSpl, fmt);
        }

        static inline void AudioConvertTo(CDynLib& dynlib, const float *input, uint8_t *payload, size_t nSpl, bigvoice_SampleFormat fmt) {
            dynlib.AudioConvertTo(input, payload, nSpl, fmt);
        }

        static inline void StereoToMono(CDynLib& dynlib, const float *input, float *output, size_t nFrame) {
            dynlib.StereoToMono(input, output, nFrame);
        }

        static inline void MonoToStereo(CDynLib& dynlib, const float *input, float *output, size_t nFrame) {
            dynlib.MonoToStereo(input, output, nFrame);
        }

        static inline void StereoToMono_Planar(CDynLib& dynlib, const float *inputL, const float *inputR, float *output, size_t nFrame) {
            dynlib.StereoToMono_Planar(inputL, inputR, output, nFrame);
        }

        static inline void MonoToStereo_Planar(CDynLib& dynlib, const float *input, float *outputL, float *outputR, size_t nFrame) {
            dynlib.MonoToStereo_Planar(input, outputL, outputR, nFrame);
        }

        static inline void AudioMonoFromLiveStereo(CDynLib& dynlib, const uint8_t *payload, float *output) {
```

```
            dynlib.AudioMonoFromLiveStereo(payload, output);
        }

        static inline void AudioMonoToLiveStereo(CDynLib& dynlib, const float *input, uint8_t *payload) {
            dynlib.AudioMonoToLiveStereo(input, payload);
        }

    }; // namespace helper

    static inline std::string GetVersion(CDynLib& dynlib)
        {
            return std::string(dynlib.GetVersion());
        }

    static inline unsigned int GetChunkSizeInFrames(CDynLib& dynlib)
        {
            return dynlib.GetChunkSizeInFrames();
        }

    static inline std::vector<unsigned int> GetPossibleChunkSizeInFrames(CDynLib& dynlib)
        {
            std::vector<unsigned int> list;
            if (dynlib.GetPossibleChunkSizeInFrames) {
                for (unsigned int* src=dynlib.GetPossibleChunkSizeInFrames();*src;src++) {
                    list.push_back(*src);
                }
            } else {
                list.push_back(12);
            }
            return list;
        }

    static inline unsigned int GetChannelCount(CDynLib& dynlib)
        {
            return dynlib.GetChannelCount();
        }

    static inline unsigned int GetAudioInputCount(CDynLib& dynlib)
        {
            return dynlib.GetAudioInputCount();
        }

    static inline unsigned int GetAudioOutputCount(CDynLib& dynlib)
        {
            return dynlib.GetAudioOutputCount();
        }

    static inline unsigned int GetSampleRate(CDynLib& dynlib)
        {
            return dynlib.GetSampleRate();
        }

    static inline void SanityCheck(CDynLib& dynlib, bool a_bCheckFrames = true)
    {
        // Do some sanity checks
        if (dynlib.GetSampleRate()!=BIGVOICE_SAMPLE_RATE) {
            throw std::runtime_error("Bad library sampling rate");
        }
        if (a_bCheckFrames && dynlib.GetChunkSizeInFrames()!=ChunkFrames) {
            throw std::runtime_error("Bad library frame size");
        }
        if (dynlib.GetChannelCount()!=BIGVOICE_CHANNEL_COUNT) {
            throw std::runtime_error("Bad library channel count");
        }
        if (dynlib.GetAudioInputCount()!=BIGVOICE_AUDIO_INPUT_COUNT) {
            throw std::runtime_error("Bad library input count");
        }
        if (dynlib.GetAudioOutputCount()!=BIGVOICE_AUDIO_OUTPUT_COUNT) {
            throw std::runtime_error("Bad library output count");
        }
    }

    static inline std::string GetFormatName(CDynLib& dynlib, const SampleFormat fmt)
        {
            return std::string(dynlib.GetFormatName(fmt));
        }

    static inline SampleFormat GetFormatFromName(CDynLib& dynlib, const std::string& name)
        {
            return dynlib.GetFormatFromName(name.c_str());
        }

    static inline unsigned int GetBytesFromFormat(CDynLib& dynlib, const SampleFormat fmt)
        {
            return dynlib.GetBytesFromFormat(fmt);
        }
```

```
    using LogSeverity = bigvoice_LogSeverity;
    using log_cb_t = std::function<void(LogSeverity,const std::string&)>;

    static log_cb_t _log_cb;
    extern "C" {
        static inline void _log_cb_c(bigvoice_LogSeverity severity, const char *c_msg) {
            _log_cb(severity, std::string(c_msg));
        }
    }
    static inline void SetLogSeverity(CDynLib& dynlib, LogSeverity severity)
        {
            dynlib.SetLogSeverity(severity);
        }
    static inline void SetLoggerCallback(CDynLib& dynlib, log_cb_t cb)
        {
            _log_cb=cb;
            dynlib.SetLoggerCallback(&_log_cb_c);
        }

#if BIGVOICE_HAS_CLOUDBUS
    class CBus {
        public:
            CBus(CDynLib& dynlib)
                : m_dynlib(dynlib)
                {
                    if (m_dynlib.NewBus) {
                        m_bus=m_dynlib.NewBus();
                    }
                }
            ~CBus()
                {
                    if (m_bus && m_dynlib.FreeBus) {
                        m_dynlib.FreeBus(m_bus);
                    }
                    m_bus = nullptr;
                }
            bigvoice_CBus *Get() const { return m_bus; }
        private:
            CDynLib& m_dynlib;
            bigvoice_CBus *m_bus;
    };
#endif // BIGVOICE_HAS_CLOUDBUS

    class CPresetLoader {
    public:
        CPresetLoader() = default;
        virtual ~CPresetLoader() = default;

        virtual bool IsReadOnly() = 0;
        virtual bool Exists(const std::filesystem::path &name) = 0;
        virtual bool Remove(const std::filesystem::path &name) = 0;
        virtual bool Rename(const std::filesystem::path &from, const std::filesystem::path &to) = 0;
        virtual std::vector<std::filesystem::path> GetAll() = 0;
        virtual std::string Read(const std::filesystem::path &filename) = 0;
        virtual bool Write(const std::filesystem::path &filename, const std::string &content) =0;
    };
    using PresetChange_Kind = bigvoice_PresetChange_Kind;

    class CInstance {
    public:
        CInstance(CDynLib& dynlib)
        : m_dynlib(dynlib)
            {
                params = m_dynlib.NewParameters();
                if (!params) throw std::bad_alloc();
            }
        // non-copyable
        CInstance( const CInstance& ) = delete;
        CInstance& operator=( const CInstance& ) = delete;
        virtual ~CInstance()
            {
                Stop();
                if (params) m_dynlib.FreeParameters(params);
            }
       bool IsOk() const { return instance!=nullptr; }
        void SetParam(const std::string& name, const std::string& value)
            {
                assert(params);
                m_dynlib.SetParameter(params, name.c_str(), value.c_str());
            }
        std::string GetParam(const std::string& name)
            {
                assert(params);
                auto c_value=m_dynlib.GetParameter(params, name.c_str());
                std::string ret(c_value);
                m_dynlib.FreeParameterValue(c_value);
```

```
                return ret;
            }
#if BIGVOICE_HAS_CLOUDBUS
            void SetBus(const CBus& bus) {
                assert(params);
                if (m_dynlib.SetInstanceBus) {
                    m_dynlib.SetInstanceBus(params,bus.Get());
                }
            }
#endif // BIGVOICE_HAS_CLOUDBUS

        void SetPresetManager(CPresetLoader *preset_manager)
            {
                if (!preset_manager) return;
                if (!m_dynlib.SetPresetManager) return;
                assert(params);
                m_dynlib.SetPresetManager(params,
                    bigvoice_custom_reader,
                    bigvoice_custom_reader_free,
                    bigvoice_custom_writer,
                    bigvoice_custom_exists,
                    bigvoice_custom_getall,
                    bigvoice_custom_getall_free,
                    bigvoice_custom_remove,
                    bigvoice_custom_rename,
                    preset_manager->IsReadOnly(),
                    preset_manager
                );
            }

        bool Create(const std::string& LoginKey, const std::string& RadioName, const std::string& Access_Key_ID, const std::string& Access_Key_Secret, const std::filesystem::path& save_path, int json_port = 0, unsigned int frames_per_chunk=12)
            {
                assert(!instance);
                std::string l_save_path;
                if (!save_path.empty()) {
                    #if (__cplusplus<202002L)
                    l_save_path = save_path.u8string();
                    #else // C++20
                    l_save_path = (const char*)save_path.u8string().c_str();
                    #endif // C++20
                }
                if (m_dynlib.InitProcess3) {
                    instance = m_dynlib.InitProcess3(LoginKey.c_str(), RadioName.c_str(), Access_Key_ID.c_str(), Access_Key_Secret.c_str(), l_save_path.c_str(), params, frames_per_chunk);
                } else if (frames_per_chunk!=12) {
                    return false;
                } else {
                    instance = m_dynlib.InitProcess2(LoginKey.c_str(), RadioName.c_str(), Access_Key_ID.c_str(), Access_Key_Secret.c_str(), l_save_path.c_str(), params);
                }
                if (!instance) return false;
                if (!init_metadata.empty()) {
                    for (auto&& [key,value]: init_metadata) {
                        m_dynlib.SetMetadata(instance, key.c_str(), value.c_str());
                    }
                    init_metadata.clear();
                }
                update_thread = std::thread([this, json_port](){
                    OnUpdateThreadStart();
                    m_dynlib.StartUpdateThread(instance, json_port);
                    OnUpdateThreadStop();
                });
                int timeout=5000;
                #ifdef DEBUG
                    timeout=60*1000; // For debugger pauses
                #endif
                if (m_dynlib.WaitUpdateThreadReady(instance, timeout)<0) {
                    return false;
                }
                return true;
            }

        unsigned int GetChunkFrames() {
            if (instance && m_dynlib.GetProcessChunkFrames) {
                return m_dynlib.GetProcessChunkFrames(instance);
            }
            return 12;
        }

        void PresetManager_InformChange(const std::filesystem::path& relative_path, PresetChange_Kind change_kind)
            {
                if (m_dynlib.PresetManager_InformChange) {
                    m_dynlib.PresetManager_InformChange(instance, relative_path.c_str(), (bigvoice_PresetChange_Kind) change_kind);
```

```
                }
            }

        void SetMetadata(const std::string& key, const char* value)
            {
                if (m_dynlib.SetMetadata) {
                    if (instance) {
                        m_dynlib.SetMetadata(instance, key.c_str(), value);
                    } else {
                        init_metadata.push_back( {key, value} );
                    }
                }
            }


        void SetMetadataMulti(const std::unordered_map<std::string, const char*>& list)
            {
                if (instance) {
                    if (m_dynlib.SetMetadataMulti) {
                        typedef const char* pchar;
                        pchar* keyvalue=new pchar[2*list.size()+1];
                        size_t n=0;
                        for (auto&& [key,value]: list) {
                            keyvalue[2*n+0]=key.c_str();
                            keyvalue[2*n+1]=value;
                            n++;
                        }
                        keyvalue[2*n+0]=nullptr;

                        bigvoice_SetMetadataMulti(instance, keyvalue);

                        delete[] keyvalue;
                    } else {
                        for (auto&& [key,value]: list) {
                            SetMetadata(key, value);
                        }
                    }
                } else {
                    for (auto&& [key,value]: list) {
                        if (value) {
                            init_metadata.push_back( {key, value} );
                        }
                    }
                }
            }

        std::vector< std::tuple<std::string,std::string> > GetMetadataInfos()
            {
                std::vector< std::tuple<std::string,std::string> > values;
                if (m_dynlib.GetMetadataInfos) {
                    const char** c_values = m_dynlib.GetMetadataInfos(instance);
                    if (c_values) {
                        for (const char** c_value=c_values; *c_value; ) {
                            std::string key(*c_value);
                            c_value++;
                            if (*c_value) {
                                std::string descr(*c_value);
                                c_value++;
                                values.push_back( {key,descr} );
                            }
                        }
                        m_dynlib.FreeMetadataInfos(instance, c_values);
                    }
                }
                return values;
            }

        virtual void OnUpdateThreadStart() {}
        virtual void OnUpdateThreadStop() {}

#if BIGVOICE_HAS_WEBSERVER
        bool StartWebServer(int http_port, int https_port=0)
            {
                assert(instance);
                assert(webserver==SOUND4_INVALID_WEBSERVER_ID);
                webserver = m_dynlib.Webserver(http_port,https_port,instance);
                if (webserver==SOUND4_INVALID_WEBSERVER_ID) {
                    return false;
                }
                int web_status=m_dynlib.Webserver_Status(webserver);
                if (http_port && (web_status & SOUND4_WEBSERVER_HTTP_OK) == 0) {
                    return false;
                }
                if (https_port && (web_status & SOUND4_WEBSERVER_HTTPS_OK) == 0) {
                    return false;
                }
                return true;
```

```
            }

        void StopWebServer(int timeout_ms = 1000)
            {
                if (webserver != SOUND4_INVALID_WEBSERVER_ID) {
                    m_dynlib.Webserver_Stop(webserver, timeout_ms);
                    webserver = SOUND4_INVALID_WEBSERVER_ID;
                }
            }

        void SetWebServerAppHealth(int httpcode, const std::string& contenttype, const std::string& content)
            {
                assert(instance);
                if (!m_dynlib.Webserver_SetAppHealth) return;
                m_dynlib.Webserver_SetAppHealth(instance, httpcode, contenttype.c_str(), content.c_str());
            }
        void GetWebServerAppHealth(int &httpcode, std::string& contenttype, std::string& content)
            {
                assert(instance);
                if (!m_dynlib.Webserver_GetAppHealth) return;
                char* c_contenttype=nullptr;
                char* c_content=nullptr;
                m_dynlib.Webserver_GetAppHealth(instance, &httpcode, &c_contenttype, &c_content);
                contenttype=c_contenttype;
                content=c_content;
                m_dynlib.Webserver_FreeString(c_contenttype);
                m_dynlib.Webserver_FreeString(c_content);
            }
#endif // BIGVOICE_HAS_WEBSERVER

        int Terminate()
            {
                if (!instance) return 0;
                return m_dynlib.TerminateProcess(instance);
            }

        void Stop()
            {
                if (!instance) return;
#if BIGVOICE_HAS_WEBSERVER
                StopWebServer();
#endif // BIGVOICE_HAS_WEBSERVER
                if (update_thread.joinable()) {
                    m_dynlib.StopUpdateThread(instance); // this will exit the update thread
                    update_thread.join();
                }
                m_dynlib.ExitProcess(instance);
                instance=nullptr;
            }

        unsigned int GetEstimatedDelay()
            {
                assert(instance);
                return m_dynlib.GetEstimatedDelay(instance);
            }

        std::array<float,InputSampleSize>& GetBufferIn()
            {
                assert(instance);
                float *buf=m_dynlib.GetBufferIn(instance);
                return reinterpret_cast< std::array<float,InputSampleSize>& >(*buf);

            }
        std::array<float,OutputSampleSize>& GetBufferOut()
            {
                assert(instance);
                float *buf= m_dynlib.GetBufferOut(instance);
                return reinterpret_cast< std::array<float,OutputSampleSize>& >(*buf);
            }
        void ProcessAudio()
            {
                assert(instance);
                m_dynlib.ProcessAudio(instance, m_dynlib.GetBufferIn(instance), m_dynlib.GetBufferOut(instance));
            }
        void ProcessAudio_Planar(float const * const *input, float * const *output)
            {
                assert(instance);
                m_dynlib.ProcessAudio_Planar(instance, input, output);
            }

            template<typename T>
        std::vector<T> ProcessAnyAudio(const std::vector<T> input)
            {
                assert(instance);
```

```
                std::vector<T> output;
                unsigned int out_offset=0;
                unsigned int in_offset=0;
                unsigned int todo = input.size();
                while (todo>0) {
                    unsigned int left = AddAudio(&input[in_offset], todo);
                    unsigned int out_avail = m_dynlib.GetOutputCount(instance);
                    output.resize(out_offset + out_avail);
                    GetAudio(&output[out_offset], out_avail);
                    out_offset+=out_avail;
                    in_offset += todo-left;
                    todo=left;
                }
                return output;
            }

        class CClient {
            public:
                CClient(bigvoice_CInstance* instance, CDynLib& dynlib)
                : m_dynlib(dynlib)
                    {
                        assert(instance);
                        client=m_dynlib.NewClient(instance);
                        if (!client) throw std::bad_alloc();
                    }
                // non-copyable
                CClient( const CInstance& ) = delete;
                CClient& operator=( const CInstance& ) = delete;
                ~CClient()
                    {
                        if (client) {
                            m_dynlib.DeleteClient(client);
                            client=nullptr;
                        }
                    }
                std::string ProcessJson(const std::string &request, bool *NeedSave = nullptr)
                    {
                        assert(client);
                        int need_save=0;
                        const char *canswer = m_dynlib.ProcessJson(client, request.c_str(), &need_save);
                        if (!canswer) return {};
                        std::string answer(canswer);
                        m_dynlib.FreeJsonAnswer (canswer);
                        if (NeedSave) {
                            *NeedSave=(need_save!=0);
                        }
                        return answer;
                    }
            private:
                CDynLib& m_dynlib;
                bigvoice_CClientInstance *client = nullptr;
        };
        std::shared_ptr<CClient> NewClient()
            {
                assert(instance);
                return std::make_shared<CClient>(instance, m_dynlib);
            }

        bool SaveState() {
            assert(instance);
            if (m_dynlib.SaveState(instance)!=0) {
                return false;
            }
            return true;
        }
#ifdef _WIN32
        void SetInstanceTracing(TraceLoggingHProvider tracing_provider, GUID activity_guid = {}) {
            if (m_dynlib.SetInstanceTracing) {
                m_dynlib.SetInstanceTracing(params, tracing_provider, activity_guid);
            }
        }
        void SetInstanceTracingProcessActivity(GUID activity_guid) {
            assert(instance);
            if (m_dynlib.SetInstanceTracingProcessActivity) {
                m_dynlib.SetInstanceTracingProcessActivity(instance, activity_guid);
            }
        }
#endif // _WIN32
    protected:
            template<typename T>
        unsigned int AddAudio(const T* payload, unsigned int nFrame)
            {
                assert(instance);
                return m_dynlib.AddAudio(instance, reinterpret_cast<const T*>(payload), nFrame, helper::SampleFormat<T>::format);
            }
```

```
            template<typename T>
        unsigned int GetAudio(T* payload, unsigned int max_nFrame)
            {
                assert(instance);
                return m_dynlib.GetAudio(instance, reinterpret_cast<T*>(payload), max_nFrame, helper::SampleFormat<T>::format);
            }

    private:
        CDynLib& m_dynlib;
        bigvoice_CParameters* params = nullptr;
        bigvoice_CInstance* instance = nullptr;
        std::thread update_thread;
        std::vector< std::pair<std::string,std::string> > init_metadata;
#if BIGVOICE_HAS_WEBSERVER
        uint64_t webserver = SOUND4_INVALID_WEBSERVER_ID;
#endif // BIGVOICE_HAS_WEBSERVER
    };

    class CAudioConverter {
        public:
            CAudioConverter(CDynLib& dynlib)
                : m_dynlib(dynlib)
                { }

            virtual ~CAudioConverter()
                {
                    Delete();
                }

            bool Configure(SampleFormat fmt, size_t nFrame, size_t payl_ch, size_t payl_ch_offset, bigvoice_ConverterTargetMode target_mode)
                {
                    Delete();
                    if (m_dynlib.GetAudioConverter)
                        m_cvt = m_dynlib.GetAudioConverter((bigvoice_SampleFormat)fmt, nFrame, payl_ch, payl_ch_offset, target_mode);
                    return IsOK();
                }
            void Delete()
                {
                    if (m_cvt && m_dynlib.FreeAudioConverter) {
                        m_dynlib.FreeAudioConverter(m_cvt);
                    }
                    m_cvt = nullptr;
                }
            bool IsOK() const { return (m_cvt!=nullptr); }

            void ConvertFrom(const uint8_t *payload, float *output)
                { m_dynlib.AudioConverter_From(m_cvt, payload, output); }

            void ConvertTo(const float *input, uint8_t *payload)
                { m_dynlib.AudioConverter_To(m_cvt, input, payload); }

        private:
            CDynLib& m_dynlib;
            bigvoice_CAudioConverter *m_cvt = nullptr;
    };

}; // namespace dyn
}; // namespace bigvoice
}; // namespace sound4

// bridge C callbacks to CPresetLoader
extern "C" {
    static char *bigvoice_custom_reader(const fs_char *filename, void* userdata) {
        sound4::bigvoice::dyn::CPresetLoader *preset_loader=reinterpret_cast<sound4::bigvoice::dyn::CPresetLoader*>(userdata);
        std::string content=preset_loader->Read(filename);
        return strdup(content.c_str());
    }
    static void bigvoice_custom_reader_free(char *content, void* userdata) {
        if (!content) return;
        free(content);
    }
    static int bigvoice_custom_writer(const fs_char *filename, const char *content, void* userdata) {
        sound4::bigvoice::dyn::CPresetLoader *preset_loader=reinterpret_cast<sound4::bigvoice::dyn::CPresetLoader*>(userdata);
        auto res=preset_loader->Write(filename,content);
        return res?0:-1;
    }
    static int bigvoice_custom_exists(const fs_char *filename, void* userdata) {
        sound4::bigvoice::dyn::CPresetLoader *preset_loader=reinterpret_cast<sound4::bigvoice::dyn::CPresetLoader*>(userdata);
        auto res=preset_loader->Exists(filename);
        return res?0:-1;
    }
```

```
    static fs_char** bigvoice_custom_getall(void* userdata) {
        sound4::bigvoice::dyn::CPresetLoader
*preset_loader=reinterpret_cast<sound4::bigvoice::dyn::CPresetLoader*>(userdata);
        auto res=preset_loader->GetAll();
        fs_char**all=(fs_char**)malloc((res.size()+1)*sizeof(const fs_char*));
        for (size_t n=0;n<res.size();n++) {
            all[n]=fs_strdup(res[n].c_str());
        }
        all[res.size()]=nullptr;
        return all;
    }
    static void bigvoice_custom_getall_free(fs_char** all, void* userdata) {
        if (!all) return;
        for (fs_char** one=all;*one;one++) {
            free(*one);
        }
        free(all);
    }
    static int bigvoice_custom_remove(const fs_char *filename, void* userdata) {
        sound4::bigvoice::dyn::CPresetLoader
*preset_loader=reinterpret_cast<sound4::bigvoice::dyn::CPresetLoader*>(userdata);
        auto res=preset_loader->Remove(filename);
        return res?0:-1;
    }
    static int bigvoice_custom_rename(const fs_char *from, const fs_char *to, void* userdata) {
        sound4::bigvoice::dyn::CPresetLoader
*preset_loader=reinterpret_cast<sound4::bigvoice::dyn::CPresetLoader*>(userdata);
        auto res=preset_loader->Rename(from,to);
        return res?0:-1;
    }

};
```

15.29 sound4cl.hpp File Reference

C++ wrapper for dynamic loading library.

```
#include <string>
#include <exception>
#include <thread>
#include <functional>
#include <memory>
#include <array>
#include <assert.h>
#include <stdexcept>
#include <filesystem>
#include <string.h>
#include <libloaderapi.h>
#include "sound4cl_cdef.h"
```

Classes

- struct sound4::helper::SampleFormat< T >

  Helper for Sample format types.
- class sound4::helper::DynFuncHolder< T >

  Helper to wrap a function pointer.
- class sound4::helper::CDynLoader

  Helper to load dynamic library.
- class sound4::CProcessor

  Dynamic library interface.
- class sound4::CBus

  Shared Bus.

- class sound4::CPresetLoader

  Custom preset handler helper.
- class sound4::CInstance

  Instance handling class.
- class sound4::CInstance::CClient
- class sound4::CAudioConverter

  Audio converter helper.

Namespaces

- namespace sound4
- namespace sound4::helper

Macros

- #define UNIXLIKE

Typedefs

- using sound4::log_cb_t = std::function< void(LogSeverity, const std::string &)>

Enumerations

- enum sound4::SampleFormat {
  sound4::INVALID_FORMAT , sound4::S16_LE , sound4::S16_BE , sound4::S24_LE ,
  sound4::S24_BE , sound4::S32_LE , sound4::S32_BE , sound4::F32_LE ,
  sound4::F32_BE , sound4::S16_NATIVE , sound4::S24_NATIVE , sound4::S32_NATIVE ,
  sound4::F32_NATIVE }
- enum sound4::LogSeverity {
  sound4::none , sound4::fatal , sound4::error , sound4::warning ,
  sound4::info , sound4::verbose , sound4::verbose2 , sound4::verbose3 ,
  sound4::verbose4 , sound4::verbose5 }
- enum sound4::PresetChange_Kind { sound4::change_kind_created , sound4::change_kind_modified ,
  sound4::change_kind_deleted }
- enum sound4::ConverterTargetMode {
  sound4::ConverterTargetMode_AsInput = sound4cl_ConverterTargetMode_AsInput , sound4::ConverterTargetMode_Mono
  = sound4cl_ConverterTargetMode_Mono , sound4::ConverterTargetMode_Stereo = sound4cl_Converter↩
  TargetMode_Stereo , sound4::ConverterTargetMode_StereoToMono = sound4cl_ConverterTargetMode_↩
  StereoToMono ,
  sound4::ConverterTargetMode_MonoToStereo = sound4cl_ConverterTargetMode_MonoToStereo }

Functions

- static std::string sound4::helper::WStringToUTF8 (const std::wstring &wstr)
- static std::wstring sound4::helper::UTF8ToWString (const std::string &str)
- static void sound4::_log_cb_c (sound4cl_LogSeverity severity, const char *c_msg)

Variables

- static log_cb_t sound4::_log_cb

15.29.1 Detailed Description

You need to load the dynamic library, and if it succeed you can use it.

Definition in file sound4cl.hpp.

15.29.2 Macro Definition Documentation

15.29.2.1 UNIXLIKE

```
#define UNIXLIKE
```

Definition at line 24 of file sound4cl.hpp.

15.30 sound4cl.hpp

Go to the documentation of this file.

```
00001
00008 #pragma once
00009
00010 #include <string>
00011 #include <exception>
00012 #include <thread>
00013 #include <functional>
00014 #include <memory>
00015 #include <array>
00016 #include <assert.h>
00017 #include <stdexcept>
00018 #include <filesystem>
00019 #include <string.h>
00020
00021 #if defined(__unix__) || defined(__APPLE__)
00022     #define UNIXLIKE 1
00023 #else
00024     #define UNIXLIKE 0
00025 #endif
00026
00027 #if UNIXLIKE
00028     #include <dlfcn.h>
00029 #elif defined(_WIN32)
00030     #include <libloaderapi.h>
00031     #ifdef _MSC_VER
00032         #pragma warning(disable : 4996)
00033     #endif
00034 #else
00035     #error "Unsupported OS"
00036 #endif
00037
00038 #include "sound4cl_cdef.h"
00039
00040     // bridge C callbacks to CPresetLoader
00041     extern "C" {
00042         static char *sound4cl_custom_reader(const fs_char *filename, void* userdata);
00043         static void sound4cl_custom_reader_free(char *content, void* userdata);
00044         static int sound4cl_custom_writer(const fs_char *filename, const char *content, void*
      userdata);
00045         static int sound4cl_custom_exists(const fs_char *filename, void* userdata);
00046         static fs_char** sound4cl_custom_getall(void* userdata);
00047         static void sound4cl_custom_getall_free(fs_char** all, void* userdata);
00048         static int sound4cl_custom_remove(const fs_char *filename, void* userdata);
00049         static int sound4cl_custom_rename(const fs_char *from, const fs_char *to, void* userdata);
00050     };
00051
00055 namespace sound4 {
00056
00060     enum SampleFormat {
00061         INVALID_FORMAT=sound4cl_SampleFormat::INVALID_FORMAT,
00062         S16_LE        =sound4cl_SampleFormat::S16_LE,
00063         S16_BE        =sound4cl_SampleFormat::S16_BE,
00064         S24_LE        =sound4cl_SampleFormat::S24_LE,
00065         S24_BE        =sound4cl_SampleFormat::S24_BE,
```

```
        S32_LE        =sound4cl_SampleFormat::S32_LE,
        S32_BE        =sound4cl_SampleFormat::S32_BE,
        F32_LE        =sound4cl_SampleFormat::F32_LE,
        F32_BE        =sound4cl_SampleFormat::F32_BE,
        S16_NATIVE    =sound4cl_SampleFormat::S16_NATIVE,
        S24_NATIVE    =sound4cl_SampleFormat::S24_NATIVE,
        S32_NATIVE    =sound4cl_SampleFormat::S32_NATIVE,
        F32_NATIVE    =sound4cl_SampleFormat::F32_NATIVE,
    };

    namespace helper {
        #ifdef _WIN32
        static inline std::string WStringToUTF8(const std::wstring& wstr) {
            if (wstr.empty()) return {};
            int size = WideCharToMultiByte(CP_UTF8, 0, &wstr[0], (int)wstr.size(), NULL, 0, NULL, NULL);
            std::string str(size, 0);
            WideCharToMultiByte(CP_UTF8, 0, &wstr[0], (int)wstr.size(), &str[0], size, NULL, NULL);
            return str;
        }
        static inline std::wstring UTF8ToWString(const std::string& str) {
            if (str.empty()) return std::wstring();
            int size = MultiByteToWideChar(CP_UTF8, 0, &str[0], (int)str.size(), NULL, 0);
            std::wstring wstr(size, 0);
            MultiByteToWideChar(CP_UTF8, 0, &str[0], (int)str.size(), &wstr[0], size);
            return wstr;
        }
        #endif // _WIN32

            template<typename T>
        struct SampleFormat {
        };
            template<>
        struct SampleFormat<int16_t> {
            const sound4::SampleFormat format = S16_NATIVE;
        };
            template<>
        struct SampleFormat<int32_t> {
            const sound4::SampleFormat format = S32_NATIVE;
        };
            template<>
        struct SampleFormat<float> {
            const sound4::SampleFormat format = F32_NATIVE;
        };

            template <typename T>
        class DynFuncHolder {
            // Storage definition, depending on OS
            #if UNIXLIKE
                using DynFunc_t = void *;
            #else
                using DynFunc_t = FARPROC;
            #endif
        private:
            DynFunc_t m_ptr = NULL;
        public:
            DynFuncHolder() = default;
            DynFuncHolder(DynFunc_t a_ptr) : m_ptr(a_ptr) {}
            operator bool() const { return (m_ptr!=NULL); }
            bool IsOk() const { return m_ptr!=NULL; }
            operator T* () const { return reinterpret_cast<T*>(m_ptr); }
        };

        class CDynLoader {
            // Storage definition, depending on OS
            #if UNIXLIKE
                using DynLib_t = void *;
            #else
                using DynLib_t = HMODULE;
            #endif
            private:
                DynLib_t m_lib {};
            public:
                CDynLoader() = default;
                CDynLoader(CDynLoader&& other) noexcept : m_lib(other.m_lib) { other.m_lib = NULL; }
                CDynLoader& operator=(CDynLoader&& other) noexcept {
                    if (this != &other) { Close(); m_lib = other.m_lib; other.m_lib = NULL; }
                    return *this;
                }
                // No copy allowed
                CDynLoader(const CDynLoader&) = delete;
                CDynLoader& operator=(CDynLoader const&) = delete;
                operator bool() const {
                    return (m_lib!=NULL);
                }
                bool IsOk() const {
                    return (m_lib!=NULL);
```

```
                }
                #if UNIXLIKE
                    void Close() {
                        if (IsOk()) {
                            #ifndef __SANITIZE_ADDRESS__ // avoid unloading to keep call stack
                            dlclose(m_lib);
                            #endif // __SANITIZE_ADDRESS__
                            m_lib=NULL;
                        }
                    }
                    bool Load(const std::filesystem::path& dynlib)
                    {
                        Close();
                        m_lib=dlopen(dynlib.c_str(), RTLD_NOW|RTLD_LOCAL);
                        return IsOk();
                    }
                        template <typename T>
                    DynFuncHolder<T> GetSymbol(const std::string& name) {
                        auto ptr=dlsym(m_lib, name.c_str());
                        if (!ptr) {
                            throw std::runtime_error("Missing function in library");
                        }
                        return DynFuncHolder<T>(ptr);
                    }
                        template <typename T>
                    DynFuncHolder<T> GetSymbol_safe(const std::string& name) {
                        auto ptr=dlsym(m_lib, name.c_str());
                        return DynFuncHolder<T>(ptr);
                    }
                    static std::filesystem::path GetThisLibraryPath(void) {
                        Dl_info info;   // local: static would be a data race across concurrent callers
                        if (! dladdr((void *) GetThisLibraryPath, & info)) return {};
                        auto rp=realpath(info.dli_fname, NULL);
                        if (!rp) {
                            #if defined(__unix__)
                                rp=realpath("/proc/self/exe", NULL);
                            #elif defined(__APPLE__)
                                // How to solve this for Apple ?
                            #endif
                        }
                        if (!rp) return {};
                        std::filesystem::path p(rp);
                        free(rp);
                        return p;
                    }
                #else
                    bool Load(const std::filesystem::path& dynlib, uint32_t loadflags = LOAD_LIBRARY_SEARCH_DLL_LOAD_DIR|LOAD_LIBRARY_SEARCH_APPLICATION_DIR|LOAD_LIBRARY_SEARCH_USER_DIRS|LOAD_LIBRARY_SEARCH_S
                    {
                        Close();
                        m_lib=LoadLibraryExW(dynlib.c_str(), NULL, loadflags);
                        return IsOk();
                    }
                    void Close() {
                        if (IsOk()) {
                            // NOTE: On Windows, FreeLibrary may create a lot of troubles, should use FreeLibraryAndExitThread but...
                            // So define SOUND4_CALL_FREELIBRARY before including this file if you really want to unload the library dynamically
                            #if defined(SOUND4_CALL_FREELIBRARYANDEXITTHREAD)
                                FreeLibraryAndExitThread(m_lib, 0);
                            #elif defined(SOUND4_CALL_FREELIBRARY)
                                FreeLibrary(m_lib);
                            #endif // SOUND4_CALL_FREELIBRARY
                            m_lib=NULL;
                        }
                    }
                        template <typename T>
                    DynFuncHolder<T> GetSymbol(const std::string& name) {
                        auto ptr=GetProcAddress(m_lib, name.c_str());
                        if (!ptr) {
                            throw std::runtime_error("Missing function in library");
                        }
                        return DynFuncHolder<T>(ptr);
                    }
                        template <typename T>
                    DynFuncHolder<T> GetSymbol_safe(const std::string& name) {
                        auto ptr=GetProcAddress(m_lib, name.c_str());
                        return DynFuncHolder<T>(ptr);
                    }
                    static std::filesystem::path GetThisLibraryPath(void) {
                        static wchar_t path[MAX_PATH]={};
                        HMODULE hm = NULL;
                        if (GetModuleHandleExW(GET_MODULE_HANDLE_EX_FLAG_FROM_ADDRESS |
                                GET_MODULE_HANDLE_EX_FLAG_UNCHANGED_REFCOUNT,
                                (LPCWSTR) &GetThisLibraryPath, &hm))
```

```
                        {
                            if (GetModuleFileNameW(hm, path, MAX_PATH) > 0) {
                                return std::filesystem::path(path);
                            }
                        }
                        return {};
                    }
                #endif
                virtual ~CDynLoader() {
                    Close();
                }
        }; // class CDynLoader
    }; // namespace helper


    enum LogSeverity {
       none     = sound4cl_none,
       fatal    = sound4cl_fatal,
       error    = sound4cl_error,
       warning  = sound4cl_warning,
       info     = sound4cl_info,
       verbose  = sound4cl_verbose,
       verbose2 = sound4cl_verbose2,
       verbose3 = sound4cl_verbose3,
       verbose4 = sound4cl_verbose4,
       verbose5 = sound4cl_verbose5,
    };

    using log_cb_t = std::function<void(LogSeverity,const std::string&)>;

    static log_cb_t _log_cb;
    extern "C" {
        static inline void _log_cb_c(sound4cl_LogSeverity severity, const char *c_msg) {
            _log_cb((LogSeverity)severity, std::string(c_msg));
        }
    }

    class CProcessor {
    private:
        helper::CDynLoader m_lib;
        bool m_bOK = false;
        std::string m_prefix; // The prefix of functions, depends on the library (cloud_, impact_...)
    protected:
        friend class CBus;
        friend class CInstance;
        friend class CAudioConverter;

        // All those wrapped functions have the same signature as there C sound4cl_XXX
        helper::DynFuncHolder< decltype(sound4cl_GetVersion              ) > fnGetVersion              ;
        helper::DynFuncHolder< decltype(sound4cl_GetChunkSizeInFrames    ) > fnGetChunkSizeInFrames    ;
        helper::DynFuncHolder< decltype(sound4cl_GetChannelCount         ) > fnGetChannelCount         ;
        helper::DynFuncHolder< decltype(sound4cl_GetAudioInputCount      ) > fnGetAudioInputCount      ;
        helper::DynFuncHolder< decltype(sound4cl_GetAudioOutputCount     ) > fnGetAudioOutputCount     ;
        helper::DynFuncHolder< decltype(sound4cl_GetSampleRate           ) > fnGetSampleRate           ;
        helper::DynFuncHolder< decltype(sound4cl_SetLoggerCallback       ) > fnSetLoggerCallback       ;
        helper::DynFuncHolder< decltype(sound4cl_SetLogSeverity          ) > fnSetLogSeverity          ;
        helper::DynFuncHolder< decltype(sound4cl_NewParameters           ) > fnNewParameters           ;
        helper::DynFuncHolder< decltype(sound4cl_FreeParameters          ) > fnFreeParameters          ;
        helper::DynFuncHolder< decltype(sound4cl_SetParameter            ) > fnSetParameter            ;
        helper::DynFuncHolder< decltype(sound4cl_GetParameter            ) > fnGetParameter            ;
        helper::DynFuncHolder< decltype(sound4cl_FreeParameterValue      ) > fnFreeParameterValue      ;
        helper::DynFuncHolder< decltype(sound4cl_InitProcess             ) > fnInitProcess             ;
        helper::DynFuncHolder< decltype(sound4cl_InitProcess2            ) > fnInitProcess2            ;
        helper::DynFuncHolder< decltype(sound4cl_TerminateProcess        ) > fnTerminateProcess        ;
        helper::DynFuncHolder< decltype(sound4cl_ExitProcess             ) > fnExitProcess             ;
        helper::DynFuncHolder< decltype(sound4cl_StartUpdateThread       ) > fnStartUpdateThread       ;
        helper::DynFuncHolder< decltype(sound4cl_StopUpdateThread        ) > fnStopUpdateThread        ;
        helper::DynFuncHolder< decltype(sound4cl_WaitUpdateThreadReady   ) > fnWaitUpdateThreadReady   ;
        helper::DynFuncHolder< decltype(sound4cl_ProcessAudio            ) > fnProcessAudio            ;
        helper::DynFuncHolder< decltype(sound4cl_ProcessAudio_Planar     ) > fnProcessAudio_Planar     ;
        helper::DynFuncHolder< decltype(sound4cl_GetBufferIn             ) > fnGetBufferIn             ;
        helper::DynFuncHolder< decltype(sound4cl_GetBufferOut            ) > fnGetBufferOut            ;
        helper::DynFuncHolder< decltype(sound4cl_GetEstimatedDelay       ) > fnGetEstimatedDelay       ;
        helper::DynFuncHolder< decltype(sound4cl_GetFormatName           ) > fnGetFormatName           ;
        helper::DynFuncHolder< decltype(sound4cl_GetFormatFromName       ) > fnGetFormatFromName       ;
        helper::DynFuncHolder< decltype(sound4cl_GetBytesFromFormat      ) > fnGetBytesFromFormat      ;
        helper::DynFuncHolder< decltype(sound4cl_GetMaxPacketFrame       ) > fnGetMaxPacketFrame       ;
        helper::DynFuncHolder< decltype(sound4cl_AddAudio                ) > fnAddAudio                ;
        helper::DynFuncHolder< decltype(sound4cl_AddPadAudio             ) > fnAddPadAudio             ;
        helper::DynFuncHolder< decltype(sound4cl_GetOutputCount          ) > fnGetOutputCount          ;
        helper::DynFuncHolder< decltype(sound4cl_GetAudio                ) > fnGetAudio                ;
        helper::DynFuncHolder< decltype(sound4cl_AudioConvertFrom        ) > fnAudioConvertFrom        ;
        helper::DynFuncHolder< decltype(sound4cl_AudioConvertTo          ) > fnAudioConvertTo          ;
        helper::DynFuncHolder< decltype(sound4cl_StereoToMono            ) > fnStereoToMono            ;
        helper::DynFuncHolder< decltype(sound4cl_MonoToStereo            ) > fnMonoToStereo            ;
        helper::DynFuncHolder< decltype(sound4cl_AudioMonoFromLiveStereo) > fnAudioMonoFromLiveStereo;
        helper::DynFuncHolder< decltype(sound4cl_AudioMonoToLiveStereo   ) > fnAudioMonoToLiveStereo   ;
```

```
        helper::DynFuncHolder< decltype(sound4cl_NewClient              ) > fnNewClient              ;
        helper::DynFuncHolder< decltype(sound4cl_DeleteClient           ) > fnDeleteClient           ;
        helper::DynFuncHolder< decltype(sound4cl_ProcessJson            ) > fnProcessJson            ;
        helper::DynFuncHolder< decltype(sound4cl_FreeJsonAnswer         ) > fnFreeJsonAnswer         ;
        helper::DynFuncHolder< decltype(sound4cl_SaveState              ) > fnSaveState              ;

        // only for processes supporting webserver
        helper::DynFuncHolder< decltype(sound4cl_Webserver_tcp          ) > fnWebserver_tcp          ;
        helper::DynFuncHolder< decltype(sound4cl_Webserver_tcp2         ) > fnWebserver_tcp2         ;
        helper::DynFuncHolder< decltype(sound4cl_Webserver              ) > fnWebserver              ;
        helper::DynFuncHolder< decltype(sound4cl_Webserver_Stop         ) > fnWebserver_Stop         ;
        helper::DynFuncHolder< decltype(sound4cl_Webserver_Status       ) > fnWebserver_Status       ;

        // added 2023-03-22
        helper::DynFuncHolder< decltype(sound4cl_StereoToMono_Planar    ) > fnStereoToMono_Planar    ;
        helper::DynFuncHolder< decltype(sound4cl_MonoToStereo_Planar    ) > fnMonoToStereo_Planar    ;

        // added 2023-05-22
        helper::DynFuncHolder< decltype(sound4cl_SetMetadata            ) > fnSetMetadata            ;
        helper::DynFuncHolder< decltype(sound4cl_GetMetadataInfos       ) > fnGetMetadataInfos       ;
        helper::DynFuncHolder< decltype(sound4cl_FreeMetadataInfos      ) > fnFreeMetadataInfos      ;

        // added 2023-06-20
        helper::DynFuncHolder< decltype(sound4cl_SetPresetManager                ) > fnSetPresetManager      ;
        helper::DynFuncHolder< decltype(sound4cl_PresetManager_InformChange      ) > fnPresetManager_InformChange      ;

        // added 2023-09-21
        helper::DynFuncHolder< decltype(sound4cl_GetPossibleChunkSizeInFrames    ) > fnGetPossibleChunkSizeInFrames   ;
        helper::DynFuncHolder< decltype(sound4cl_GetProcessChunkFrames           ) > fnGetProcessChunkFrames   ;
        helper::DynFuncHolder< decltype(sound4cl_InitProcess3                    ) > fnInitProcess3 ;

        // added 2023-06-26, only for processes supporting bus
        helper::DynFuncHolder< decltype(sound4cl_NewBus                 ) > fnNewBus      ;
        helper::DynFuncHolder< decltype(sound4cl_FreeBus                ) > fnFreeBus      ;
        helper::DynFuncHolder< decltype(sound4cl_SetInstanceBus         ) > fnSetInstanceBus      ;

        // added 2024-02-19
        helper::DynFuncHolder< decltype(sound4cl_SetMetadataMulti       ) > fnSetMetadataMulti ;

        // added 2024-05-23
        helper::DynFuncHolder< decltype(sound4cl_Webserver_SetAppHealth    ) > fnWebserver_SetAppHealth      ;
        helper::DynFuncHolder< decltype(sound4cl_Webserver_GetAppHealth    ) > fnWebserver_GetAppHealth      ;
        helper::DynFuncHolder< decltype(sound4cl_Webserver_FreeString      ) > fnWebserver_FreeString ;

#ifdef _WIN32
        // added 2025-05-28
        helper::DynFuncHolder< decltype(sound4cl_SetInstanceTracing                ) > fnSetInstanceTracing                ;
        helper::DynFuncHolder< decltype(sound4cl_SetInstanceTracingProcessActivity ) > fnSetInstanceTracingProcessActivity ;
#endif // _WIN32

        // added 2026-02-17
        helper::DynFuncHolder< decltype(sound4cl_GetAudioConverter      ) > fnGetAudioConverter      ;
        helper::DynFuncHolder< decltype(sound4cl_FreeAudioConverter     ) > fnFreeAudioConverter     ;
        helper::DynFuncHolder< decltype(sound4cl_AudioConverter_From    ) > fnAudioConverter_From    ;
        helper::DynFuncHolder< decltype(sound4cl_AudioConverter_To      ) > fnAudioConverter_To      ;

            template <typename T>
        helper::DynFuncHolder<T> GetPrefixSymbol(const std::string& name) {
            std::string prefix_name = m_prefix+name;
            return m_lib.GetSymbol<T>(prefix_name);
        }

    public:
        CProcessor() = default;

        bool Load(const std::filesystem::path& filepath) {
            m_lib.Close();
            // If a path is given, use it directly and do not try other path
            if (filepath.has_parent_path() && !m_lib.Load(filepath)) {
                return false;
            } else if (!m_lib.IsOk()) {
                auto thisdir=helper::CDynLoader::GetThisLibraryPath().parent_path();
                auto filename = filepath.filename();
                #ifndef _WIN32
                // Linux: if in a bin directory, try ../lib first
                if (!m_lib.IsOk() && thisdir.filename()=="bin") {
```

```
                    auto libdir = thisdir.parent_path() / "lib";
                    m_lib.Load(libdir / filename);
                }
                #endif // !_WIN32
                if (!m_lib.IsOk()) {
                    // Search in the same directory this code is in
                    m_lib.Load(thisdir / filename);
                }
                if (!m_lib.IsOk()) {
                    // Try current path
                    std::error_code ec;
                    auto p = std::filesystem::current_path(ec);
                    if (!ec) {
                        m_lib.Load(p / filename);
                    }
                }
                if (!m_lib.IsOk()) {
                    return false;
                }
            }
            // Get information from the library itself
            try {
                auto GetInfo = m_lib.GetSymbol< decltype(sound4cl_SOUND4_GetProcessInfo              )
    >("SOUND4_GetProcessInfo"   );
                auto info = GetInfo();
                m_prefix = info->prefix;
            } catch (std::runtime_error& ) {
                // Compatibility: search in known libraries without this function
                #ifdef _WIN32
                    std::string filename = helper::WStringToUTF8(filepath.stem());
                #else // !_WIN32
                    std::string filename = filepath.stem();
                    // remove lib prefix
                    filename=filename.substr(3);
                #endif // ! _WIN32
                if (filename=="sound4.x1.cloud") {
                    m_prefix="cloudx1_";
                } else if (filename=="sound4.impact.cl") {
                    m_prefix="impact_";
                } else if (filename=="sound4.bigvoice.cl") {
                    m_prefix="bigvoice_";
                } else {
                    return false;
                }
            }

            // Load all C functions
            try {
                fnGetVersion              = GetPrefixSymbol< decltype(sound4cl_GetVersion
    ) >("GetVersion"             );
                fnGetChunkSizeInFrames    = GetPrefixSymbol< decltype(sound4cl_GetChunkSizeInFrames
    ) >("GetChunkSizeInFrames"   );
                fnGetChannelCount         = GetPrefixSymbol< decltype(sound4cl_GetChannelCount
    ) >("GetChannelCount"        );
                fnGetAudioInputCount      = GetPrefixSymbol< decltype(sound4cl_GetAudioInputCount
    ) >("GetAudioInputCount"     );
                fnGetAudioOutputCount     = GetPrefixSymbol< decltype(sound4cl_GetAudioOutputCount
    ) >("GetAudioOutputCount"    );
                fnGetSampleRate           = GetPrefixSymbol< decltype(sound4cl_GetSampleRate
    ) >("GetSampleRate"          );
                fnSetLoggerCallback       = GetPrefixSymbol< decltype(sound4cl_SetLoggerCallback
    ) >("SetLoggerCallback"      );
                fnSetLogSeverity          = GetPrefixSymbol< decltype(sound4cl_SetLogSeverity
    ) >("SetLogSeverity"         );
                fnNewParameters           = GetPrefixSymbol< decltype(sound4cl_NewParameters
    ) >("NewParameters"          );
                fnFreeParameters          = GetPrefixSymbol< decltype(sound4cl_FreeParameters
    ) >("FreeParameters"         );
                fnSetParameter            = GetPrefixSymbol< decltype(sound4cl_SetParameter
    ) >("SetParameter"           );
                fnGetParameter            = GetPrefixSymbol< decltype(sound4cl_GetParameter
    ) >("GetParameter"           );
                fnFreeParameterValue      = GetPrefixSymbol< decltype(sound4cl_FreeParameterValue
    ) >("FreeParameterValue"     );
                fnInitProcess             = GetPrefixSymbol< decltype(sound4cl_InitProcess
    ) >("InitProcess"            );
                fnInitProcess2            = GetPrefixSymbol< decltype(sound4cl_InitProcess2
    ) >("InitProcess2"           );
                fnTerminateProcess        = GetPrefixSymbol< decltype(sound4cl_TerminateProcess
    ) >("TerminateProcess"       );
                fnExitProcess             = GetPrefixSymbol< decltype(sound4cl_ExitProcess
    ) >("ExitProcess"            );
                fnStartUpdateThread       = GetPrefixSymbol< decltype(sound4cl_StartUpdateThread
    ) >("StartUpdateThread"      );
                fnStopUpdateThread        = GetPrefixSymbol< decltype(sound4cl_StopUpdateThread
    ) >("StopUpdateThread"       );
                fnWaitUpdateThreadReady   = GetPrefixSymbol< decltype(sound4cl_WaitUpdateThreadReady
```

```
) >("WaitUpdateThreadReady"  );
                fnProcessAudio            = GetPrefixSymbol< decltype(sound4cl_ProcessAudio
) >("ProcessAudio"           );
                fnProcessAudio_Planar     = GetPrefixSymbol< decltype(sound4cl_ProcessAudio_Planar
) >("ProcessAudio_Planar"    );
                fnGetBufferIn             = GetPrefixSymbol< decltype(sound4cl_GetBufferIn
) >("GetBufferIn"            );
                fnGetBufferOut            = GetPrefixSymbol< decltype(sound4cl_GetBufferOut
) >("GetBufferOut"           );
                fnGetEstimatedDelay       = GetPrefixSymbol< decltype(sound4cl_GetEstimatedDelay
) >("GetEstimatedDelay"      );
                fnGetFormatName           = GetPrefixSymbol< decltype(sound4cl_GetFormatName
) >("GetFormatName"          );
                fnGetFormatFromName       = GetPrefixSymbol< decltype(sound4cl_GetFormatFromName
) >("GetFormatFromName"      );
                fnGetBytesFromFormat      = GetPrefixSymbol< decltype(sound4cl_GetBytesFromFormat
) >("GetBytesFromFormat"     );
                fnGetMaxPacketFrame       = GetPrefixSymbol< decltype(sound4cl_GetMaxPacketFrame
) >("GetMaxPacketFrame"      );
                fnAddAudio                = GetPrefixSymbol< decltype(sound4cl_AddAudio
) >("AddAudio"               );
                fnAddPadAudio             = GetPrefixSymbol< decltype(sound4cl_AddPadAudio
) >("AddPadAudio"            );
                fnGetOutputCount          = GetPrefixSymbol< decltype(sound4cl_GetOutputCount
) >("GetOutputCount"         );
                fnGetAudio                = GetPrefixSymbol< decltype(sound4cl_GetAudio
) >("GetAudio"               );
                fnAudioConvertFrom        = GetPrefixSymbol< decltype(sound4cl_AudioConvertFrom
) >("AudioConvertFrom"       );
                fnAudioConvertTo          = GetPrefixSymbol< decltype(sound4cl_AudioConvertTo
) >("AudioConvertTo"         );
                fnStereoToMono            = GetPrefixSymbol< decltype(sound4cl_StereoToMono
) >("StereoToMono"           );
                fnMonoToStereo            = GetPrefixSymbol< decltype(sound4cl_MonoToStereo
) >("MonoToStereo"           );
                fnAudioMonoFromLiveStereo = GetPrefixSymbol<
decltype(sound4cl_AudioMonoFromLiveStereo) >("AudioMonoFromLiveStereo");
                fnAudioMonoToLiveStereo   = GetPrefixSymbol< decltype(sound4cl_AudioMonoToLiveStereo
) >("AudioMonoToLiveStereo"  );
                fnNewClient               = GetPrefixSymbol< decltype(sound4cl_NewClient
) >("NewClient"              );
                fnDeleteClient            = GetPrefixSymbol< decltype(sound4cl_DeleteClient
) >("DeleteClient"           );
                fnProcessJson             = GetPrefixSymbol< decltype(sound4cl_ProcessJson
) >("ProcessJson"            );
                fnFreeJsonAnswer          = GetPrefixSymbol< decltype(sound4cl_FreeJsonAnswer
) >("FreeJsonAnswer"         );
                fnSaveState               = GetPrefixSymbol< decltype(sound4cl_SaveState
) >("SaveState"              );
            } catch (std::runtime_error& ) {
                return false;
            }
            // Webserver : not for all projects
            try {
                fnWebserver_tcp           = GetPrefixSymbol< decltype(sound4cl_Webserver_tcp
) >("Webserver_tcp"          );
                fnWebserver_tcp2          = GetPrefixSymbol< decltype(sound4cl_Webserver_tcp2
) >("Webserver_tcp2"         );
                fnWebserver               = GetPrefixSymbol< decltype(sound4cl_Webserver
) >("Webserver"              );
                fnWebserver_Stop          = GetPrefixSymbol< decltype(sound4cl_Webserver_Stop
) >("Webserver_Stop"         );
                fnWebserver_Status        = GetPrefixSymbol< decltype(sound4cl_Webserver_Status
) >("Webserver_Status"       );
            } catch (std::runtime_error& ) {
                // Ignored, handler will take care
            }
            // Stereo/Mono conversion : must be present
            try {
                // added 2023-03-22
                fnStereoToMono_Planar     = GetPrefixSymbol< decltype(sound4cl_StereoToMono_Planar
) >("StereoToMono_Planar"    );
                fnMonoToStereo_Planar     = GetPrefixSymbol< decltype(sound4cl_MonoToStereo_Planar
) >("MonoToStereo_Planar"    );

            } catch (std::runtime_error& ) {
                return false;
            }
            // C functions allowed to be missing
            try {
                // added 2023-05-22
                fnSetMetadata             = GetPrefixSymbol< decltype(sound4cl_SetMetadata
) >("SetMetadata"            );
                fnGetMetadataInfos        = GetPrefixSymbol< decltype(sound4cl_GetMetadataInfos
) >("GetMetadataInfos"       );
                fnFreeMetadataInfos       = GetPrefixSymbol< decltype(sound4cl_FreeMetadataInfos
) >("FreeMetadataInfos"      );
```

```
                // added 2023-06-20
                fnSetPresetManager            = GetPrefixSymbol< decltype(sound4cl_SetPresetManager ) >("SetPresetManager"            );
                fnPresetManager_InformChange  = GetPrefixSymbol< decltype(sound4cl_PresetManager_InformChange     ) >("PresetManager_InformChange"    );

                // added 2023-09-21
                fnGetPossibleChunkSizeInFrames = GetPrefixSymbol< decltype(sound4cl_GetPossibleChunkSizeInFrames  ) >("GetPossibleChunkSizeInFrames"  );
                fnGetProcessChunkFrames        = GetPrefixSymbol< decltype(sound4cl_GetProcessChunkFrames         ) >("GetProcessChunkFrames"         );
                fnInitProcess3                 = GetPrefixSymbol< decltype(sound4cl_InitProcess3 ) >("InitProcess3"                 );
            }  catch (std::runtime_error& ) {
                // Ignored, handler will take care
            }

            // bus: not for all projects
            try {
                // added 2023-06-26
                fnNewBus                  = GetPrefixSymbol< decltype(sound4cl_NewBus ) >("NewBus"                 );
                fnFreeBus                 = GetPrefixSymbol< decltype(sound4cl_FreeBus ) >("FreeBus"                 );
                fnSetInstanceBus          = GetPrefixSymbol< decltype(sound4cl_SetInstanceBus ) >("SetInstanceBus"         );
            }  catch (std::runtime_error& ) {
                // Ignored, handler will take care
            }

            // Other optional
            try {
                // added 2024-02-19
                fnSetMetadataMulti        = GetPrefixSymbol< decltype(sound4cl_SetMetadataMulti ) >("SetMetadataMulti"       );

            }  catch (std::runtime_error& ) {
                // Ignored, handler will take care
            }

            // Other optional, web server only
            try {
                // added 2024-05-23
                fnWebserver_SetAppHealth    = GetPrefixSymbol< decltype(sound4cl_Webserver_SetAppHealth    ) >("Webserver_SetAppHealth"     );
                fnWebserver_GetAppHealth    = GetPrefixSymbol< decltype(sound4cl_Webserver_GetAppHealth    ) >("Webserver_GetAppHealth"     );
                fnWebserver_FreeString      = GetPrefixSymbol< decltype(sound4cl_Webserver_FreeString ) >("Webserver_FreeString"       );
            }  catch (std::runtime_error& ) {
                // Ignored, handler will take care
            }

#ifdef _WIN32
            // Other optional, windows tracing
            try {
                // added 2025-05-28
                fnSetInstanceTracing               = GetPrefixSymbol< decltype(sound4cl_SetInstanceTracing                  ) >("SetInstanceTracing"               );
                fnSetInstanceTracingProcessActivity= GetPrefixSymbol< decltype(sound4cl_SetInstanceTracingProcessActivity    ) >("SetInstanceTracingProcessActivity");
            }  catch (std::runtime_error& ) {
                // Ignored, handler will take care
            }
#endif // _WIN32

            // Other optional
            try {
                // added 2026-02-17
                fnGetAudioConverter       = GetPrefixSymbol< decltype(sound4cl_GetAudioConverter ) >("GetAudioConverter"      );
                fnFreeAudioConverter      = GetPrefixSymbol< decltype(sound4cl_FreeAudioConverter ) >("FreeAudioConverter"     );
                fnAudioConverter_From     = GetPrefixSymbol< decltype(sound4cl_AudioConverter_From ) >("AudioConverter_From"    );
                fnAudioConverter_To       = GetPrefixSymbol< decltype(sound4cl_AudioConverter_To ) >("AudioConverter_To"      );
            }  catch (std::runtime_error& ) {
                // Ignored, handler will take care
            }

            m_bOK=true;
            return true;
        }
        bool IsOk() const {
            return m_bOK;
        }
```

```

        // ------------------------------------------------------------
        // ------------------------------------------------------------
        void AudioConvertFrom(const uint8_t *payload, float *output, size_t nSpl, SampleFormat fmt)
            { fnAudioConvertFrom(payload, output, nSpl, (sound4cl_SampleFormat)fmt); }

        void AudioConvertTo(const float *input, uint8_t *payload, size_t nSpl, SampleFormat fmt)
            { fnAudioConvertTo(input, payload, nSpl, (sound4cl_SampleFormat)fmt); }

        void StereoToMono(const float *input, float *output, size_t nFrame)
            { fnStereoToMono(input, output, nFrame); }

        void MonoToStereo(const float *input, float *output, size_t nFrame)
            { fnMonoToStereo(input, output, nFrame); }

        void StereoToMono_Planar(const float *inputL, const float *inputR, float *output, size_t nFrame)
            { fnStereoToMono_Planar(inputL, inputR, output, nFrame); }

        void MonoToStereo_Planar(const float *input, float *outputL, float *outputR, size_t nFrame)
            { fnMonoToStereo_Planar(input, outputL, outputR, nFrame); }

        void AudioMonoFromLiveStereo(const uint8_t *payload, float *output)
            { fnAudioMonoFromLiveStereo(payload, output); }

        void AudioMonoToLiveStereo(const float *input, uint8_t *payload)
            { fnAudioMonoToLiveStereo(input, payload); }

        std::string GetVersion()
            { return std::string(fnGetVersion()); }

        unsigned int GetChunkSizeInFrames()
            { return fnGetChunkSizeInFrames(); }

        std::vector<unsigned int> GetPossibleChunkSizeInFrames()
            {
                std::vector<unsigned int> list;
                if (fnGetPossibleChunkSizeInFrames) {
                    for (unsigned int* src=fnGetPossibleChunkSizeInFrames();*src;src++) {
                        list.push_back(*src);
                    }
                } else {
                    list.push_back(fnGetChunkSizeInFrames());
                }
                return list;
            }

        unsigned int GetChannelCount()
            { return fnGetChannelCount(); }

        unsigned int GetAudioInputCount()
            { return fnGetAudioInputCount(); }

        unsigned int GetAudioOutputCount()
            { return fnGetAudioOutputCount(); }

        unsigned int GetSampleRate()
            { return fnGetSampleRate(); }

        std::string GetFormatName( const SampleFormat fmt)
            { return std::string(fnGetFormatName((sound4cl_SampleFormat)fmt)); }

        SampleFormat GetFormatFromName( const std::string& name)
            { return SampleFormat(fnGetFormatFromName(name.c_str())); }

        unsigned int GetBytesFromFormat( const SampleFormat fmt)
            { return fnGetBytesFromFormat((sound4cl_SampleFormat)fmt); }

        void SetLogSeverity(LogSeverity severity)
            { fnSetLogSeverity((sound4cl_LogSeverity)severity); }

        void SetLoggerCallback(log_cb_t cb)
            { _log_cb=cb; fnSetLoggerCallback(&_log_cb_c); }
    };

    class CBus {
        public:
            CBus(CProcessor& dynlib)
                : m_dynlib(dynlib)
                {
                    if (m_dynlib.fnNewBus) {
                        m_bus=m_dynlib.fnNewBus();
                    }
                }
            ~CBus()
                {
                    if (m_bus && m_dynlib.fnFreeBus) {
```

```
                        m_dynlib.fnFreeBus(m_bus);
                    }
                    m_bus = nullptr;
                }
        protected:
            friend class CInstance;
            sound4cl_CBus *Get() const { return m_bus; }
        private:
            CProcessor& m_dynlib;
            sound4cl_CBus *m_bus;
    };

    class CPresetLoader {
    public:
        CPresetLoader() = default;
        virtual ~CPresetLoader() = default;

        virtual bool IsReadOnly() = 0;
        virtual bool Exists(const std::filesystem::path &name) = 0;
        virtual bool Remove(const std::filesystem::path &name) = 0;
        virtual bool Rename(const std::filesystem::path &from, const std::filesystem::path &to) = 0;
        virtual std::vector<std::filesystem::path> GetAll() = 0;
        virtual std::string Read(const std::filesystem::path &filename) = 0;
        virtual bool Write(const std::filesystem::path &filename, const std::string &content) =0;
    };
    enum PresetChange_Kind {
        change_kind_created  = sound4cl_PresetChange_Kind::change_kind_created,
        change_kind_modified = sound4cl_PresetChange_Kind::change_kind_modified,
        change_kind_deleted  = sound4cl_PresetChange_Kind::change_kind_deleted,
    };
    class CInstance {
    public:
        CInstance(CProcessor& dynlib)
        : m_dynlib(dynlib)
            {
                params = m_dynlib.fnNewParameters();
                if (!params) throw std::bad_alloc();
            }

        CInstance(CProcessor& dynlib, void* _instance)
        : m_dynlib(dynlib)
        , instance(reinterpret_cast<sound4cl_CInstance*>(_instance))
        , m_bOwned(false)
            {
            }
        // non-copyable
        CInstance( const CInstance& ) = delete;
        CInstance& operator=( const CInstance& ) = delete;
        virtual ~CInstance()
            {
                Stop();
                if (params) m_dynlib.fnFreeParameters(params);
            }
       bool IsOk() const { return instance!=nullptr; }
        void SetParam(const std::string& name, const std::string& value)
            {
                assert(params);
                m_dynlib.fnSetParameter(params, name.c_str(), value.c_str());
            }
        std::string GetParam(const std::string& name)
            {
                assert(params);
                auto c_value=m_dynlib.fnGetParameter(params, name.c_str());
                std::string ret(c_value);
                m_dynlib.fnFreeParameterValue(c_value);
                return ret;
            }

        void SetBus(const CBus& bus) {
            assert(params);
            if (m_dynlib.fnSetInstanceBus) {
                m_dynlib.fnSetInstanceBus(params,bus.Get());
            }
        }

        void SetPresetManager(CPresetLoader *preset_manager)
            {
                if (!preset_manager) return;
                if (!m_dynlib.fnSetPresetManager) return;
                assert(params);
                m_dynlib.fnSetPresetManager(params,
                    sound4cl_custom_reader,
                    sound4cl_custom_reader_free,
                    sound4cl_custom_writer,
                    sound4cl_custom_exists,
                    sound4cl_custom_getall,
                    sound4cl_custom_getall_free,
```

```
                    sound4cl_custom_remove,
                    sound4cl_custom_rename,
                    preset_manager->IsReadOnly(),
                    preset_manager
                );
            }

        bool Create(const std::string& LoginKey, const std::string& RadioName, const std::string& Access_Key_ID, const std::string& Access_Key_Secret, const std::filesystem::path& save_path, int json_port = 0, unsigned int frames_per_chunk=0)
            {
                assert(!instance);
                std::string l_save_path;
                if (!save_path.empty()) {
                    #if (__cplusplus<202002L)
                    l_save_path = save_path.u8string();
                    #else // C++20
                    l_save_path = (const char*)save_path.u8string().c_str();
                    #endif // C++20
                }
                if (frames_per_chunk==0) {
                    frames_per_chunk=m_dynlib.GetChunkSizeInFrames();
                }
                if (m_dynlib.fnInitProcess3) {
                    instance = m_dynlib.fnInitProcess3(LoginKey.c_str(), RadioName.c_str(), Access_Key_ID.c_str(), Access_Key_Secret.c_str(), l_save_path.c_str(), params, frames_per_chunk);
                } else if (frames_per_chunk!=m_dynlib.GetChunkSizeInFrames()) {
                    return false;
                } else {
                    instance = m_dynlib.fnInitProcess2(LoginKey.c_str(), RadioName.c_str(), Access_Key_ID.c_str(), Access_Key_Secret.c_str(), l_save_path.c_str(), params);
                }
                if (!instance) return false;
                if (!init_metadata.empty()) {
                    for (auto&& [key,value]: init_metadata) {
                        m_dynlib.fnSetMetadata(instance, key.c_str(), value.c_str());
                    }
                    init_metadata.clear();
                }
                update_thread = std::thread([this, json_port](){
                    OnUpdateThreadStart();
                    m_dynlib.fnStartUpdateThread(instance, json_port);
                    OnUpdateThreadStop();
                });
                int timeout=5000;
                #ifdef DEBUG
                    timeout=60*1000; // For debugger pauses
                #endif
                if (m_dynlib.fnWaitUpdateThreadReady(instance, timeout)<0) {
                    return false;
                }
                return true;
            }

        unsigned int GetChunkFrames() {
            if (instance && m_dynlib.fnGetProcessChunkFrames) {
                return m_dynlib.fnGetProcessChunkFrames(instance);
            }
            return m_dynlib.fnGetChunkSizeInFrames();
        }

        void PresetManager_InformChange(const std::filesystem::path& relative_path, PresetChange_Kind change_kind)
            {
                if (m_dynlib.fnPresetManager_InformChange) {
                    m_dynlib.fnPresetManager_InformChange(instance, relative_path.c_str(), (sound4cl_PresetChange_Kind) change_kind);
                }
            }

        void SetMetadata(const std::string& key, const char* value)
            {
                if (m_dynlib.fnSetMetadata) {
                    if (instance) {
                        m_dynlib.fnSetMetadata(instance, key.c_str(), value);
                    } else {
                        init_metadata.push_back( {key, value} );
                    }
                }
            }

        void SetMetadataMulti(const std::unordered_map<std::string, const char*>& list)
            {
                if (instance) {
                    if (m_dynlib.fnSetMetadataMulti) {
                        typedef const char* pchar;
                        pchar* keyvalue=new pchar[2*list.size()+1];
```

```
                        size_t n=0;
                        for (auto&& [key,value]: list) {
                            keyvalue[2*n+0]=key.c_str();
                            keyvalue[2*n+1]=value;
                            n++;
                        }
                        keyvalue[2*n+0]=nullptr;

                        sound4cl_SetMetadataMulti(instance, keyvalue);

                        delete[] keyvalue;
                    } else {
                        for (auto&& [key,value]: list) {
                            SetMetadata(key, value);
                        }
                    }
                } else {
                    for (auto&& [key,value]: list) {
                        if (value) {
                            init_metadata.push_back( {key, value} );
                        }
                    }
                }
            }

        std::vector< std::tuple<std::string,std::string> > GetMetadataInfos()
            {
                std::vector< std::tuple<std::string,std::string> > values;
                if (m_dynlib.fnGetMetadataInfos) {
                    const char** c_values = m_dynlib.fnGetMetadataInfos(instance);
                    if (c_values) {
                        for (const char** c_value=c_values; *c_value; ) {
                            std::string key(*c_value);
                            c_value++;
                            if (*c_value) {
                                std::string descr(*c_value);
                                c_value++;
                                values.push_back( {key,descr} );
                            }
                        }
                        m_dynlib.fnFreeMetadataInfos(instance, c_values);
                    }
                }
                return values;
            }

        virtual void OnUpdateThreadStart() {}
        virtual void OnUpdateThreadStop() {}


        bool StartWebServer(int http_port, int https_port=0)
            {
                assert(instance);
                assert(webserver==SOUND4_INVALID_WEBSERVER_ID);
                if (!m_dynlib.fnWebserver) {
                    return false;
                }
                webserver = m_dynlib.fnWebserver(http_port,https_port,instance);
                if (webserver==SOUND4_INVALID_WEBSERVER_ID) {
                    return false;
                }
                int web_status=m_dynlib.fnWebserver_Status(webserver);
                if (http_port && (web_status & SOUND4_WEBSERVER_HTTP_OK) == 0) {
                    return false;
                }
                if (https_port && (web_status & SOUND4_WEBSERVER_HTTPS_OK) == 0) {
                    return false;
                }
                return true;
            }

            void StopWebServer(int timeout_ms = 1000)
            {
                if (!m_dynlib.fnWebserver_Stop) return;
                if (webserver != SOUND4_INVALID_WEBSERVER_ID) {
                    m_dynlib.fnWebserver_Stop(webserver, timeout_ms);
                    webserver = SOUND4_INVALID_WEBSERVER_ID;
                }
            }

        void SetWebServerAppHealth(int httpcode, const std::string& contenttype, const std::string&
    content)
            {
                assert(instance);
                if (!m_dynlib.fnWebserver_SetAppHealth) return;
                m_dynlib.fnWebserver_SetAppHealth(instance, httpcode, contenttype.c_str(),
    content.c_str());
```

```
            }
        void GetWebServerAppHealth(int &httpcode, std::string& contenttype, std::string& content)
            {
                assert(instance);
                if (!m_dynlib.fnWebserver_GetAppHealth) return;
                char* c_contenttype=nullptr;
                char* c_content=nullptr;
                m_dynlib.fnWebserver_GetAppHealth(instance, &httpcode, &c_contenttype, &c_content);
                contenttype=c_contenttype;
                content=c_content;
                m_dynlib.fnWebserver_FreeString(c_contenttype);
                m_dynlib.fnWebserver_FreeString(c_content);
            }
        int Terminate()
            {
                if (!instance) return 0;
                return m_dynlib.fnTerminateProcess(instance);
            }

        void Stop()
            {
                if (!instance) return;
                if (m_bOwned) {
                    StopWebServer();
                    if (update_thread.joinable()) {
                        m_dynlib.fnStopUpdateThread(instance); // this will exit the update thread
                        update_thread.join();
                    }
                    m_dynlib.fnExitProcess(instance);
                }
                instance=nullptr;
            }

        unsigned int GetEstimatedDelay()
            {
                assert(instance);
                return m_dynlib.fnGetEstimatedDelay(instance);
            }

        float* GetBufferIn()
            {
                assert(instance);
                return m_dynlib.fnGetBufferIn(instance);

            }
        float* GetBufferOut()
            {
                assert(instance);
                return m_dynlib.fnGetBufferOut(instance);
            }
        void ProcessAudio()
            {
                assert(instance);
                m_dynlib.fnProcessAudio(instance, GetBufferIn(), GetBufferOut());
            }
        void ProcessAudio_Planar(float const * const *input, float * const *output)
            {
                assert(instance);
                m_dynlib.fnProcessAudio_Planar(instance, input, output);
            }

            template<typename T>
        std::vector<T> ProcessAnyAudio(const std::vector<T> input)
            {
                assert(instance);
                std::vector<T> output;
                unsigned int out_offset=0;
                unsigned int in_offset=0;
                unsigned int todo = input.size();
                while (todo>0) {
                    unsigned int left = AddAudio(&input[in_offset], todo);
                    unsigned int out_avail = m_dynlib.fnGetOutputCount(instance);
                    output.resize(out_offset + out_avail);
                    GetAudio(&output[out_offset], out_avail);
                    out_offset+=out_avail;
                    in_offset += todo-left;
                    todo=left;
                }
                return output;
            }

        class CClient {
            public:
                CClient(sound4cl_CInstance* instance, CProcessor& dynlib)
                : m_dynlib(dynlib)
                    {
                        assert(instance);
```

```
                        client=m_dynlib.fnNewClient(instance);
                        if (!client) throw std::bad_alloc();
                    }
                // non-copyable
                CClient( const CInstance& ) = delete;
                CClient& operator=( const CInstance& ) = delete;
                ~CClient()
                    {
                        if (client) {
                            m_dynlib.fnDeleteClient(client);
                            client=nullptr;
                        }
                    }
                std::string ProcessJson(const std::string &request, bool *NeedSave = nullptr)
                    {
                        assert(client);
                        int need_save=0;
                        const char *canswer = m_dynlib.fnProcessJson(client, request.c_str(), &need_save);
                        if (!canswer) return {};
                        std::string answer(canswer);
                        m_dynlib.fnFreeJsonAnswer (canswer);
                        if (NeedSave) {
                            *NeedSave=(need_save!=0);
                        }
                        return answer;
                    }
            private:
                CProcessor& m_dynlib;
                sound4cl_CClientInstance *client = nullptr;
        };
        std::shared_ptr<CClient> NewClient()
            {
                assert(instance);
                return std::make_shared<CClient>(instance, m_dynlib);
            }

        bool SaveState() {
            assert(instance);
            if (!m_dynlib.fnSaveState || m_dynlib.fnSaveState(instance)!=0) {
                return false;
            }
            return true;
        }
#ifdef _WIN32
        void SetInstanceTracing(TraceLoggingHProvider tracing_provider, GUID activity_guid = {}) {
            if (m_dynlib.fnSetInstanceTracing) {
                m_dynlib.fnSetInstanceTracing(params, tracing_provider, activity_guid);
            }
        }
        void SetInstanceTracingProcessActivity(GUID activity_guid) {
            assert(instance);
            if (m_dynlib.fnSetInstanceTracingProcessActivity) {
                m_dynlib.fnSetInstanceTracingProcessActivity(instance, activity_guid);
            }
        }
#endif // _WIN32
    protected:
            template<typename T>
        unsigned int AddAudio(const T* payload, unsigned int nFrame)
            {
                assert(instance);
                return m_dynlib.fnAddAudio(instance, reinterpret_cast<const T*>(payload), nFrame, helper::SampleFormat<T>::format);
            }
            template<typename T>
        unsigned int GetAudio(T* payload, unsigned int max_nFrame)
            {
                assert(instance);
                return m_dynlib.fnGetAudio(instance, reinterpret_cast<T*>(payload), max_nFrame, helper::SampleFormat<T>::format);
            }

    private:
        CProcessor& m_dynlib;
        sound4cl_CParameters* params = nullptr;
        sound4cl_CInstance* instance = nullptr;
        std::thread update_thread;
        std::vector< std::pair<std::string,std::string> > init_metadata;
        uint64_t webserver = SOUND4_INVALID_WEBSERVER_ID;
        bool m_bOwned = true;
    };


    // ------------------------------------------------------------
    enum ConverterTargetMode {
        ConverterTargetMode_AsInput      = sound4cl_ConverterTargetMode_AsInput,
```

```
        ConverterTargetMode_Mono         = sound4cl_ConverterTargetMode_Mono,
        ConverterTargetMode_Stereo       = sound4cl_ConverterTargetMode_Stereo,
        ConverterTargetMode_StereoToMono = sound4cl_ConverterTargetMode_StereoToMono,
        ConverterTargetMode_MonoToStereo = sound4cl_ConverterTargetMode_MonoToStereo,
    };

    class CAudioConverter {
        public:
            CAudioConverter(CProcessor& dynlib)
                : m_dynlib(dynlib)
                { }

            virtual ~CAudioConverter()
                {
                    Delete();
                }

            bool Configure(SampleFormat fmt, size_t nFrame, size_t payl_ch, size_t payl_ch_offset, ConverterTargetMode target_mode)
                {
                    Delete();
                    if (m_dynlib.fnGetAudioConverter)
                        m_cvt = m_dynlib.fnGetAudioConverter((sound4cl_SampleFormat)fmt, nFrame, payl_ch, payl_ch_offset, (sound4cl_ConverterTargetMode)target_mode);
                    return IsOK();
                }
            void Delete()
                {
                    if (m_cvt && m_dynlib.fnFreeAudioConverter) {
                        m_dynlib.fnFreeAudioConverter(m_cvt);
                    }
                    m_cvt = nullptr;
                }
            bool IsOK() const { return (m_cvt!=nullptr); }

            void ConvertFrom(const uint8_t *payload, float *output)
                { m_dynlib.fnAudioConverter_From(m_cvt, payload, output); }

            void ConvertTo(const float *input, uint8_t *payload)
                { m_dynlib.fnAudioConverter_To(m_cvt, input, payload); }

        private:
            CProcessor& m_dynlib;
            sound4cl_CAudioConverter *m_cvt = nullptr;
    };

}; // namespace sound4


// bridge C callbacks to CPresetLoader
extern "C" {
    static char *sound4cl_custom_reader(const fs_char *filename, void* userdata) {
        sound4::CPresetLoader *preset_loader=reinterpret_cast<sound4::CPresetLoader*>(userdata);
        std::string content=preset_loader->Read(filename);
        return strdup(content.c_str());
    }
    static void sound4cl_custom_reader_free(char *content, void* userdata) {
        if (!content) return;
        free(content);
    }
    static int sound4cl_custom_writer(const fs_char *filename, const char *content, void* userdata) {
        sound4::CPresetLoader *preset_loader=reinterpret_cast<sound4::CPresetLoader*>(userdata);
        auto res=preset_loader->Write(filename,content);
        return res?0:-1;
    }
    static int sound4cl_custom_exists(const fs_char *filename, void* userdata) {
        sound4::CPresetLoader *preset_loader=reinterpret_cast<sound4::CPresetLoader*>(userdata);
        auto res=preset_loader->Exists(filename);
        return res?0:-1;
    }
    static fs_char** sound4cl_custom_getall(void* userdata) {
        sound4::CPresetLoader *preset_loader=reinterpret_cast<sound4::CPresetLoader*>(userdata);
        auto res=preset_loader->GetAll();
        fs_char**all=(fs_char**)malloc((res.size()+1)*sizeof(const fs_char*));
        for (size_t n=0;n<res.size();n++) {
            all[n]=fs_strdup(res[n].c_str());
        }
        all[res.size()]=nullptr;
        return all;
    }
    static void sound4cl_custom_getall_free(fs_char** all, void* userdata) {
        if (!all) return;
        for (fs_char** one=all;*one;one++) {
            free(*one);
        }
        free(all);
    }
```

```
    static int sound4cl_custom_remove(const fs_char *filename, void* userdata) {
        sound4::CPresetLoader *preset_loader=reinterpret_cast<sound4::CPresetLoader*>(userdata);
        auto res=preset_loader->Remove(filename);
        return res?0:-1;
    }
    static int sound4cl_custom_rename(const fs_char *from, const fs_char *to, void* userdata) {
        sound4::CPresetLoader *preset_loader=reinterpret_cast<sound4::CPresetLoader*>(userdata);
        auto res=preset_loader->Rename(from,to);
        return res?0:-1;
    }

};
```

15.31 sound4cl_cdef.h File Reference

C function signature definition for all sound4.cl libraries.

```
#include <stdint.h>
#include <stringapiset.h>
#include <wchar.h>
```

Macros

- #define SOUND4_INVALID_WEBSERVER_ID ((uint64_t)-1)
- #define SOUND4_WEBSERVER_HTTP_OK (1<<0)
- #define SOUND4_WEBSERVER_HTTPS_OK (1<<1)

Typedefs

- typedef wchar_t fs_char
- typedef struct _tlgProvider_t const * TraceLoggingHProvider

15.31.1 Detailed Description

Used by sound4cl.hpp for dynamic library loading.

Definition in file sound4cl_cdef.h.

15.31.2 Macro Definition Documentation

15.31.2.1 SOUND4_INVALID_WEBSERVER_ID

```
#define SOUND4_INVALID_WEBSERVER_ID ((uint64_t)-1)
```

Definition at line 67 of file sound4cl_cdef.h.

15.31.2.2 SOUND4_WEBSERVER_HTTP_OK

```
#define SOUND4_WEBSERVER_HTTP_OK (1<<0)
```

Definition at line 68 of file sound4cl_cdef.h.

15.31.2.3 SOUND4_WEBSERVER_HTTPS_OK

```
#define SOUND4_WEBSERVER_HTTPS_OK (1<<1)
```

Definition at line 69 of file sound4cl_cdef.h.

15.31.3 Typedef Documentation

15.31.3.1 fs_char

```
typedef wchar_t fs_char
```

Definition at line 19 of file sound4cl_cdef.h.

15.31.3.2 TraceLoggingHProvider

```
typedef struct _tlgProvider_t const* TraceLoggingHProvider
```

Definition at line 227 of file sound4cl_cdef.h.

15.32 sound4cl_cdef.h

Go to the documentation of this file.

```
00001
00007 #pragma once
00008
00009 #include <stdint.h>
00010 #ifdef __unix__
00011     #include <sys/types.h>
00012 #endif
00013
00014 #ifdef _WIN32
00015     #include <stringapiset.h>
00016     #include <wchar.h>
00018     #define fs_strdup wcsdup
00019     typedef wchar_t fs_char;
00020     #ifdef _MSC_VER
00021         #define __BYTE_ORDER__  REG_DWORD
00022         #define __ORDER_LITTLE_ENDIAN__ REG_DWORD_LITTLE_ENDIAN
00023         #define __ORDER_BIG_ENDIAN__    REG_DWORD_BIG_ENDIAN
00024     #endif
00025     #ifdef _MSC_VER
00026         #pragma warning(disable : 4996)
00027     #endif
00028 #else // !_WIN32
00030     #define fs_strdup strdup
00031     typedef char fs_char;
00032 #endif // !_WIN32
00033
00034 #ifdef __cplusplus
00035 extern "C" {
00036 #endif // __cplusplus
00037
00038 struct sound4cl_SOUND4_ProcessInfo {
00039     size_t struct_size;
00040     const char *name;
00041     const char *prefix;
00042     const char *shortname;
00043     const char *version;
00044 };
00045 enum sound4cl_LogSeverity {
00046     sound4cl_none     = 0,
00047     sound4cl_fatal    = 1,
00048     sound4cl_error    = 2,
00049     sound4cl_warning  = 3,
```

```
    sound4cl_info     = 4,
    sound4cl_verbose  = 5,
    sound4cl_verbose2 = 6,
    sound4cl_verbose3 = 7,
    sound4cl_verbose4 = 8,
    sound4cl_verbose5 = 9,
};
struct sound4cl_CInstance;
struct sound4cl_CParameters;
struct sound4cl_CBus;
struct sound4cl_CClientInstance;
struct sound4cl_CAudioConverter;
enum sound4cl_PresetChange_Kind {
    change_kind_created = 1,
    change_kind_modified   ,
    change_kind_deleted    ,
};
#define SOUND4_INVALID_WEBSERVER_ID            ((uint64_t)-1)
#define SOUND4_WEBSERVER_HTTP_OK               (1«0)
#define SOUND4_WEBSERVER_HTTPS_OK              (1«1)

enum sound4cl_SampleFormat {
    INVALID_FORMAT=0,
    S16_LE,
    S16_BE,
    S24_LE,
    S24_BE,
    S32_LE,
    S32_BE,
    F32_LE,
    F32_BE,

    // Native definitions, only links to the physical ones
    #if __BYTE_ORDER__ == __ORDER_LITTLE_ENDIAN__
        S16_NATIVE=S16_LE,
        S24_NATIVE=S24_LE,
        S32_NATIVE=S32_LE,
        F32_NATIVE=F32_LE,
    #else
        S16_NATIVE=S16_BE,
        S24_NATIVE=S24_BE,
        S32_NATIVE=S32_BE,
        F32_NATIVE=F32_BE,
    #endif
};

enum sound4cl_ConverterTargetMode {
    sound4cl_ConverterTargetMode_AsInput = 0,
    sound4cl_ConverterTargetMode_Mono,
    sound4cl_ConverterTargetMode_Stereo,
    sound4cl_ConverterTargetMode_StereoToMono,
    sound4cl_ConverterTargetMode_MonoToStereo,
};

const struct sound4cl_SOUND4_ProcessInfo* sound4cl_SOUND4_GetProcessInfo();
const char *sound4cl_GetVersion();
unsigned int sound4cl_GetChunkSizeInFrames();
unsigned int* sound4cl_GetPossibleChunkSizeInFrames();
unsigned int sound4cl_GetChannelCount();
unsigned int sound4cl_GetAudioInputCount();
unsigned int sound4cl_GetAudioOutputCount();
unsigned int sound4cl_GetSampleRate();
typedef void (*sound4cl_loggerfn) (enum sound4cl_LogSeverity, const char *);
void sound4cl_SetLoggerCallback( sound4cl_loggerfn logger );
void sound4cl_SetLogSeverity( enum sound4cl_LogSeverity severity );
struct sound4cl_CParameters *sound4cl_NewParameters();
void sound4cl_FreeParameters(struct sound4cl_CParameters *params);
void sound4cl_SetParameter(struct sound4cl_CParameters *params, const char *name, const char *value);
const char *sound4cl_GetParameter(struct sound4cl_CParameters *params, const char *name);
void sound4cl_FreeParameterValue(const char *value);
struct sound4cl_CInstance *sound4cl_InitProcess(
        const char *LoginKey,
        const char *RadioName,
        const char *Access_Key_ID,
        const char *Access_Key_Secret,
        const char *save_path
    );
struct sound4cl_CInstance *sound4cl_InitProcess2(
        const char *LoginKey,
        const char *RadioName,
        const char *Access_Key_ID,
        const char *Access_Key_Secret,
        const char *save_path,
        const struct sound4cl_CParameters *parameters
    );
struct sound4cl_CInstance *sound4cl_InitProcess3(
        const char *LoginKey,
```

```
        const char *RadioName,
        const char *Access_Key_ID,
        const char *Access_Key_Secret,
        const char *save_path,
        const struct sound4cl_CParameters *parameters,
        unsigned int frames_per_chunk
    );
unsigned int sound4cl_GetProcessChunkFrames(struct sound4cl_CInstance *instance);
int sound4cl_TerminateProcess(struct sound4cl_CInstance *instance);
void sound4cl_ExitProcess(struct sound4cl_CInstance *instance);
struct sound4cl_CBus* sound4cl_NewBus();
void sound4cl_FreeBus(struct sound4cl_CBus *bus);
void sound4cl_SetInstanceBus(struct sound4cl_CParameters *params, struct sound4cl_CBus *bus);
typedef char * (*sound4cl_storage_reader) (const fs_char *filename, void* userdata);
typedef void (*sound4cl_storage_reader_free) (char *content, void* userdata);
typedef int (*sound4cl_storage_writer) (const fs_char *filename, const char *content, void* userdata);
typedef int (*sound4cl_storage_exists) (const fs_char *filename, void* userdata);
typedef fs_char** (*sound4cl_storage_getall) (void* userdata);
typedef void (*sound4cl_storage_getall_free) (fs_char**all, void* userdata);
typedef int (*sound4cl_storage_remove) (const fs_char *filename, void* userdata);
typedef int (*sound4cl_storage_rename) (const fs_char *from, const fs_char *to, void* userdata);
void sound4cl_SetPresetManager(struct sound4cl_CParameters *params
    , sound4cl_storage_reader reader, sound4cl_storage_reader_free
    , sound4cl_storage_writer writer
    , sound4cl_storage_exists exists
    , sound4cl_storage_getall getall, sound4cl_storage_getall_free getall_free
    , sound4cl_storage_remove remove
    , sound4cl_storage_rename rename
    , int IsReadOnly
    , void* userdata
    );
void sound4cl_PresetManager_InformChange(struct sound4cl_CInstance *instance, const fs_char *relative_path, enum sound4cl_PresetChange_Kind change_kind);
void sound4cl_SetMetadata(struct sound4cl_CInstance *instance, const char* key, const char* value);
void sound4cl_SetMetadataMulti(struct sound4cl_CInstance *instance, const char** keyvalue);
const char** sound4cl_GetMetadataInfos(struct sound4cl_CInstance *instance);
void sound4cl_FreeMetadataInfos(struct sound4cl_CInstance *instance, const char** infos);
void sound4cl_StartUpdateThread(struct sound4cl_CInstance *instance, unsigned int port);
void sound4cl_StopUpdateThread(struct sound4cl_CInstance *instance);
int sound4cl_WaitUpdateThreadReady(struct sound4cl_CInstance *instance, int milliseconds);
void sound4cl_ProcessAudio(struct sound4cl_CInstance *instance, const float *input, float *output );
void sound4cl_ProcessAudio_Planar(struct sound4cl_CInstance *instance
    , float const * const *input
    , float * const *output);
float *sound4cl_GetBufferIn(struct sound4cl_CInstance *instance);
float *sound4cl_GetBufferOut(struct sound4cl_CInstance *instance);
unsigned int sound4cl_GetEstimatedDelay(struct sound4cl_CInstance *instance);
const char *sound4cl_GetFormatName(const enum sound4cl_SampleFormat fmt);
enum sound4cl_SampleFormat sound4cl_GetFormatFromName(const char *name);
unsigned int sound4cl_GetBytesFromFormat(const enum sound4cl_SampleFormat fmt);
unsigned int sound4cl_GetMaxPacketFrame(struct sound4cl_CInstance *instance);
unsigned int sound4cl_AddAudio(struct sound4cl_CInstance *instance, const uint8_t *payload, unsigned int nFrame, enum sound4cl_SampleFormat fmt );
unsigned int sound4cl_AddPadAudio(struct sound4cl_CInstance *instance);
unsigned int sound4cl_GetOutputCount(struct sound4cl_CInstance *instance);
unsigned int sound4cl_GetAudio(struct sound4cl_CInstance *instance, uint8_t *payload, unsigned int max_nFrame, enum sound4cl_SampleFormat fmt );
void sound4cl_AudioConvertFrom(const uint8_t *payload, float *output, size_t nSpl, enum sound4cl_SampleFormat fmt);
void sound4cl_AudioConvertTo(const float *input, uint8_t *payload, size_t nSpl, enum sound4cl_SampleFormat fmt);
void sound4cl_StereoToMono(const float *input, float *output, size_t nFrame);
void sound4cl_MonoToStereo(const float *input, float *output, size_t nFrame);
void sound4cl_StereoToMono_Planar(const float *inputL, const float *inputR, float *output, size_t nFrame);
void sound4cl_MonoToStereo_Planar(const float *input, float *outputL, float *outputR, size_t nFrame);
void sound4cl_AudioMonoFromLiveStereo(const uint8_t *payload, float *output);
void sound4cl_AudioMonoToLiveStereo(const float *input, uint8_t *payload);
struct sound4cl_CAudioConverter* sound4cl_GetAudioConverter(enum sound4cl_SampleFormat fmt, size_t nFrame, size_t payl_ch, size_t payl_ch_offset, sound4cl_ConverterTargetMode tartget_mode);
void sound4cl_FreeAudioConverter(struct sound4cl_CAudioConverter *converter);
void sound4cl_AudioConverter_From(struct sound4cl_CAudioConverter *converter, const uint8_t *payload, float *output);
void sound4cl_AudioConverter_To(struct sound4cl_CAudioConverter *converter, const float *input, uint8_t *payload);
struct sound4cl_CClientInstance *sound4cl_NewClient(struct sound4cl_CInstance *instance);
void sound4cl_DeleteClient(struct sound4cl_CClientInstance *client);
const char *sound4cl_ProcessJson(struct sound4cl_CClientInstance *client, const char *json_str, int *need_save);
void sound4cl_FreeJsonAnswer(const char *json_str);
int sound4cl_SaveState(struct sound4cl_CInstance *instance);
uint64_t sound4cl_Webserver_tcp(unsigned int listenport, unsigned int listenport_secure, const char *socket_ip, unsigned int socket_port);
uint64_t sound4cl_Webserver_tcp2(unsigned int listenport, unsigned int listenport_secure, const char *socket_ip, unsigned int socket_port, const struct sound4cl_CParameters *parameters);
uint64_t sound4cl_Webserver(unsigned int listenport, unsigned int listenport_secure, struct sound4cl_CInstance *instance);
```

```
int sound4cl_Webserver_Stop(uint64_t id, int timeout_ms);
int sound4cl_Webserver_Status(uint64_t id);
void sound4cl_Webserver_SetAppHealth(struct sound4cl_CInstance *instance, int httpcode, const char*
contenttype, const char* content);
void sound4cl_Webserver_GetAppHealth(struct sound4cl_CInstance *instance, int* httpcode, char**
contenttype, char** content);
void sound4cl_Webserver_FreeString(char* str);

//   Tracing (Windows only)
#ifdef _WIN32
    #ifndef TLG_HAVE_EVENT_SET_INFORMATION // TraceLoggingProvider.h has not been included
        struct _tlgProvider_t;
        typedef struct _tlgProvider_t const* TraceLoggingHProvider;
    #endif // !TLG_HAVE_EVENT_SET_INFORMATION
void sound4cl_SetInstanceTracing(struct sound4cl_CParameters *params, TraceLoggingHProvider
tracing_provider, GUID activity_guid);
void sound4cl_SetInstanceTracingProcessActivity(struct sound4cl_CInstance *instance, GUID
activity_guid);
#endif // _WIN32


#ifdef __cplusplus
} // extern "C"
#endif // __cplusplus
```

Index

_log_cb
- sound4, 90
- sound4::bigvoice, 96
- sound4::bigvoice::dyn, 105

_log_cb_c
- sound4, 89
- sound4::bigvoice, 92
- sound4::bigvoice::dyn, 99

~CAudioConverter
- sound4::bigvoice::CAudioConverter, 122
- sound4::bigvoice::dyn::CAudioConverter, 125
- sound4::CAudioConverter, 129

~CBus
- sound4::bigvoice::CBus, 131
- sound4::bigvoice::dyn::CBus, 132
- sound4::CBus, 133

~CClient
- sound4::bigvoice::CInstance::CClient, 135
- sound4::bigvoice::dyn::CInstance::CClient, 136
- sound4::CInstance::CClient, 138

~CDynLoader
- sound4::bigvoice::dyn::helper::CDynLoader, 152
- sound4::helper::CDynLoader, 155

~CInstance
- sound4::bigvoice::CInstance, 158
- sound4::bigvoice::dyn::CInstance, 171
- sound4::CInstance, 183

~CPresetLoader
- sound4::bigvoice::CPresetLoader, 194
- sound4::bigvoice::dyn::CPresetLoader, 196
- sound4::CPresetLoader, 198

~MyPresetManager
- MyPresetManager, 210

ActivateAuxiliaryAudioID
- sound4::bigvoice::CInstance, 159

AddAudio
- sound4::bigvoice::CInstance, 159
- sound4::bigvoice::dyn::CDynLib, 141
- sound4::bigvoice::dyn::CInstance, 171
- sound4::CInstance, 184

AddPadAudio
- sound4::bigvoice::dyn::CDynLib, 141

Audio convert helpers, 29
- bigvoice_AudioConverter_From, 30
- bigvoice_AudioConverter_To, 30
- bigvoice_AudioConvertFrom, 31
- bigvoice_AudioConvertTo, 31
- bigvoice_AudioMonoFromLiveStereo, 32
- bigvoice_AudioMonoToLiveStereo, 32
- bigvoice_ConverterTargetMode, 30
- bigvoice_FreeAudioConverter, 32
- bigvoice_GetAudioConverter, 32
- bigvoice_MonoToStereo, 33
- bigvoice_MonoToStereo_Planar, 34
- bigvoice_StereoToMono, 34
- bigvoice_StereoToMono_Planar, 34
- ConverterTargetMode_AsInput, 30
- ConverterTargetMode_Mono, 30
- ConverterTargetMode_MonoToStereo, 30
- ConverterTargetMode_Stereo, 30
- ConverterTargetMode_StereoToMono, 30

Audio convert helpers (C++), 35
- AudioConvertFrom, 36
- AudioConvertTo, 36
- AudioMonoFromLiveStereo, 37
- AudioMonoToLiveStereo, 37
- ConverterTargetMode, 36
- ConverterTargetMode_AsInput, 36
- ConverterTargetMode_Mono, 36
- ConverterTargetMode_MonoToStereo, 36
- ConverterTargetMode_Stereo, 36
- ConverterTargetMode_StereoToMono, 36
- MonoToStereo, 37
- MonoToStereo_Planar, 38
- StereoToMono, 38
- StereoToMono_Planar, 39

Audio managing (any audio), 39
- bigvoice_AddAudio, 41
- bigvoice_AddPadAudio, 41
- bigvoice_GetAudio, 41
- bigvoice_GetBytesFromFormat, 43
- bigvoice_GetFormatFromName, 43
- bigvoice_GetFormatName, 43
- bigvoice_GetMaxPacketFrame, 44
- bigvoice_GetOutputCount, 44
- bigvoice_SampleFormat, 40
- F32_BE, 40
- F32_LE, 40
- F32_NATIVE, 40
- INVALID_FORMAT, 40
- S16_BE, 40
- S16_LE, 40
- S16_NATIVE, 40
- S24_BE, 40
- S24_LE, 40
- S24_NATIVE, 40
- S32_BE, 40
- S32_LE, 40

S32_NATIVE, 40
AudioConverter_From
sound4::bigvoice::dyn::CDynLib, 141
AudioConverter_To
sound4::bigvoice::dyn::CDynLib, 141
AudioConvertFrom
Audio convert helpers (C++), 36
sound4::bigvoice::dyn::CDynLib, 141
sound4::bigvoice::dyn::helper, 108
sound4::bigvoice::helper, 113
AudioConvertTo
Audio convert helpers (C++), 36
sound4::bigvoice::dyn::CDynLib, 142
sound4::bigvoice::dyn::helper, 108
sound4::bigvoice::helper, 113
AudioMonoFromLiveStereo
Audio convert helpers (C++), 37
sound4::bigvoice::dyn::CDynLib, 142
sound4::bigvoice::dyn::helper, 109
sound4::bigvoice::helper, 113
AudioMonoToLiveStereo
Audio convert helpers (C++), 37
sound4::bigvoice::dyn::CDynLib, 142
sound4::bigvoice::dyn::helper, 109
sound4::bigvoice::helper, 114
Auxiliary outputs, 44
bigvoice_ActivateAuxiliaryAudioID, 45
bigvoice_FreeAuxiliaryAudioInfos, 45
bigvoice_GetAuxiliaryAudioEstimatedDelay, 46
bigvoice_GetAuxiliaryAudioOutputInfos, 46

bigvoice_ActivateAuxiliaryAudioID
Auxiliary outputs, 45
bigvoice_AddAudio
Audio managing (any audio), 41
bigvoice_AddPadAudio
Audio managing (any audio), 41
BIGVOICE_AUDIO_INPUT_COUNT
Global setup, 59
BIGVOICE_AUDIO_OUTPUT_COUNT
Global setup, 59
bigvoice_AudioConverter_From
Audio convert helpers, 30
bigvoice_AudioConverter_To
Audio convert helpers, 30
bigvoice_AudioConvertFrom
Audio convert helpers, 31
bigvoice_AudioConvertTo
Audio convert helpers, 31
BIGVOICE_AUDIOFRAME_COUNT
Global setup, 59
bigvoice_AudioMonoFromLiveStereo
Audio convert helpers, 32
bigvoice_AudioMonoToLiveStereo
Audio convert helpers, 32
bigvoice_CAudioConverter, 120
bigvoice_CBus, 121
bigvoice_CClientInstance, 121
BIGVOICE_CHANNEL_COUNT
Global setup, 59
bigvoice_CInstance, 121
bigvoice_ConverterTargetMode
Audio convert helpers, 30
bigvoice_CParameters, 121
bigvoice_custom_exists
sound4.bigvoice.cl.hpp, 249
sound4.bigvoice.cl_dyn.hpp, 262
bigvoice_custom_getall
sound4.bigvoice.cl.hpp, 249
sound4.bigvoice.cl_dyn.hpp, 262
bigvoice_custom_getall_free
sound4.bigvoice.cl.hpp, 250
sound4.bigvoice.cl_dyn.hpp, 262
bigvoice_custom_reader
sound4.bigvoice.cl.hpp, 250
sound4.bigvoice.cl_dyn.hpp, 262
bigvoice_custom_reader_free
sound4.bigvoice.cl.hpp, 250
sound4.bigvoice.cl_dyn.hpp, 262
bigvoice_custom_remove
sound4.bigvoice.cl.hpp, 250
sound4.bigvoice.cl_dyn.hpp, 263
bigvoice_custom_rename
sound4.bigvoice.cl.hpp, 250
sound4.bigvoice.cl_dyn.hpp, 263
bigvoice_custom_writer
sound4.bigvoice.cl.hpp, 250
sound4.bigvoice.cl_dyn.hpp, 263
BIGVOICE_DECL
sound4.bigvoice.cl.h, 242
bigvoice_DeleteClient
Client's JSon config interfacing, 47
bigvoice_ExitProcess
Process creation/destruction, 68
bigvoice_FreeAudioConverter
Audio convert helpers, 32
bigvoice_FreeAuxiliaryAudioInfos
Auxiliary outputs, 45
bigvoice_FreeBus
Instance's bus, 65
bigvoice_FreeJsonAnswer
Client's JSon config interfacing, 47
bigvoice_FreeMetadataInfos
Metadata Management, 66
bigvoice_FreeParameters
Process creation/destruction, 69
bigvoice_FreeParameterValue
Process creation/destruction, 69
bigvoice_GetAudio
Audio managing (any audio), 41
bigvoice_GetAudioConverter
Audio convert helpers, 32
bigvoice_GetAudioInputCount
Global setup, 61
bigvoice_GetAudioOutputCount
Global setup, 61
bigvoice_GetAuxiliaryAudioEstimatedDelay

Auxiliary outputs, 46
bigvoice_GetAuxiliaryAudioOutputInfos
Auxiliary outputs, 46
bigvoice_GetBufferIn
Direct processing, 55
bigvoice_GetBufferOut
Direct processing, 55
bigvoice_GetBytesFromFormat
Audio managing (any audio), 43
bigvoice_GetChannelCount
Global setup, 61
bigvoice_GetChunkSizeInFrames
Global setup, 61
bigvoice_GetEstimatedDelay
Direct processing, 56
bigvoice_GetFormatFromName
Audio managing (any audio), 43
bigvoice_GetFormatName
Audio managing (any audio), 43
bigvoice_GetMaxPacketFrame
Audio managing (any audio), 44
bigvoice_GetMetadataInfos
Metadata Management, 67
bigvoice_GetOutputCount
Audio managing (any audio), 44
bigvoice_GetParameter
Process creation/destruction, 69
bigvoice_GetPossibleChunkSizeInFrames
Global setup, 62
bigvoice_GetProcessChunkFrames
Process creation/destruction, 69
bigvoice_GetSampleRate
Global setup, 62
bigvoice_GetVersion
Global setup, 62
BIGVOICE_HAS_CLOUDBUS
sound4.bigvoice.cl.h, 242
BIGVOICE_HAS_WEBSERVER
sound4.bigvoice.cl.h, 242
bigvoice_InitProcess
Process creation/destruction, 70
bigvoice_InitProcess2
Process creation/destruction, 70
bigvoice_InitProcess3
Process creation/destruction, 70
bigvoice_loggerfn
Global setup, 60
bigvoice_LogSeverity
Global setup, 60
bigvoice_MonoToStereo
Audio convert helpers, 33
bigvoice_MonoToStereo_Planar
Audio convert helpers, 34
bigvoice_NewBus
Instance's bus, 65
bigvoice_NewClient
Client's JSon config interfacing, 47
bigvoice_NewParameters
Process creation/destruction, 71
bigvoice_PresetChange_Kind
Custom preset managagement, 53
bigvoice_PresetManager_InformChange
Custom preset managagement, 53
bigvoice_ProcessAudio
Direct processing, 56
bigvoice_ProcessAudio_Planar
Direct processing, 57
bigvoice_ProcessJson
Client's JSon config interfacing, 48
BIGVOICE_SAMPLE_RATE
Global setup, 59
bigvoice_SampleFormat
Audio managing (any audio), 40
bigvoice_SaveState
Client's JSon config interfacing, 48
bigvoice_SetInstanceBus
Instance's bus, 65
bigvoice_SetInstanceTracing
Instance tracing (Windows only), 64
bigvoice_SetInstanceTracingProcessActivity
Instance tracing (Windows only), 64
bigvoice_SetLoggerCallback
Global setup, 63
bigvoice_SetLogSeverity
Global setup, 63
bigvoice_SetMetadata
Metadata Management, 67
bigvoice_SetMetadataMulti
Metadata Management, 67
bigvoice_SetParameter
Process creation/destruction, 72
bigvoice_SetPresetManager
Custom preset managagement, 54
bigvoice_StartUpdateThread
Update Management, 80
bigvoice_StereoToMono
Audio convert helpers, 34
bigvoice_StereoToMono_Planar
Audio convert helpers, 34
bigvoice_StopUpdateThread
Update Management, 80
bigvoice_storage_exists
Custom preset managagement, 50
bigvoice_storage_getall
Custom preset managagement, 50
bigvoice_storage_getall_free
Custom preset managagement, 51
bigvoice_storage_reader
Custom preset managagement, 51
bigvoice_storage_reader_free
Custom preset managagement, 51
bigvoice_storage_remove
Custom preset managagement, 52
bigvoice_storage_rename
Custom preset managagement, 52
bigvoice_storage_writer

Custom preset managagement, 52
bigvoice_TerminateProcess
Process creation/destruction, 72
bigvoice_WaitUpdateThreadReady
Update Management, 80
bigvoice_Webserver
Web server, 82
bigvoice_Webserver_FreeString
Web server, 82
bigvoice_Webserver_GetAppHealth
Web server, 83
bigvoice_Webserver_SetAppHealth
Web server, 83
bigvoice_Webserver_Status
Web server, 83
bigvoice_Webserver_Stop
Web server, 84
bigvoice_Webserver_tcp
Web server, 84
bigvoice_Webserver_tcp2
Web server, 85
buffer
sound4::AuxiliaryOutputInfos, 119
SOUND4_AuxiliaryOutputInfos, 216

CAudioConverter
sound4::bigvoice::CAudioConverter, 122
sound4::bigvoice::dyn::CAudioConverter, 125
sound4::CAudioConverter, 128
sound4::CProcessor, 205
CBus
sound4::bigvoice::CBus, 131
sound4::bigvoice::dyn::CBus, 132
sound4::CBus, 133
sound4::CProcessor, 205
CClient
sound4::bigvoice::CInstance::CClient, 135
sound4::bigvoice::dyn::CInstance::CClient, 136
sound4::CInstance::CClient, 137
CDynLib
sound4::bigvoice::dyn::CDynLib, 140
CDynLoader
sound4::bigvoice::dyn::helper::CDynLoader, 152
sound4::helper::CDynLoader, 155
change_kind_created
Custom preset managagement, 53
sound4, 89
change_kind_deleted
Custom preset managagement, 53
sound4, 89
change_kind_modified
Custom preset managagement, 53
sound4, 89
CHANNEL_COUNT
sound4.bigvoice.cl-pipe.cpp, 229
channel_count
sound4::AuxiliaryOutputInfos, 119
SOUND4_AuxiliaryOutputInfos, 216
CHUNK_SIZE
sound4.bigvoice.cl-pipe.cpp, 229
ChunkFrames
sound4::bigvoice, 96
sound4::bigvoice::dyn, 105
CInstance
sound4::bigvoice::CInstance, 158
sound4::bigvoice::dyn::CInstance, 171
sound4::CBus, 134
sound4::CInstance, 183
sound4::CProcessor, 205
Client's JSon config interfacing, 46
bigvoice_DeleteClient, 47
bigvoice_FreeJsonAnswer, 47
bigvoice_NewClient, 47
bigvoice_ProcessJson, 48
bigvoice_SaveState, 48
Close
sound4::bigvoice::dyn::helper::CDynLoader, 153
sound4::helper::CDynLoader, 155
Configure
sound4::bigvoice::CAudioConverter, 123
sound4::bigvoice::dyn::CAudioConverter, 125
sound4::CAudioConverter, 129
ConverterTargetMode
Audio convert helpers (C++), 36
ConverterTargetMode_AsInput
Audio convert helpers, 30
Audio convert helpers (C++), 36
ConverterTargetMode_Mono
Audio convert helpers, 30
Audio convert helpers (C++), 36
ConverterTargetMode_MonoToStereo
Audio convert helpers, 30
Audio convert helpers (C++), 36
ConverterTargetMode_Stereo
Audio convert helpers, 30
Audio convert helpers (C++), 36
ConverterTargetMode_StereoToMono
Audio convert helpers, 30
Audio convert helpers (C++), 36
ConvertFrom
sound4::bigvoice::CAudioConverter, 123
sound4::bigvoice::dyn::CAudioConverter, 127
sound4::CAudioConverter, 129
ConvertTo
sound4::bigvoice::CAudioConverter, 124
sound4::bigvoice::dyn::CAudioConverter, 127
sound4::CAudioConverter, 130
CPresetLoader
sound4::bigvoice::CPresetLoader, 194
sound4::bigvoice::dyn::CPresetLoader, 196
sound4::CPresetLoader, 198
CProcessor
sound4::CProcessor, 201
Create
sound4::bigvoice::CInstance, 159
sound4::bigvoice::dyn::CInstance, 171
sound4::CInstance, 184

Custom preset managagement, 49
bigvoice_PresetChange_Kind, 53
bigvoice_PresetManager_InformChange, 53
bigvoice_SetPresetManager, 54
bigvoice_storage_exists, 50
bigvoice_storage_getall, 50
bigvoice_storage_getall_free, 51
bigvoice_storage_reader, 51
bigvoice_storage_reader_free, 51
bigvoice_storage_remove, 52
bigvoice_storage_rename, 52
bigvoice_storage_writer, 52
change_kind_created, 53
change_kind_deleted, 53
change_kind_modified, 53
fs_char, 53

Delete
sound4::bigvoice::CAudioConverter, 124
sound4::bigvoice::dyn::CAudioConverter, 128
sound4::CAudioConverter, 130
DeleteClient
sound4::bigvoice::dyn::CDynLib, 142
Deprecated List, 17
description
sound4::AuxiliaryOutputInfos, 120
SOUND4_AuxiliaryOutputInfos, 216
Direct processing, 54
bigvoice_GetBufferIn, 55
bigvoice_GetBufferOut, 55
bigvoice_GetEstimatedDelay, 56
bigvoice_ProcessAudio, 56
bigvoice_ProcessAudio_Planar, 57
doc_examples.h, 219
doc_gencpp.h, 219
doc_json.h, 219
doc_main.h, 220
doc_params.h, 220
documentation.h, 220
DynFuncHolder
sound4::bigvoice::dyn::helper::DynFuncHolder< T >, 206
sound4::helper::DynFuncHolder< T >, 208

Environment variables and parameters, 13
error
Global setup, 60
sound4, 88
Examples, 57
Exists
MyPresetManager, 210
sound4::bigvoice::CPresetLoader, 195
sound4::bigvoice::dyn::CPresetLoader, 196
sound4::CPresetLoader, 198
ExitProcess
sound4::bigvoice::dyn::CDynLib, 142

F32_BE
Audio managing (any audio), 40
sound4, 89
F32_LE
Audio managing (any audio), 40
sound4, 89
F32_NATIVE
Audio managing (any audio), 40
sound4, 89
fatal
Global setup, 60
sound4, 88
FreeAudioConverter
sound4::bigvoice::dyn::CDynLib, 142
FreeBus
sound4::bigvoice::dyn::CDynLib, 142
FreeJsonAnswer
sound4::bigvoice::dyn::CDynLib, 143
FreeMetadataInfos
sound4::bigvoice::dyn::CDynLib, 143
FreeParameters
sound4::bigvoice::dyn::CDynLib, 143
FreeParameterValue
sound4::bigvoice::dyn::CDynLib, 143
fs_char
Custom preset managagement, 53
sound4cl_cdef.h, 296

Generic C++ access to SOUND4 .CL librairies, 3
Get
sound4::bigvoice::CBus, 132
sound4::bigvoice::dyn::CBus, 133
sound4::CBus, 134
GetAll
MyPresetManager, 210
sound4::bigvoice::CPresetLoader, 195
sound4::bigvoice::dyn::CPresetLoader, 196
sound4::CPresetLoader, 198
GetAudio
sound4::bigvoice::CInstance, 160
sound4::bigvoice::dyn::CDynLib, 143
sound4::bigvoice::dyn::CInstance, 172
sound4::CInstance, 185
GetAudioConverter
sound4::bigvoice::dyn::CDynLib, 143
GetAudioInputCount
sound4::bigvoice, 92
sound4::bigvoice::dyn, 99
sound4::bigvoice::dyn::CDynLib, 143
sound4::CProcessor, 201
GetAudioOutputCount
sound4::bigvoice, 92
sound4::bigvoice::dyn, 100
sound4::bigvoice::dyn::CDynLib, 144
sound4::CProcessor, 201
GetAuxiliaryAudioOutputInfos
sound4::bigvoice::CInstance, 160
GetBufferIn
sound4::bigvoice::CInstance, 160
sound4::bigvoice::dyn::CDynLib, 144
sound4::bigvoice::dyn::CInstance, 172

sound4::CInstance, 185
GetBufferOut
sound4::bigvoice::CInstance, 160
sound4::bigvoice::dyn::CDynLib, 144
sound4::bigvoice::dyn::CInstance, 172
sound4::CInstance, 185
GetBytesFromFormat
sound4::bigvoice, 92
sound4::bigvoice::dyn, 100
sound4::bigvoice::dyn::CDynLib, 144
sound4::CProcessor, 201
GetChannelCount
sound4::bigvoice, 93
sound4::bigvoice::dyn, 100
sound4::bigvoice::dyn::CDynLib, 144
sound4::CProcessor, 202
GetChunkFrames
sound4::bigvoice::CInstance, 161
sound4::bigvoice::dyn::CInstance, 173
sound4::CInstance, 185
GetChunkSizeInFrames
sound4::bigvoice, 93
sound4::bigvoice::dyn, 101
sound4::bigvoice::dyn::CDynLib, 144
sound4::CProcessor, 202
GetEnv
sound4.bigvoice.cl-pipe-cxx.cpp, 221
sound4.bigvoice.cl-pipe-dyn.cpp, 224
sound4cl-pipe.cpp, 234
GetEstimatedDelay
sound4::bigvoice::CInstance, 161
sound4::bigvoice::dyn::CDynLib, 144
sound4::bigvoice::dyn::CInstance, 173
sound4::CInstance, 186
GetFormatFromName
sound4::bigvoice, 93
sound4::bigvoice::dyn, 101
sound4::bigvoice::dyn::CDynLib, 145
sound4::CProcessor, 202
GetFormatName
sound4::bigvoice, 94
sound4::bigvoice::dyn, 102
sound4::bigvoice::dyn::CDynLib, 145
sound4::CProcessor, 203
GetMaxPacketFrame
sound4::bigvoice::dyn::CDynLib, 145
GetMetadataInfos
sound4::bigvoice::CInstance, 161
sound4::bigvoice::dyn::CDynLib, 145
sound4::bigvoice::dyn::CInstance, 173
sound4::CInstance, 186
GetOutputCount
sound4::bigvoice::dyn::CDynLib, 145
GetParam
sound4::bigvoice::CInstance, 162
sound4::bigvoice::dyn::CInstance, 174
sound4::CInstance, 186
GetParameter
sound4::bigvoice::dyn::CDynLib, 145
GetPossibleChunkSizeInFrames
sound4::bigvoice, 94
sound4::bigvoice::dyn, 102
sound4::bigvoice::dyn::CDynLib, 145
sound4::CProcessor, 203
GetPrefixSymbol
sound4::CProcessor, 203
GetProcessChunkFrames
sound4::bigvoice::dyn::CDynLib, 146
GetSampleRate
sound4::bigvoice, 94
sound4::bigvoice::dyn, 103
sound4::bigvoice::dyn::CDynLib, 146
sound4::CProcessor, 204
GetSymbol
sound4::bigvoice::dyn::helper::CDynLoader, 153
sound4::helper::CDynLoader, 155
GetSymbol_safe
sound4::bigvoice::dyn::helper::CDynLoader, 153
sound4::helper::CDynLoader, 155
GetThisLibraryPath
sound4::bigvoice::dyn::helper::CDynLoader, 153
sound4::helper::CDynLoader, 156
GetVersion
sound4::bigvoice, 95
sound4::bigvoice::dyn, 103
sound4::bigvoice::dyn::CDynLib, 146
sound4::CProcessor, 204
GetWebServerAppHealth
sound4::bigvoice::CInstance, 162
sound4::bigvoice::dyn::CInstance, 174
sound4::CInstance, 187
Global setup, 58
BIGVOICE_AUDIO_INPUT_COUNT, 59
BIGVOICE_AUDIO_OUTPUT_COUNT, 59
BIGVOICE_AUDIOFRAME_COUNT, 59
BIGVOICE_CHANNEL_COUNT, 59
bigvoice_GetAudioInputCount, 61
bigvoice_GetAudioOutputCount, 61
bigvoice_GetChannelCount, 61
bigvoice_GetChunkSizeInFrames, 61
bigvoice_GetPossibleChunkSizeInFrames, 62
bigvoice_GetSampleRate, 62
bigvoice_GetVersion, 62
bigvoice_loggerfn, 60
bigvoice_LogSeverity, 60
BIGVOICE_SAMPLE_RATE, 59
bigvoice_SetLoggerCallback, 63
bigvoice_SetLogSeverity, 63
error, 60
fatal, 60
info, 60
none, 60
SOUND4_GetProcessInfo, 63
verbose, 60
verbose2, 60
verbose3, 60

verbose4, 60
verbose5, 60
warning, 60

id
sound4::AuxiliaryOutputInfos, 120
SOUND4_AuxiliaryOutputInfos, 216
info
Global setup, 60
sound4, 88
InitProcess
sound4::bigvoice::dyn::CDynLib, 146
InitProcess2
sound4::bigvoice::dyn::CDynLib, 146
InitProcess3
sound4::bigvoice::dyn::CDynLib, 146
InputChannels
sound4::bigvoice, 96
sound4::bigvoice::dyn, 105
InputSampleSize
sound4::bigvoice, 96
sound4::bigvoice::dyn, 106
Instance tracing (Windows only), 64
bigvoice_SetInstanceTracing, 64
bigvoice_SetInstanceTracingProcessActivity, 64
Instance's bus, 65
bigvoice_FreeBus, 65
bigvoice_NewBus, 65
bigvoice_SetInstanceBus, 65
INVALID_FORMAT
Audio managing (any audio), 40
sound4, 89
IsOK
sound4::bigvoice::CAudioConverter, 124
sound4::bigvoice::dyn::CAudioConverter, 128
sound4::CAudioConverter, 130
IsOk
sound4::bigvoice::CInstance, 162
sound4::bigvoice::dyn::CDynLib, 140
sound4::bigvoice::dyn::CInstance, 174
sound4::bigvoice::dyn::helper::CDynLoader, 153
sound4::bigvoice::dyn::helper::DynFuncHolder< T >, 207
sound4::CInstance, 187
sound4::CProcessor, 204
sound4::helper::CDynLoader, 156
sound4::helper::DynFuncHolder< T >, 208
IsReadOnly
MyPresetManager, 211
sound4::bigvoice::CPresetLoader, 195
sound4::bigvoice::dyn::CPresetLoader, 197
sound4::CPresetLoader, 199

JSON syntax, 5
JSON syntax for internal setup, 9

Load
sound4::bigvoice::dyn::CDynLib, 140
sound4::bigvoice::dyn::helper::CDynLoader, 153
sound4::CProcessor, 204
sound4::helper::CDynLoader, 156
log_cb_t
sound4, 88
sound4::bigvoice, 91
sound4::bigvoice::dyn, 99
LogSeverity
sound4, 88
sound4::bigvoice, 91
sound4::bigvoice::dyn, 99

main
sound4.bigvoice.cl-pipe-cxx.cpp, 221
sound4.bigvoice.cl-pipe-dyn.cpp, 224
sound4.bigvoice.cl-pipe.cpp, 230
sound4cl-pipe.cpp, 234
Metadata Management, 66
bigvoice_FreeMetadataInfos, 66
bigvoice_GetMetadataInfos, 67
bigvoice_SetMetadata, 67
bigvoice_SetMetadataMulti, 67
MonoToStereo
Audio convert helpers (C++), 37
sound4::bigvoice::dyn::CDynLib, 146
sound4::bigvoice::dyn::helper, 109
sound4::bigvoice::helper, 114
MonoToStereo_Planar
Audio convert helpers (C++), 38
sound4::bigvoice::dyn::CDynLib, 147
sound4::bigvoice::dyn::helper, 110
sound4::bigvoice::helper, 115
MyLogger
sound4.bigvoice.cl-pipe-cxx.cpp, 221
sound4.bigvoice.cl-pipe-dyn.cpp, 225
sound4.bigvoice.cl-pipe.cpp, 230
MyPresetManager, 209
~MyPresetManager, 210
Exists, 210
GetAll, 210
IsReadOnly, 211
MyPresetManager, 210
Read, 211
Remove, 211
Rename, 212
SetupPath, 212
Write, 212

name
SOUND4_ProcessInfo, 217
NewBus
sound4::bigvoice::dyn::CDynLib, 147
NewClient
sound4::bigvoice::CInstance, 162
sound4::bigvoice::dyn::CDynLib, 147
sound4::bigvoice::dyn::CInstance, 174
sound4::CInstance, 187
NewParameters
sound4::bigvoice::dyn::CDynLib, 147
none

Global setup, 60
sound4, 88

OnUpdateThreadStart
sound4::bigvoice::CInstance, 163
sound4::bigvoice::dyn::CInstance, 175
sound4::CInstance, 187
OnUpdateThreadStop
sound4::bigvoice::CInstance, 163
sound4::bigvoice::dyn::CInstance, 175
sound4::CInstance, 187
operator bool
sound4::bigvoice::dyn::helper::CDynLoader, 153
sound4::bigvoice::dyn::helper::DynFuncHolder< T >, 207
sound4::helper::CDynLoader, 156
sound4::helper::DynFuncHolder< T >, 208
operator T*
sound4::bigvoice::dyn::helper::DynFuncHolder< T >, 207
sound4::helper::DynFuncHolder< T >, 208
operator=
sound4::bigvoice::CInstance, 163
sound4::bigvoice::CInstance::CClient, 135
sound4::bigvoice::dyn::CInstance, 175
sound4::bigvoice::dyn::CInstance::CClient, 136
sound4::bigvoice::dyn::helper::CDynLoader, 154
sound4::CInstance, 188
sound4::CInstance::CClient, 138
sound4::helper::CDynLoader, 156
OutputChannels
sound4::bigvoice, 96
sound4::bigvoice::dyn, 106
OutputSampleSize
sound4::bigvoice, 97
sound4::bigvoice::dyn, 106

prefix
SOUND4_ProcessInfo, 217
PresetChange_Kind
sound4, 88
sound4::bigvoice, 91
sound4::bigvoice::dyn, 99
PresetManager_InformChange
sound4::bigvoice::CInstance, 163
sound4::bigvoice::dyn::CDynLib, 147
sound4::bigvoice::dyn::CInstance, 175
sound4::CInstance, 188
Process creation/destruction, 68
bigvoice_ExitProcess, 68
bigvoice_FreeParameters, 69
bigvoice_FreeParameterValue, 69
bigvoice_GetParameter, 69
bigvoice_GetProcessChunkFrames, 69
bigvoice_InitProcess, 70
bigvoice_InitProcess2, 70
bigvoice_InitProcess3, 70
bigvoice_NewParameters, 71
bigvoice_SetParameter, 72
bigvoice_TerminateProcess, 72
process_name
sound4::bigvoice, 97
sound4::bigvoice::dyn, 106
process_shortname
sound4::bigvoice, 97
sound4::bigvoice::dyn, 106
ProcessAnyAudio
sound4::bigvoice::CInstance, 164
sound4::bigvoice::dyn::CInstance, 176
sound4::CInstance, 188
ProcessAudio
sound4::bigvoice::CInstance, 164
sound4::bigvoice::dyn::CDynLib, 147
sound4::bigvoice::dyn::CInstance, 176
sound4::CInstance, 189
ProcessAudio_Planar
sound4::bigvoice::CInstance, 164
sound4::bigvoice::dyn::CDynLib, 147
sound4::bigvoice::dyn::CInstance, 176
sound4::CInstance, 189
ProcessJson
sound4::bigvoice::CInstance::CClient, 135
sound4::bigvoice::dyn::CDynLib, 148
sound4::bigvoice::dyn::CInstance::CClient, 136
sound4::CInstance::CClient, 138
ProcessLoop
sound4.bigvoice.cl-pipe-cxx.cpp, 221
sound4.bigvoice.cl-pipe-dyn.cpp, 225
sound4.bigvoice.cl-pipe.cpp, 230
sound4cl-pipe.cpp, 235

Read
MyPresetManager, 211
sound4::bigvoice::CPresetLoader, 195
sound4::bigvoice::dyn::CPresetLoader, 197
sound4::CPresetLoader, 199
Remove
MyPresetManager, 211
sound4::bigvoice::CPresetLoader, 195
sound4::bigvoice::dyn::CPresetLoader, 197
sound4::CPresetLoader, 199
Rename
MyPresetManager, 212
sound4::bigvoice::CPresetLoader, 195
sound4::bigvoice::dyn::CPresetLoader, 197
sound4::CPresetLoader, 199

S16_BE
Audio managing (any audio), 40
sound4, 89
S16_LE
Audio managing (any audio), 40
sound4, 89
S16_NATIVE
Audio managing (any audio), 40
sound4, 89
S24_BE
Audio managing (any audio), 40

sound4, 89
S24_LE
Audio managing (any audio), 40
sound4, 89
S24_NATIVE
Audio managing (any audio), 40
sound4, 89
S32_BE
Audio managing (any audio), 40
sound4, 89
S32_LE
Audio managing (any audio), 40
sound4, 89
S32_NATIVE
Audio managing (any audio), 40
sound4, 89
Sample using C interface, 72
Sample using C++ interface wrapper, 74
Sample using C++ interface wrapper with dynamic library loading, 75
Sample using Generic C++ interface (multi-process compatible), 77
SAMPLE_RATE
sound4.bigvoice.cl-pipe.cpp, 229
sample_rate
sound4::AuxiliaryOutputInfos, 120
SOUND4_AuxiliaryOutputInfos, 216
SampleFormat
sound4, 89
sound4::bigvoice, 91
sound4::bigvoice::dyn, 99
SampleRate
sound4::bigvoice, 97
sound4::bigvoice::dyn, 107
SanityCheck
sound4::bigvoice, 95
sound4::bigvoice::dyn, 103
SaveState
sound4::bigvoice::CInstance, 165
sound4::bigvoice::dyn::CDynLib, 148
sound4::bigvoice::dyn::CInstance, 177
sound4::CInstance, 189
SetBus
sound4::bigvoice::CInstance, 165
sound4::bigvoice::dyn::CInstance, 177
sound4::CInstance, 190
SetInstanceBus
sound4::bigvoice::dyn::CDynLib, 148
SetInstanceTracing
sound4::bigvoice::CInstance, 165
sound4::bigvoice::dyn::CDynLib, 148
sound4::bigvoice::dyn::CInstance, 177
sound4::CInstance, 190
SetInstanceTracingProcessActivity
sound4::bigvoice::CInstance, 166
sound4::bigvoice::dyn::CDynLib, 148
sound4::bigvoice::dyn::CInstance, 178
sound4::CInstance, 190
SetLoggerCallback
sound4::bigvoice, 95
sound4::bigvoice::dyn, 105
sound4::bigvoice::dyn::CDynLib, 148
sound4::CProcessor, 205
SetLogSeverity
sound4::bigvoice, 95
sound4::bigvoice::dyn, 105
sound4::bigvoice::dyn::CDynLib, 148
sound4::CProcessor, 205
SetMetadata
sound4::bigvoice::CInstance, 166
sound4::bigvoice::dyn::CDynLib, 149
sound4::bigvoice::dyn::CInstance, 178
sound4::CInstance, 191
SetMetadataMulti
sound4::bigvoice::CInstance, 166
sound4::bigvoice::dyn::CDynLib, 149
sound4::bigvoice::dyn::CInstance, 178
sound4::CInstance, 191
SetParam
sound4::bigvoice::CInstance, 167
sound4::bigvoice::dyn::CInstance, 179
sound4::CInstance, 191
SetParameter
sound4::bigvoice::dyn::CDynLib, 149
SetPresetManager
sound4::bigvoice::CInstance, 167
sound4::bigvoice::dyn::CDynLib, 149
sound4::bigvoice::dyn::CInstance, 179
sound4::CInstance, 192
SetupPath
MyPresetManager, 212
SetWebServerAppHealth
sound4::bigvoice::CInstance, 167
sound4::bigvoice::dyn::CInstance, 179
sound4::CInstance, 192
shortname
SOUND4_ProcessInfo, 217
sound4, 87
_log_cb, 90
_log_cb_c, 89
change_kind_created, 89
change_kind_deleted, 89
change_kind_modified, 89
error, 88
F32_BE, 89
F32_LE, 89
F32_NATIVE, 89
fatal, 88
info, 88
INVALID_FORMAT, 89
log_cb_t, 88
LogSeverity, 88
none, 88
PresetChange_Kind, 88
S16_BE, 89
S16_LE, 89

S16_NATIVE, 89
S24_BE, 89
S24_LE, 89
S24_NATIVE, 89
S32_BE, 89
S32_LE, 89
S32_NATIVE, 89
SampleFormat, 89
verbose, 88
verbose2, 88
verbose3, 88
verbose4, 88
verbose5, 88
warning, 88
SOUND4 BIGVOICE.CL Library, 1
sound4.bigvoice.cl-pipe-cxx.cpp, 220, 222
GetEnv, 221
main, 221
MyLogger, 221
ProcessLoop, 221
Usage, 221
sound4.bigvoice.cl-pipe-dyn.cpp, 224, 226
GetEnv, 224
main, 224
MyLogger, 225
ProcessLoop, 225
Usage, 225
sound4.bigvoice.cl-pipe.cpp, 229, 231
CHANNEL_COUNT, 229
CHUNK_SIZE, 229
main, 230
MyLogger, 230
ProcessLoop, 230
SAMPLE_RATE, 229
Usage, 230
sound4.bigvoice.cl.h, 239
BIGVOICE_DECL, 242
BIGVOICE_HAS_CLOUDBUS, 242
BIGVOICE_HAS_WEBSERVER, 242
TraceLoggingHProvider, 242
sound4.bigvoice.cl.hpp, 247
bigvoice_custom_exists, 249
bigvoice_custom_getall, 249
bigvoice_custom_getall_free, 250
bigvoice_custom_reader, 250
bigvoice_custom_reader_free, 250
bigvoice_custom_remove, 250
bigvoice_custom_rename, 250
bigvoice_custom_writer, 250
sound4.bigvoice.cl_dyn.hpp, 259
bigvoice_custom_exists, 262
bigvoice_custom_getall, 262
bigvoice_custom_getall_free, 262
bigvoice_custom_reader, 262
bigvoice_custom_reader_free, 262
bigvoice_custom_remove, 263
bigvoice_custom_rename, 263
bigvoice_custom_writer, 263
UNIXLIKE, 262
sound4::AuxiliaryOutputInfos, 119
buffer, 119
channel_count, 119
description, 120
id, 120
sample_rate, 120
sound4::bigvoice, 90
_log_cb, 96
_log_cb_c, 92
ChunkFrames, 96
GetAudioInputCount, 92
GetAudioOutputCount, 92
GetBytesFromFormat, 92
GetChannelCount, 93
GetChunkSizeInFrames, 93
GetFormatFromName, 93
GetFormatName, 94
GetPossibleChunkSizeInFrames, 94
GetSampleRate, 94
GetVersion, 95
InputChannels, 96
InputSampleSize, 96
log_cb_t, 91
LogSeverity, 91
OutputChannels, 96
OutputSampleSize, 97
PresetChange_Kind, 91
process_name, 97
process_shortname, 97
SampleFormat, 91
SampleRate, 97
SanityCheck, 95
SetLoggerCallback, 95
SetLogSeverity, 95
sound4::bigvoice::CAudioConverter, 122
~CAudioConverter, 122
CAudioConverter, 122
Configure, 123
ConvertFrom, 123
ConvertTo, 124
Delete, 124
IsOK, 124
sound4::bigvoice::CBus, 131
~CBus, 131
CBus, 131
Get, 132
sound4::bigvoice::CInstance, 157
~CInstance, 158
ActivateAuxiliaryAudioID, 159
AddAudio, 159
CInstance, 158
Create, 159
GetAudio, 160
GetAuxiliaryAudioOutputInfos, 160
GetBufferIn, 160
GetBufferOut, 160
GetChunkFrames, 161

GetEstimatedDelay, 161
GetMetadataInfos, 161
GetParam, 162
GetWebServerAppHealth, 162
IsOk, 162
NewClient, 162
OnUpdateThreadStart, 163
OnUpdateThreadStop, 163
operator=, 163
PresetManager_InformChange, 163
ProcessAnyAudio, 164
ProcessAudio, 164
ProcessAudio_Planar, 164
SaveState, 165
SetBus, 165
SetInstanceTracing, 165
SetInstanceTracingProcessActivity, 166
SetMetadata, 166
SetMetadataMulti, 166
SetParam, 167
SetPresetManager, 167
SetWebServerAppHealth, 167
StartWebServer, 168
Stop, 168
StopWebServer, 168
Terminate, 169
sound4::bigvoice::CInstance::CClient, 134
~CClient, 135
CClient, 135
operator=, 135
ProcessJson, 135
sound4::bigvoice::CPresetLoader, 194
~CPresetLoader, 194
CPresetLoader, 194
Exists, 195
GetAll, 195
IsReadOnly, 195
Read, 195
Remove, 195
Rename, 195
Write, 195
sound4::bigvoice::dyn, 98
_log_cb, 105
_log_cb_c, 99
ChunkFrames, 105
GetAudioInputCount, 99
GetAudioOutputCount, 100
GetBytesFromFormat, 100
GetChannelCount, 100
GetChunkSizeInFrames, 101
GetFormatFromName, 101
GetFormatName, 102
GetPossibleChunkSizeInFrames, 102
GetSampleRate, 103
GetVersion, 103
InputChannels, 105
InputSampleSize, 106
log_cb_t, 99
LogSeverity, 99
OutputChannels, 106
OutputSampleSize, 106
PresetChange_Kind, 99
process_name, 106
process_shortname, 106
SampleFormat, 99
SampleRate, 107
SanityCheck, 103
SetLoggerCallback, 105
SetLogSeverity, 105
sound4::bigvoice::dyn::CAudioConverter, 124
~CAudioConverter, 125
CAudioConverter, 125
Configure, 125
ConvertFrom, 127
ConvertTo, 127
Delete, 128
IsOK, 128
sound4::bigvoice::dyn::CBus, 132
~CBus, 132
CBus, 132
Get, 133
sound4::bigvoice::dyn::CDynLib, 138
AddAudio, 141
AddPadAudio, 141
AudioConverter_From, 141
AudioConverter_To, 141
AudioConvertFrom, 141
AudioConvertTo, 142
AudioMonoFromLiveStereo, 142
AudioMonoToLiveStereo, 142
CDynLib, 140
DeleteClient, 142
ExitProcess, 142
FreeAudioConverter, 142
FreeBus, 142
FreeJsonAnswer, 143
FreeMetadataInfos, 143
FreeParameters, 143
FreeParameterValue, 143
GetAudio, 143
GetAudioConverter, 143
GetAudioInputCount, 143
GetAudioOutputCount, 144
GetBufferIn, 144
GetBufferOut, 144
GetBytesFromFormat, 144
GetChannelCount, 144
GetChunkSizeInFrames, 144
GetEstimatedDelay, 144
GetFormatFromName, 145
GetFormatName, 145
GetMaxPacketFrame, 145
GetMetadataInfos, 145
GetOutputCount, 145
GetParameter, 145
GetPossibleChunkSizeInFrames, 145

GetProcessChunkFrames, 146
GetSampleRate, 146
GetVersion, 146
InitProcess, 146
InitProcess2, 146
InitProcess3, 146
IsOk, 140
Load, 140
MonoToStereo, 146
MonoToStereo_Planar, 147
NewBus, 147
NewClient, 147
NewParameters, 147
PresetManager_InformChange, 147
ProcessAudio, 147
ProcessAudio_Planar, 147
ProcessJson, 148
SaveState, 148
SetInstanceBus, 148
SetInstanceTracing, 148
SetInstanceTracingProcessActivity, 148
SetLoggerCallback, 148
SetLogSeverity, 148
SetMetadata, 149
SetMetadataMulti, 149
SetParameter, 149
SetPresetManager, 149
StartUpdateThread, 149
StereoToMono, 149
StereoToMono_Planar, 149
StopUpdateThread, 150
TerminateProcess, 150
WaitUpdateThreadReady, 150
Webserver, 150
Webserver_FreeString, 150
Webserver_GetAppHealth, 150
Webserver_SetAppHealth, 150
Webserver_Status, 151
Webserver_Stop, 151
Webserver_tcp, 151
Webserver_tcp2, 151
sound4::bigvoice::dyn::CInstance, 169
~CInstance, 171
AddAudio, 171
CInstance, 171
Create, 171
GetAudio, 172
GetBufferIn, 172
GetBufferOut, 172
GetChunkFrames, 173
GetEstimatedDelay, 173
GetMetadataInfos, 173
GetParam, 174
GetWebServerAppHealth, 174
IsOk, 174
NewClient, 174
OnUpdateThreadStart, 175
OnUpdateThreadStop, 175
operator=, 175
PresetManager_InformChange, 175
ProcessAnyAudio, 176
ProcessAudio, 176
ProcessAudio_Planar, 176
SaveState, 177
SetBus, 177
SetInstanceTracing, 177
SetInstanceTracingProcessActivity, 178
SetMetadata, 178
SetMetadataMulti, 178
SetParam, 179
SetPresetManager, 179
SetWebServerAppHealth, 179
StartWebServer, 180
Stop, 180
StopWebServer, 180
Terminate, 181
sound4::bigvoice::dyn::CInstance::CClient, 136
~CClient, 136
CClient, 136
operator=, 136
ProcessJson, 136
sound4::bigvoice::dyn::CPresetLoader, 196
~CPresetLoader, 196
CPresetLoader, 196
Exists, 196
GetAll, 196
IsReadOnly, 197
Read, 197
Remove, 197
Rename, 197
Write, 197
sound4::bigvoice::dyn::helper, 107
AudioConvertFrom, 108
AudioConvertTo, 108
AudioMonoFromLiveStereo, 109
AudioMonoToLiveStereo, 109
MonoToStereo, 109
MonoToStereo_Planar, 110
StereoToMono, 110
StereoToMono_Planar, 111
UTF8ToWString, 111
WStringToUTF8, 112
sound4::bigvoice::dyn::helper::CDynLoader, 151
~CDynLoader, 152
CDynLoader, 152
Close, 153
GetSymbol, 153
GetSymbol_safe, 153
GetThisLibraryPath, 153
IsOk, 153
Load, 153
operator bool, 153
operator=, 154
sound4::bigvoice::dyn::helper::DynFuncHolder< T >, 206
DynFuncHolder, 206

IsOk, 207
operator bool, 207
operator T∗, 207
sound4::bigvoice::dyn::helper::SampleFormat< T >, 213
sound4::bigvoice::helper, 112
AudioConvertFrom, 113
AudioConvertTo, 113
AudioMonoFromLiveStereo, 113
AudioMonoToLiveStereo, 114
MonoToStereo, 114
MonoToStereo_Planar, 115
StereoToMono, 115
StereoToMono_Planar, 115
UTF8ToWString, 116
WStringToUTF8, 116
sound4::bigvoice::helper::SampleFormat< T >, 213
sound4::CAudioConverter, 128
∼CAudioConverter, 129
CAudioConverter, 128
Configure, 129
ConvertFrom, 129
ConvertTo, 130
Delete, 130
IsOK, 130
sound4::CBus, 133
∼CBus, 133
CBus, 133
CInstance, 134
Get, 134
sound4::CInstance, 181
∼CInstance, 183
AddAudio, 184
CInstance, 183
Create, 184
GetAudio, 185
GetBufferIn, 185
GetBufferOut, 185
GetChunkFrames, 185
GetEstimatedDelay, 186
GetMetadataInfos, 186
GetParam, 186
GetWebServerAppHealth, 187
IsOk, 187
NewClient, 187
OnUpdateThreadStart, 187
OnUpdateThreadStop, 187
operator=, 188
PresetManager_InformChange, 188
ProcessAnyAudio, 188
ProcessAudio, 189
ProcessAudio_Planar, 189
SaveState, 189
SetBus, 190
SetInstanceTracing, 190
SetInstanceTracingProcessActivity, 190
SetMetadata, 191
SetMetadataMulti, 191
SetParam, 191
SetPresetManager, 192
SetWebServerAppHealth, 192
StartWebServer, 192
Stop, 193
StopWebServer, 193
Terminate, 193
sound4::CInstance::CClient, 137
∼CClient, 138
CClient, 137
operator=, 138
ProcessJson, 138
sound4::CPresetLoader, 198
∼CPresetLoader, 198
CPresetLoader, 198
Exists, 198
GetAll, 198
IsReadOnly, 199
Read, 199
Remove, 199
Rename, 199
Write, 199
sound4::CProcessor, 200
CAudioConverter, 205
CBus, 205
CInstance, 205
CProcessor, 201
GetAudioInputCount, 201
GetAudioOutputCount, 201
GetBytesFromFormat, 201
GetChannelCount, 202
GetChunkSizeInFrames, 202
GetFormatFromName, 202
GetFormatName, 203
GetPossibleChunkSizeInFrames, 203
GetPrefixSymbol, 203
GetSampleRate, 204
GetVersion, 204
IsOk, 204
Load, 204
SetLoggerCallback, 205
SetLogSeverity, 205
sound4::helper, 117
UTF8ToWString, 117
WStringToUTF8, 117
sound4::helper::CDynLoader, 154
∼CDynLoader, 155
CDynLoader, 155
Close, 155
GetSymbol, 155
GetSymbol_safe, 155
GetThisLibraryPath, 156
IsOk, 156
Load, 156
operator bool, 156
operator=, 156
sound4::helper::DynFuncHolder< T >, 207
DynFuncHolder, 208

IsOk, 208
operator bool, 208
operator T∗, 208
sound4::helper::SampleFormat< T >, 215
SOUND4_AuxiliaryOutputInfos, 215
buffer, 216
channel_count, 216
description, 216
id, 216
sample_rate, 216
SOUND4_GetProcessInfo
Global setup, 63
SOUND4_INVALID_WEBSERVER_ID
sound4cl_cdef.h, 295
Web server, 81
SOUND4_ProcessInfo, 216
name, 217
prefix, 217
shortname, 217
struct_size, 217
version, 217
SOUND4_WEBSERVER_HTTP_OK
sound4cl_cdef.h, 295
Web server, 81
SOUND4_WEBSERVER_HTTPS_OK
sound4cl_cdef.h, 295
Web server, 82
sound4cl-pipe.cpp, 234, 236
GetEnv, 234
main, 234
ProcessLoop, 235
sound4cl.hpp, 278
UNIXLIKE, 280
sound4cl_cdef.h, 295
fs_char, 296
SOUND4_INVALID_WEBSERVER_ID, 295
SOUND4_WEBSERVER_HTTP_OK, 295
SOUND4_WEBSERVER_HTTPS_OK, 295
TraceLoggingHProvider, 296
StartUpdateThread
sound4::bigvoice::dyn::CDynLib, 149
StartWebServer
sound4::bigvoice::CInstance, 168
sound4::bigvoice::dyn::CInstance, 180
sound4::CInstance, 192
StereoToMono
Audio convert helpers (C++), 38
sound4::bigvoice::dyn::CDynLib, 149
sound4::bigvoice::dyn::helper, 110
sound4::bigvoice::helper, 115
StereoToMono_Planar
Audio convert helpers (C++), 39
sound4::bigvoice::dyn::CDynLib, 149
sound4::bigvoice::dyn::helper, 111
sound4::bigvoice::helper, 115
Stop
sound4::bigvoice::CInstance, 168
sound4::bigvoice::dyn::CInstance, 180
sound4::CInstance, 193
StopUpdateThread
sound4::bigvoice::dyn::CDynLib, 150
StopWebServer
sound4::bigvoice::CInstance, 168
sound4::bigvoice::dyn::CInstance, 180
sound4::CInstance, 193
struct_size
SOUND4_ProcessInfo, 217

Terminate
sound4::bigvoice::CInstance, 169
sound4::bigvoice::dyn::CInstance, 181
sound4::CInstance, 193
TerminateProcess
sound4::bigvoice::dyn::CDynLib, 150
TraceLoggingHProvider
sound4.bigvoice.cl.h, 242
sound4cl_cdef.h, 296

UNIXLIKE
sound4.bigvoice.cl_dyn.hpp, 262
sound4cl.hpp, 280
Update Management, 79
bigvoice_StartUpdateThread, 80
bigvoice_StopUpdateThread, 80
bigvoice_WaitUpdateThreadReady, 80
Usage
sound4.bigvoice.cl-pipe-cxx.cpp, 221
sound4.bigvoice.cl-pipe-dyn.cpp, 225
sound4.bigvoice.cl-pipe.cpp, 230
UTF8ToWString
sound4::bigvoice::dyn::helper, 111
sound4::bigvoice::helper, 116
sound4::helper, 117

verbose
Global setup, 60
sound4, 88
verbose2
Global setup, 60
sound4, 88
verbose3
Global setup, 60
sound4, 88
verbose4
Global setup, 60
sound4, 88
verbose5
Global setup, 60
sound4, 88
version
SOUND4_ProcessInfo, 217

WaitUpdateThreadReady
sound4::bigvoice::dyn::CDynLib, 150
warning
Global setup, 60
sound4, 88

Web server, 81
bigvoice_Webserver, 82
bigvoice_Webserver_FreeString, 82
bigvoice_Webserver_GetAppHealth, 83
bigvoice_Webserver_SetAppHealth, 83
bigvoice_Webserver_Status, 83
bigvoice_Webserver_Stop, 84
bigvoice_Webserver_tcp, 84
bigvoice_Webserver_tcp2, 85
SOUND4_INVALID_WEBSERVER_ID, 81
SOUND4_WEBSERVER_HTTP_OK, 81
SOUND4_WEBSERVER_HTTPS_OK, 82
Webserver
sound4::bigvoice::dyn::CDynLib, 150
Webserver_FreeString
sound4::bigvoice::dyn::CDynLib, 150
Webserver_GetAppHealth
sound4::bigvoice::dyn::CDynLib, 150
Webserver_SetAppHealth
sound4::bigvoice::dyn::CDynLib, 150
Webserver_Status
sound4::bigvoice::dyn::CDynLib, 151
Webserver_Stop
sound4::bigvoice::dyn::CDynLib, 151
Webserver_tcp
sound4::bigvoice::dyn::CDynLib, 151
Webserver_tcp2
sound4::bigvoice::dyn::CDynLib, 151
Write
MyPresetManager, 212
sound4::bigvoice::CPresetLoader, 195
sound4::bigvoice::dyn::CPresetLoader, 197
sound4::CPresetLoader, 199
WStringToUTF8
sound4::bigvoice::dyn::helper, 112
sound4::bigvoice::helper, 116
sound4::helper, 117