# vxgcloudagent

1.3.2

Generated by Doxygen 1.8.17

**1 VXG Cloud Agent Library** 1

**2 Build System** 3

2.0.1 Overview . . . 3

2.0.2 C++ Toolchain Requirements . . . 3

2.0.3 Build system installation . . . 3

**3 Application Development** 5

3.1 Overview . . . 5

3.2 Examples . . . 5

3.2.1 Minimal application example . . . 5

3.2.2 Complete application example . . . 7

3.2.3 Linking application against the VXG Agent Cloud Library . . . 10

**4 Library Compilation Guide** 13

4.0.1 Library build process . . . 13

4.0.2 Cross-compilation . . . 13

**5 Deprecated List** 15

**6 Hierarchical Index** 17

6.1 Class Hierarchy . . . 17

**7 Data Structure Index** 19

7.1 Data Structures . . . 19

**8 File Index** 23

8.1 File List . . . 23

**9 Namespace Documentation** 25

9.1 nlohmann Namespace Reference . . . 25

9.2 std Namespace Reference . . . 25

9.2.1 Function Documentation . . . 43

9.2.1.1 make_unique() . . . 43

9.3 vxg Namespace Reference . . . 43

9.4 vxg::cloud Namespace Reference . . . 44

9.4.1 Typedef Documentation . . . 44

9.4.1.1 duration . . . 44

9.4.1.2 time . . . 45

9.4.1.3 timed_storage_ptr . . . 45

9.4.2 Function Documentation . . . 45

9.4.2.1 operator<() . . . 45

9.5 vxg::cloud::agent Namespace Reference . . . 45

9.5.1 Detailed Description . . . 46

9.5.2 Typedef Documentation . . . 47

9.5.2.1 event_manager_ptr . . . 47
9.5.2.2 event_state_ptr . . . 47
9.5.2.3 synchronizer_ptr . . . 47
9.5.3 Function Documentation . . . 47
9.5.3.1 version() . . . 47
9.6 vxg::cloud::agent::media Namespace Reference . . . 47
9.6.1 Typedef Documentation . . . 48
9.6.1.1 stream_ptr . . . 48
9.7 vxg::cloud::agent::proto Namespace Reference . . . 48
9.7.1 Typedef Documentation . . . 50
9.7.1.1 wifi_list . . . 50
9.7.2 Enumeration Type Documentation . . . 50
9.7.2.1 audio_file_format . . . 50
9.7.2.2 audio_format . . . 50
9.7.2.3 event_status . . . 51
9.7.2.4 event_type . . . 51
9.7.2.5 memorycard_status . . . 52
9.7.2.6 mode . . . 52
9.7.2.7 motion_region_shape . . . 52
9.7.2.8 motion_sensitivity . . . 53
9.7.2.9 ptz_action . . . 53
9.7.2.10 ptz_preset_action . . . 53
9.7.2.11 time_format_n . . . 54
9.7.2.12 video_format . . . 54
9.7.2.13 wifi_encryption . . . 54
9.7.2.14 wifi_network_state . . . 55
9.7.3 Function Documentation . . . 55
9.7.3.1 name() . . . 55
9.8 vxg::cloud::sync Namespace Reference . . . 55
9.8.1 Typedef Documentation . . . 56
9.8.1.1 timeline_ptr . . . 56
9.9 vxg::cloud::time_spec Namespace Reference . . . 56
9.9.1 Detailed Description . . . 56
9.9.2 Typedef Documentation . . . 56
9.9.2.1 duration . . . 56
9.9.2.2 precision . . . 57
9.9.2.3 precision_ratio . . . 57
9.10 vxg::cloud::utils Namespace Reference . . . 57
9.10.1 Typedef Documentation . . . 58
9.10.1.1 queued_async_handler_ptr . . . 58
9.10.2 Function Documentation . . . 58
9.10.2.1 dirname() . . . 58

9.10.2.2 random_string() . . . 58
9.10.2.3 set_thread_name() . . . 58
9.10.2.4 string_contains() [1/2] . . . 58
9.10.2.5 string_contains() [2/2] . . . 59
9.10.2.6 string_endswith() . . . 59
9.10.2.7 string_format() . . . 59
9.10.2.8 string_replace() . . . 59
9.10.2.9 string_split() . . . 59
9.10.2.10 string_startswith() . . . 60
9.10.2.11 string_tolower() . . . 60
9.10.2.12 string_toupper() . . . 60
9.10.2.13 string_trim() [1/2] . . . 60
9.10.2.14 string_trim() [2/2] . . . 60
9.10.2.15 string_urldecode() . . . 60
9.10.2.16 string_urlencode() . . . 60
9.11 vxg::cloud::utils::gcc_abi Namespace Reference . . . 61
9.11.1 Function Documentation . . . 61
9.11.1.1 demangle() . . . 61
9.12 vxg::cloud::utils::motion Namespace Reference . . . 61
9.13 vxg::cloud::utils::time Namespace Reference . . . 61
9.13.1 Function Documentation . . . 62
9.13.1.1 epoch() . . . 62
9.13.1.2 from_double() . . . 62
9.13.1.3 from_iso() . . . 62
9.13.1.4 from_iso2() . . . 62
9.13.1.5 from_iso_packed() . . . 62
9.13.1.6 is_iso() . . . 62
9.13.1.7 is_iso_packed() . . . 63
9.13.1.8 iso_time_valid() . . . 63
9.13.1.9 max() . . . 63
9.13.1.10 now() . . . 63
9.13.1.11 now_ISO8601_UTC() . . . 63
9.13.1.12 now_ISO8601_UTC_packed() . . . 63
9.13.1.13 null() . . . 63
9.13.1.14 to_double() . . . 64
9.13.1.15 to_iso() . . . 64
9.13.1.16 to_iso2() . . . 64
9.13.1.17 to_iso_8601() . . . 64
9.13.1.18 to_iso_local() . . . 64
9.13.1.19 to_iso_packed() . . . 64
9.14 vxg::media Namespace Reference . . . 64
9.14.1 Typedef Documentation . . . 65

9.14.1.1 rtsp_source_ptr . . . 65
9.15 vxg::media::ffmpeg Namespace Reference . . . 65
9.16 vxg::media::stream_error Namespace Reference . . . 65
9.16.1 Detailed Description . . . 66
9.16.2 Enumeration Type Documentation . . . 66
9.16.2.1 error . . . 66
9.16.2.2 origin . . . 66
9.17 vxg::media::Streamer Namespace Reference . . . 67
9.17.1 Typedef Documentation . . . 67
9.17.1.1 on_error_cb . . . 67
9.17.2 Enumeration Type Documentation . . . 67
9.17.2.1 DropDirection . . . 67
9.17.2.2 MediaType . . . 68
9.17.2.3 StreamError . . . 68
9.17.3 Variable Documentation . . . 69
9.17.3.1 SINK_THREAD_PRIO . . . 69
9.17.3.2 SRC_THREAD_PRIO . . . 69

**10 Data Structure Documentation** **71**

10.1 vxg::cloud::agent::access_token Struct Reference . . . 71
10.1.1 Detailed Description . . . 71
10.1.2 Member Typedef Documentation . . . 72
10.1.2.1 ptr . . . 72
10.1.3 Member Function Documentation . . . 72
10.1.3.1 api_uri() . . . 72
10.1.3.2 cam_base_uri() . . . 72
10.1.3.3 pack() . . . 72
10.1.3.4 parse() . . . 72
10.2 alter_bool Struct Reference . . . 73
10.2.1 Detailed Description . . . 73
10.2.2 Member Enumeration Documentation . . . 73
10.2.2.1 n_alter_bool . . . 73
10.2.3 Constructor & Destructor Documentation . . . 74
10.2.3.1 alter_bool() [1/2] . . . 74
10.2.3.2 alter_bool() [2/2] . . . 74
10.2.4 Member Function Documentation . . . 74
10.2.4.1 operator bool() . . . 74
10.2.4.2 operator=() . . . 74
10.2.5 Friends And Related Function Documentation . . . 75
10.2.5.1 from_json . . . 75
10.2.5.2 to_json . . . 75
10.2.6 Field Documentation . . . 75

10.2.6.1 val . . . 75
10.3 vxg::cloud::agent::proto::audio_caps Struct Reference . . . 76
10.3.1 Detailed Description . . . 76
10.3.2 Field Documentation . . . 76
10.3.2.1 audio_file_formats . . . 77
10.3.2.2 backward . . . 77
10.3.2.3 backward_formats . . . 77
10.3.2.4 echo_cancel . . . 77
10.3.2.5 mic . . . 77
10.3.2.6 spkr . . . 78
10.4 vxg::cloud::agent::audio_config Struct Reference . . . 78
10.4.1 Detailed Description . . . 79
10.4.2 Field Documentation . . . 79
10.4.2.1 caps . . . 79
10.4.2.2 echo_cancel . . . 79
10.4.2.3 mic_gain . . . 79
10.4.2.4 mic_mute . . . 79
10.4.2.5 spkr_mute . . . 80
10.4.2.6 spkr_vol . . . 80
10.5 vxg::cloud::agent::audio_detection_config::audio_detection_conf_caps Struct Reference . . . 80
10.5.1 Detailed Description . . . 81
10.5.2 Member Function Documentation . . . 81
10.5.2.1 JSON_DEFINE_TYPE_INTRUSIVE() . . . 81
10.5.3 Field Documentation . . . 81
10.5.3.1 level . . . 81
10.6 vxg::cloud::agent::audio_detection_config Struct Reference . . . 82
10.6.1 Detailed Description . . . 83
10.6.2 Member Function Documentation . . . 83
10.6.2.1 JSON_DEFINE_TYPE_INTRUSIVE() . . . 83
10.6.3 Field Documentation . . . 83
10.6.3.1 caps . . . 83
10.6.3.2 length . . . 83
10.6.3.3 level . . . 84
10.7 vxg::cloud::agent::proto::audio_stream_config Struct Reference . . . 84
10.7.1 Detailed Description . . . 85
10.7.2 Field Documentation . . . 85
10.7.2.1 brt . . . 85
10.7.2.2 format . . . 85
10.7.2.3 srt . . . 85
10.7.2.4 stream . . . 85
10.8 vxg::media::Streamer::StreamInfo::AudioInfo Struct Reference . . . 86
10.8.1 Detailed Description . . . 86

10.8.2 Field Documentation . . . 86
10.8.2.1 bitrate . . . 87
10.8.2.2 channels . . . 87
10.8.2.3 codec . . . 87
10.8.2.4 extradata . . . 87
10.8.2.5 samplerate . . . 87
10.8.2.6 timebase . . . 88
10.9 vxg::cloud::agent::callback Class Reference . . . 88
10.9.1 Detailed Description . . . 89
10.9.2 Member Typedef Documentation . . . 89
10.9.2.1 ptr . . . 89
10.9.3 Member Function Documentation . . . 90
10.9.3.1 on_audio_file_play() . . . 90
10.9.3.2 on_bye() . . . 90
10.9.3.3 on_cam_ptz() . . . 90
10.9.3.4 on_cam_ptz_preset() . . . 91
10.9.3.5 on_cam_upgrade_firmware() . . . 91
10.9.3.6 on_get_audio_detection() . . . 92
10.9.3.7 on_get_cam_audio_config() . . . 92
10.9.3.8 on_get_cam_video_config() . . . 92
10.9.3.9 on_get_log() . . . 93
10.9.3.10 on_get_memorycard_info() . . . 93
10.9.3.11 on_get_motion_detection_config() . . . 94
10.9.3.12 on_get_osd_config() . . . 94
10.9.3.13 on_get_ptz_config() . . . 94
10.9.3.14 on_get_timezone() . . . 95
10.9.3.15 on_get_wifi_config() . . . 95
10.9.3.16 on_raw_msg() . . . 96
10.9.3.17 on_registered() . . . 96
10.9.3.18 on_set_audio_detection() . . . 96
10.9.3.19 on_set_cam_audio_config() . . . 97
10.9.3.20 on_set_cam_video_config() . . . 97
10.9.3.21 on_set_motion_detection_config() . . . 97
10.9.3.22 on_set_osd_config() . . . 98
10.9.3.23 on_set_timezone() . . . 98
10.9.3.24 on_set_wifi_config() . . . 99
10.9.3.25 on_start_backward_audio() . . . 99
10.9.3.26 on_stop_backward_audio() . . . 100
10.9.3.27 on_trigger_event() . . . 100
10.10 vxg::cloud::agent::proto::stream_caps::caps_audio_object Struct Reference . . . 100
10.10.1 Detailed Description . . . 101
10.10.2 Field Documentation . . . 101

10.10.2.1 brt . . . 101
10.10.2.2 formats . . . 101
10.10.2.3 srt . . . 101
10.10.2.4 streams . . . 102
10.11 vxg::cloud::agent::proto::stream_caps::caps_video_object Struct Reference . . . 102
10.11.1 Detailed Description . . . 103
10.11.2 Field Documentation . . . 103
10.11.2.1 brt . . . 103
10.11.2.2 formats . . . 104
10.11.2.3 fps . . . 104
10.11.2.4 gop . . . 104
10.11.2.5 profiles . . . 104
10.11.2.6 quality . . . 104
10.11.2.7 resolutions . . . 105
10.11.2.8 smoothing . . . 105
10.11.2.9 streams . . . 105
10.11.2.10 vbr . . . 105
10.11.2.11 vbr_brt . . . 105
10.12 vxg::cloud::cloud_storage Class Reference . . . 106
10.12.1 Detailed Description . . . 106
10.12.2 Constructor & Destructor Documentation . . . 107
10.12.2.1 cloud_storage() . . . 107
10.12.2.2 ∼cloud_storage() . . . 107
10.12.3 Member Function Documentation . . . 107
10.12.3.1 erase() . . . 107
10.12.3.2 list() . . . 107
10.12.3.3 load() . . . 108
10.12.3.4 store() . . . 108
10.13 vxg::cloud::agent::event_manager::config Struct Reference . . . 108
10.13.1 Detailed Description . . . 108
10.13.2 Field Documentation . . . 108
10.13.2.1 attach_qos_report_to_motion . . . 109
10.13.2.2 send_qos_report_as_separate_event . . . 109
10.13.2.3 send_qos_report_period_sec . . . 109
10.13.2.4 stateful_event_continuation_kick_snapshot . . . 109
10.14 vxg::cloud::agent::synchronizer::config Struct Reference . . . 110
10.14.1 Detailed Description . . . 110
10.14.2 Field Documentation . . . 110
10.14.2.1 record_by_event_upload_step . . . 110
10.15 vxg::cloud::agent::proto::event_caps Struct Reference . . . 111
10.15.1 Detailed Description . . . 111
10.15.2 Field Documentation . . . 111

10.15.2.1 internal_hidden . . . 112
10.15.2.2 periodic . . . 112
10.15.2.3 snapshot . . . 112
10.15.2.4 state_emulation . . . 112
10.15.2.5 state_emulation_report_delay . . . 112
10.15.2.6 stateful . . . 113
10.15.2.7 stream . . . 113
10.15.2.8 trigger . . . 113
10.16 vxg::cloud::agent::event_config Struct Reference . . . 113
10.16.1 Detailed Description . . . 114
10.16.2 Member Function Documentation . . . 114
10.16.2.1 caps_eq() . . . 114
10.16.2.2 name() . . . 115
10.16.2.3 name_eq() . . . 115
10.16.3 Field Documentation . . . 115
10.16.3.1 active . . . 115
10.16.3.2 caps . . . 116
10.16.3.3 custom_event_name . . . 116
10.16.3.4 event . . . 116
10.16.3.5 period . . . 116
10.16.3.6 snapshot . . . 116
10.16.3.7 stream . . . 117
10.17 vxg::cloud::agent::event_manager Class Reference . . . 117
10.17.1 Detailed Description . . . 117
10.17.2 Member Typedef Documentation . . . 117
10.17.2.1 event_state_report_cb_ptr . . . 118
10.17.2.2 handle_event_payload_cb . . . 118
10.17.3 Constructor & Destructor Documentation . . . 118
10.17.3.1 event_manager() . . . 118
10.17.3.2 ∼event_manager() . . . 118
10.17.4 Member Function Documentation . . . 118
10.17.4.1 get_events() . . . 118
10.17.4.2 notify_event() . . . 119
10.17.4.3 set_events() . . . 119
10.17.4.4 start() . . . 119
10.17.4.5 stop() . . . 119
10.17.4.6 trigger_event() . . . 119
10.18 vxg::cloud::agent::event_state Class Reference . . . 119
10.18.1 Detailed Description . . . 120
10.18.2 Member Typedef Documentation . . . 120
10.18.2.1 event_state_changed_cb_ptr . . . 120
10.18.3 Member Enumeration Documentation . . . 120

10.18.3.1 stream_delivery_mode . . . 120
10.18.4 Constructor & Destructor Documentation . . . 121
10.18.4.1 event_state() [1/3] . . . 121
10.18.4.2 event_state() [2/3] . . . 121
10.18.4.3 ~event_state() . . . 121
10.18.4.4 event_state() [3/3] . . . 121
10.18.5 Member Function Documentation . . . 122
10.18.5.1 active() . . . 122
10.18.5.2 config() . . . 122
10.18.5.3 need_record() . . . 122
10.18.5.4 operator=() . . . 122
10.18.5.5 start() [1/2] . . . 122
10.18.5.6 start() [2/2] . . . 123
10.18.5.7 stateful() . . . 123
10.18.5.8 stop() [1/2] . . . 123
10.18.5.9 stop() [2/2] . . . 123
10.18.6 Friends And Related Function Documentation . . . 123
10.18.6.1 swap . . . 123
10.19 vxg::cloud::agent::event_state::event_state_changed_cb Struct Reference . . . 124
10.19.1 Detailed Description . . . 124
10.19.2 Constructor & Destructor Documentation . . . 124
10.19.2.1 event_state_changed_cb() . . . 124
10.19.2.2 ~event_state_changed_cb() . . . 124
10.19.3 Member Function Documentation . . . 124
10.19.3.1 on_ongoing() . . . 125
10.19.3.2 on_started() . . . 125
10.19.3.3 on_stopped() . . . 125
10.19.3.4 on_triggered() . . . 125
10.20 vxg::cloud::agent::event_manager::event_state_report_cb Struct Reference . . . 126
10.20.1 Detailed Description . . . 126
10.20.2 Constructor & Destructor Documentation . . . 126
10.20.2.1 event_state_report_cb() . . . 127
10.20.2.2 ~event_state_report_cb() . . . 127
10.20.3 Member Function Documentation . . . 127
10.20.3.1 on_event_continue() . . . 127
10.20.3.2 on_event_start() . . . 127
10.20.3.3 on_event_stop() . . . 127
10.20.3.4 on_event_trigger() . . . 128
10.20.3.5 on_need_stream_sync_continue() . . . 128
10.20.3.6 on_need_stream_sync_start() . . . 128
10.20.3.7 on_need_stream_sync_stop() . . . 128
10.21 vxg::cloud::agent::event_stream Class Reference . . . 128

10.21.1 Detailed Description . . . 129
10.21.2 Member Typedef Documentation . . . 129
10.21.2.1 ptr . . . 129
10.21.3 Constructor & Destructor Documentation . . . 130
10.21.3.1 event_stream() . . . 130
10.21.3.2 ~event_stream() . . . 131
10.21.4 Member Function Documentation . . . 131
10.21.4.1 finit() . . . 131
10.21.4.2 get_events() . . . 131
10.21.4.3 init() . . . 132
10.21.4.4 notify() . . . 132
10.21.4.5 set_events() . . . 132
10.21.4.6 set_trigger_recording() . . . 133
10.21.4.7 start() . . . 133
10.21.4.8 stop() . . . 134
10.21.4.9 trigger_event() . . . 134
10.22 vxg::cloud::agent::events_config Struct Reference . . . 134
10.22.1 Detailed Description . . . 135
10.22.2 Member Function Documentation . . . 135
10.22.2.1 get_event_config() . . . 135
10.22.3 Field Documentation . . . 136
10.22.3.1 enabled . . . 136
10.22.3.2 events . . . 136
10.23 vxg::media::Streamer::ISink Class Reference . . . 137
10.23.1 Detailed Description . . . 138
10.23.2 Member Typedef Documentation . . . 138
10.23.2.1 ptr . . . 138
10.23.2.2 PtrU . . . 139
10.23.3 Constructor & Destructor Documentation . . . 139
10.23.3.1 ISink() . . . 139
10.23.3.2 ~ISink() . . . 139
10.23.4 Member Function Documentation . . . 139
10.23.4.1 droppable() . . . 139
10.23.4.2 duration() . . . 140
10.23.4.3 error() . . . 140
10.23.4.4 finit() . . . 140
10.23.4.5 init() . . . 141
10.23.4.6 name() . . . 142
10.23.4.7 negotiate() . . . 142
10.23.4.8 process() . . . 143
10.23.4.9 set_eos() . . . 143
10.23.4.10 set_eos_cb() . . . 143

10.23.4.11 set_error_cb() . . . 143
10.23.5 Field Documentation . . . 143
10.23.5.1 on_error_cb_ . . . 144
10.24 vxg::media::Streamer::ISource Class Reference . . . 144
10.24.1 Detailed Description . . . 145
10.24.2 Member Typedef Documentation . . . 145
10.24.2.1 ptr . . . 145
10.24.3 Member Enumeration Documentation . . . 146
10.24.3.1 Mode . . . 146
10.24.4 Constructor & Destructor Documentation . . . 147
10.24.4.1 ISource() . . . 147
10.24.5 Member Function Documentation . . . 147
10.24.5.1 error() . . . 147
10.24.5.2 finit() . . . 148
10.24.5.3 init() . . . 148
10.24.5.4 name() . . . 148
10.24.5.5 negotiate() . . . 149
10.24.5.6 pullFrame() . . . 149
10.24.5.7 pushFrame() . . . 149
10.24.5.8 set_error_cb() . . . 150
10.24.6 Field Documentation . . . 150
10.24.6.1 mode_ . . . 150
10.24.6.2 on_error_cb_ . . . 150
10.25 vxg::cloud::timed_storage::item Struct Reference . . . 150
10.25.1 Detailed Description . . . 151
10.25.2 Member Enumeration Documentation . . . 152
10.25.2.1 data_state . . . 152
10.25.3 Constructor & Destructor Documentation . . . 152
10.25.3.1 item() [1/3] . . . 152
10.25.3.2 item() [2/3] . . . 152
10.25.3.3 item() [3/3] . . . 152
10.25.4 Member Function Documentation . . . 153
10.25.4.1 clear() . . . 153
10.25.4.2 empty() . . . 153
10.25.4.3 operator<() . . . 153
10.25.5 Field Documentation . . . 153
10.25.5.1 category . . . 153
10.25.5.2 data . . . 153
10.25.5.3 media_type . . . 154
10.25.5.4 state . . . 154
10.26 vxg::logger Class Reference . . . 154
10.26.1 Detailed Description . . . 155

10.26.2 Member Typedef Documentation . . . 155
10.26.2.1 logger_ptr . . . 155
10.26.3 Member Enumeration Documentation . . . 156
10.26.3.1 loglevel . . . 156
10.26.4 Member Function Documentation . . . 156
10.26.4.1 critical() . . . 156
10.26.4.2 debug() [1/2] . . . 156
10.26.4.3 debug() [2/2] . . . 157
10.26.4.4 error() [1/2] . . . 157
10.26.4.5 error() [2/2] . . . 157
10.26.4.6 info() [1/2] . . . 157
10.26.4.7 info() [2/2] . . . 158
10.26.4.8 instance() . . . 158
10.26.4.9 reset() [1/2] . . . 158
10.26.4.10 reset() [2/2] . . . 159
10.26.4.11 set_level() . . . 159
10.26.4.12 trace() [1/2] . . . 160
10.26.4.13 trace() [2/2] . . . 160
10.26.4.14 warn() [1/2] . . . 160
10.26.4.15 warn() [2/2] . . . 160
10.27 vxg::cloud::agent::manager Class Reference . . . 161
10.27.1 Detailed Description . . . 163
10.27.2 Member Typedef Documentation . . . 163
10.27.2.1 direct_upload_payload_map . . . 163
10.27.2.2 direct_upload_payload_map_ptr . . . 163
10.27.2.3 ptr . . . 164
10.27.3 Member Function Documentation . . . 164
10.27.3.1 __notify_record_event() . . . 164
10.27.3.2 _update_storage_status() . . . 164
10.27.3.3 create() . . . 164
10.27.3.4 handle_event() . . . 165
10.27.3.5 handle_event_meta_file() . . . 165
10.27.3.6 handle_event_snapshot() . . . 165
10.27.3.7 on_audio_file_play() . . . 165
10.27.3.8 on_cam_memorycard_recording() . . . 165
10.27.3.9 on_cam_memorycard_synchronize() . . . 165
10.27.3.10 on_cam_memorycard_synchronize_cancel() . . . 166
10.27.3.11 on_cam_ptz() . . . 166
10.27.3.12 on_cam_ptz_preset() . . . 166
10.27.3.13 on_cam_upgrade_firmware() . . . 166
10.27.3.14 on_closed() . . . 166
10.27.3.15 on_direct_upload_url() . . . 166

10.27.3.16 on_get_audio_detection() . . . 167
10.27.3.17 on_get_cam_audio_config() . . . 167
10.27.3.18 on_get_cam_events_config() . . . 167
10.27.3.19 on_get_cam_memorycard_timeline() . . . 167
10.27.3.20 on_get_cam_video_config() . . . 167
10.27.3.21 on_get_log() . . . 167
10.27.3.22 on_get_motion_detection_config() . . . 167
10.27.3.23 on_get_osd_config() . . . 168
10.27.3.24 on_get_ptz_config() . . . 168
10.27.3.25 on_get_stream_by_event() . . . 168
10.27.3.26 on_get_stream_caps() . . . 168
10.27.3.27 on_get_stream_config() . . . 168
10.27.3.28 on_get_supported_streams() . . . 168
10.27.3.29 on_get_timezone() . . . 168
10.27.3.30 on_get_wifi_config() . . . 169
10.27.3.31 on_prepared() . . . 169
10.27.3.32 on_raw_message() . . . 169
10.27.3.33 on_registered() . . . 169
10.27.3.34 on_set_activity() . . . 169
10.27.3.35 on_set_audio_detection() . . . 169
10.27.3.36 on_set_cam_audio_config() . . . 169
10.27.3.37 on_set_cam_events_config() . . . 170
10.27.3.38 on_set_cam_video_config() . . . 170
10.27.3.39 on_set_log_enable() . . . 170
10.27.3.40 on_set_motion_detection_config() . . . 170
10.27.3.41 on_set_osd_config() . . . 170
10.27.3.42 on_set_periodic_events() . . . 170
10.27.3.43 on_set_stream_by_event() . . . 170
10.27.3.44 on_set_stream_config() . . . 171
10.27.3.45 on_set_timezone() . . . 171
10.27.3.46 on_set_wifi_config() . . . 171
10.27.3.47 on_start_backward() . . . 171
10.27.3.48 on_stop_backward() . . . 171
10.27.3.49 on_stream_start() . . . 171
10.27.3.50 on_stream_stop() . . . 172
10.27.3.51 on_trigger_event() . . . 172
10.27.3.52 on_update_preview() . . . 172
10.27.3.53 start() . . . 172
10.27.3.54 stop() . . . 172
10.28 vxg::cloud::utils::motion::map Struct Reference . . . 173
10.28.1 Detailed Description . . . 173
10.28.2 Constructor & Destructor Documentation . . . 174

10.28.2.1 map() [1/2] . . . 174
10.28.2.2 map() [2/2] . . . 174
10.28.3 Member Function Documentation . . . 174
10.28.3.1 operator=() . . . 174
10.28.3.2 pack() . . . 174
10.28.3.3 unpack() . . . 174
10.29 vxg::media::Streamer::MediaFrame Struct Reference . . . 175
10.29.1 Detailed Description . . . 176
10.29.2 Member Function Documentation . . . 176
10.29.2.1 operator< () . . . 176
10.29.3 Field Documentation . . . 176
10.29.3.1 data . . . 176
10.29.3.2 dts . . . 177
10.29.3.3 duration . . . 177
10.29.3.4 is_key . . . 177
10.29.3.5 len . . . 177
10.29.3.6 NO_PTS . . . 177
10.29.3.7 pts . . . 178
10.29.3.8 time_realtime . . . 178
10.29.3.9 timescale . . . 178
10.29.3.10 type . . . 178
10.30 vxg::cloud::agent::proto::motion_detection_caps Struct Reference . . . 178
10.30.1 Detailed Description . . . 179
10.30.2 Field Documentation . . . 179
10.30.2.1 max_regions . . . 179
10.30.2.2 region_shape . . . 179
10.30.2.3 sensitivity . . . 179
10.31 vxg::cloud::agent::proto::motion_detection_config Struct Reference . . . 180
10.31.1 Detailed Description . . . 180
10.31.2 Field Documentation . . . 180
10.31.2.1 caps . . . 180
10.31.2.2 columns . . . 181
10.31.2.3 regions . . . 181
10.31.2.4 rows . . . 181
10.32 vxg::cloud::agent::proto::motion_region Struct Reference . . . 181
10.32.1 Detailed Description . . . 182
10.32.2 Field Documentation . . . 182
10.32.2.1 enabled . . . 182
10.32.2.2 map . . . 182
10.32.2.3 region . . . 183
10.32.2.4 sensitivity . . . 183
10.33 vxg::logger::options Struct Reference . . . 183

10.33.1 Detailed Description . . . 184
10.33.2 Field Documentation . . . 184
10.33.2.1 crash_logfile_path . . . 184
10.33.2.2 default_loglevel . . . 184
10.33.2.3 log_pattern . . . 184
10.33.2.4 logfile_max_files . . . 185
10.33.2.5 logfile_max_size . . . 185
10.33.2.6 logfile_path . . . 185
10.33.2.7 syslog_ident . . . 185
10.33.2.8 tcp_logsink_enabled . . . 185
10.33.2.9 tcp_logsink_host . . . 185
10.33.2.10 tcp_logsink_port . . . 186
10.34 vxg::cloud::agent::proto::osd_caps Struct Reference . . . 186
10.34.1 Detailed Description . . . 187
10.34.2 Field Documentation . . . 187
10.34.2.1 alignment . . . 187
10.34.2.2 bkg_color . . . 187
10.34.2.3 bkg_transp . . . 187
10.34.2.4 date . . . 188
10.34.2.5 date_format . . . 188
10.34.2.6 font_color . . . 188
10.34.2.7 font_size . . . 188
10.34.2.8 system_id . . . 189
10.34.2.9 system_id_text . . . 189
10.34.2.10 time . . . 189
10.34.2.11 time_format . . . 189
10.35 vxg::cloud::agent::osd_config Struct Reference . . . 190
10.35.1 Detailed Description . . . 191
10.35.2 Field Documentation . . . 191
10.35.2.1 alignment . . . 191
10.35.2.2 bkg_color . . . 191
10.35.2.3 bkg_transp . . . 191
10.35.2.4 caps . . . 191
10.35.2.5 date . . . 192
10.35.2.6 date_format . . . 192
10.35.2.7 font_color . . . 192
10.35.2.8 font_size . . . 192
10.35.2.9 system_id . . . 192
10.35.2.10 system_id_text . . . 193
10.35.2.11 time . . . 193
10.35.2.12 time_format . . . 193
10.36 vxg::cloud::period Struct Reference . . . 193

10.36.1 Detailed Description . . . 194
10.36.2 Constructor & Destructor Documentation . . . 194
10.36.2.1 period() [1/2] . . . 195
10.36.2.2 period() [2/2] . . . 195
10.36.3 Member Function Documentation . . . 195
10.36.3.1 clear() . . . 195
10.36.3.2 duration() . . . 195
10.36.3.3 intersects() . . . 195
10.36.3.4 is_null() . . . 196
10.36.3.5 is_open() . . . 196
10.36.3.6 is_valid() . . . 196
10.36.3.7 operator<() . . . 196
10.36.4 Field Documentation . . . 196
10.36.4.1 begin . . . 196
10.36.4.2 end . . . 197
10.37 vxg::cloud::agent::access_token::proxy_config Struct Reference . . . 197
10.37.1 Detailed Description . . . 197
10.37.2 Field Documentation . . . 198
10.37.2.1 socks4 . . . 198
10.37.2.2 socks5 . . . 198
10.38 vxg::cloud::agent::ptz_command Struct Reference . . . 198
10.38.1 Detailed Description . . . 198
10.38.2 Field Documentation . . . 199
10.38.2.1 action . . . 199
10.38.2.2 tm . . . 199
10.39 vxg::cloud::agent::ptz_config Struct Reference . . . 199
10.39.1 Detailed Description . . . 200
10.39.2 Field Documentation . . . 200
10.39.2.1 actions . . . 200
10.39.2.2 maximum_number_of_presets . . . 200
10.39.2.3 presets . . . 201
10.40 vxg::cloud::agent::ptz_preset Struct Reference . . . 201
10.40.1 Detailed Description . . . 201
10.40.2 Field Documentation . . . 202
10.40.2.1 action . . . 202
10.40.2.2 name . . . 202
10.40.2.3 token . . . 202
10.41 vxg::cloud::utils::queued_async_handler< T > Class Template Reference . . . 202
10.41.1 Detailed Description . . . 203
10.41.2 Member Typedef Documentation . . . 203
10.41.2.1 handler_func . . . 203
10.41.3 Constructor & Destructor Documentation . . . 203

10.41.3.1 queued_async_handler() . . . 203
10.41.3.2 ~queued_async_handler() . . . 203
10.41.4 Member Function Documentation . . . 204
10.41.4.1 get_handler() . . . 204
10.41.4.2 push() . . . 204
10.41.4.3 set_handler() . . . 204
10.41.4.4 start() . . . 204
10.41.4.5 stop() . . . 204
10.42 vxg::media::stream_error::report Struct Reference . . . 205
10.42.1 Detailed Description . . . 205
10.42.2 Field Documentation . . . 205
10.42.2.1 code . . . 205
10.42.2.2 from . . . 205
10.43 vxg::media::rtmp_sink Class Reference . . . 206
10.43.1 Detailed Description . . . 207
10.43.2 Constructor & Destructor Documentation . . . 207
10.43.2.1 rtmp_sink() . . . 207
10.43.3 Member Function Documentation . . . 207
10.43.3.1 droppable() . . . 207
10.43.3.2 init() . . . 208
10.43.3.3 name() . . . 209
10.43.3.4 negotiate() . . . 209
10.44 vxg::media::rtmp_source Class Reference . . . 210
10.44.1 Detailed Description . . . 211
10.44.2 Member Function Documentation . . . 211
10.44.2.1 init() . . . 211
10.45 vxg::media::rtsp_source Class Reference . . . 212
10.45.1 Detailed Description . . . 214
10.45.2 Member Enumeration Documentation . . . 214
10.45.2.1 transport . . . 214
10.45.3 Constructor & Destructor Documentation . . . 214
10.45.3.1 rtsp_source() . . . 214
10.45.4 Member Function Documentation . . . 215
10.45.4.1 __transport_to_ff() . . . 215
10.45.4.2 init() . . . 215
10.45.4.3 name() . . . 216
10.45.5 Field Documentation . . . 216
10.45.5.1 ffmpeg_opts_ . . . 216
10.46 vxg::cloud::agent::media::rtsp_stream Class Reference . . . 216
10.46.1 Detailed Description . . . 217
10.46.2 Member Typedef Documentation . . . 217
10.46.2.1 ptr . . . 217

10.46.3 Constructor & Destructor Documentation . . . 217
10.46.3.1 rtsp_stream() . . . 217
10.46.3.2 ~rtsp_stream() . . . 218
10.46.4 Member Function Documentation . . . 218
10.46.4.1 start() . . . 218
10.47 vxg::cloud::agent::synchronizer::segmenter Struct Reference . . . 219
10.47.1 Detailed Description . . . 220
10.47.2 Member Typedef Documentation . . . 220
10.47.2.1 ptr . . . 220
10.47.3 Constructor & Destructor Documentation . . . 220
10.47.3.1 ~segmenter() . . . 220
10.47.4 Member Function Documentation . . . 221
10.47.4.1 intersects() . . . 221
10.47.4.2 operator<() . . . 221
10.47.5 Field Documentation . . . 221
10.47.5.1 canceled . . . 221
10.47.5.2 chunks_done . . . 221
10.47.5.3 chunks_failed . . . 221
10.47.5.4 chunks_planned . . . 222
10.47.5.5 cur_seg_start . . . 222
10.47.5.6 cur_seg_stop . . . 222
10.47.5.7 delay . . . 222
10.47.5.8 final_sync_status_reported . . . 222
10.47.5.9 finished . . . 222
10.47.5.10 last_processed_time . . . 223
10.47.5.11 processed . . . 223
10.47.5.12 realtime . . . 223
10.47.5.13 step . . . 223
10.47.5.14 sync_status_cb . . . 223
10.47.5.15 ticket . . . 223
10.48 vxg::media::ffmpeg::Sink Class Reference . . . 224
10.48.1 Detailed Description . . . 225
10.48.2 Constructor & Destructor Documentation . . . 225
10.48.2.1 Sink() . . . 225
10.48.2.2 ~Sink() . . . 225
10.48.3 Member Function Documentation . . . 226
10.48.3.1 droppable() . . . 226
10.48.3.2 duration() . . . 226
10.48.3.3 error() . . . 226
10.48.3.4 finit() . . . 227
10.48.3.5 init() [1/2] . . . 227
10.48.3.6 init() [2/2] . . . 228

10.48.3.7 name() . . . 228
10.48.3.8 negotiate() . . . 228
10.48.3.9 stop() . . . 229
10.49 vxg::media::ffmpeg::Source Class Reference . . . 229
10.49.1 Detailed Description . . . 230
10.49.2 Constructor & Destructor Documentation . . . 231
10.49.2.1 Source() . . . 231
10.49.2.2 ~Source() . . . 231
10.49.3 Member Function Documentation . . . 231
10.49.3.1 finit() . . . 231
10.49.3.2 init() [1/3] . . . 231
10.49.3.3 init() [2/3] . . . 232
10.49.3.4 init() [3/3] . . . 232
10.49.3.5 name() . . . 233
10.49.3.6 negotiate() . . . 233
10.49.3.7 pullFrame() . . . 233
10.49.3.8 stop() . . . 234
10.50 vxg::media::stream Class Reference . . . 234
10.50.1 Detailed Description . . . 236
10.50.2 Member Typedef Documentation . . . 236
10.50.2.1 on_error_cb . . . 236
10.50.2.2 ptr . . . 236
10.50.3 Constructor & Destructor Documentation . . . 236
10.50.3.1 stream() . . . 236
10.50.3.2 ~stream() . . . 237
10.50.4 Member Function Documentation . . . 237
10.50.4.1 finit_sink() . . . 237
10.50.4.2 finit_source() . . . 237
10.50.4.3 init_sink() . . . 237
10.50.4.4 init_source() . . . 238
10.50.4.5 set_on_error_cb() . . . 238
10.50.5 Field Documentation . . . 239
10.50.5.1 sink_ . . . 239
10.50.5.2 source_ . . . 239
10.51 vxg::cloud::agent::media::stream Class Reference . . . 239
10.51.1 Detailed Description . . . 240
10.51.2 Member Typedef Documentation . . . 240
10.51.2.1 ptr . . . 240
10.51.3 Constructor & Destructor Documentation . . . 240
10.51.3.1 stream() . . . 240
10.51.3.2 ~stream() . . . 241
10.52 vxg::cloud::agent::media::stream_callbacks Class Reference . . . 241

10.52.1 Detailed Description . . . 242
10.52.2 Constructor & Destructor Documentation . . . 242
10.52.2.1 stream_callbacks() . . . 242
10.52.2.2 ~stream_callbacks() . . . 243
10.52.3 Member Function Documentation . . . 243
10.52.3.1 get_snapshot() . . . 243
10.52.3.2 get_stream_caps() . . . 243
10.52.3.3 get_stream_config() . . . 244
10.52.3.4 get_supported_stream() . . . 244
10.52.3.5 record_export() . . . 245
10.52.3.6 record_get_list() . . . 245
10.52.3.7 record_needs_source() . . . 246
10.52.3.8 set_stream_config() . . . 246
10.52.3.9 start_record() . . . 246
10.52.3.10 stop_record() . . . 247
10.53 vxg::cloud::agent::media::stream_callbacks_stub Class Reference . . . 247
10.53.1 Detailed Description . . . 248
10.53.2 Constructor & Destructor Documentation . . . 248
10.53.2.1 stream_callbacks_stub() . . . 249
10.53.2.2 ~stream_callbacks_stub() . . . 249
10.53.3 Member Function Documentation . . . 249
10.53.3.1 get_snapshot() . . . 249
10.53.3.2 get_stream_caps() . . . 249
10.53.3.3 get_stream_config() . . . 250
10.53.3.4 get_supported_stream() . . . 250
10.53.3.5 record_export() . . . 250
10.53.3.6 record_get_list() . . . 251
10.53.3.7 set_stream_config() . . . 251
10.53.3.8 start_record() . . . 252
10.53.3.9 stop_record() . . . 252
10.54 vxg::cloud::agent::proto::stream_caps Struct Reference . . . 253
10.54.1 Detailed Description . . . 253
10.54.2 Field Documentation . . . 253
10.54.2.1 caps_audio . . . 254
10.54.2.2 caps_video . . . 254
10.55 vxg::cloud::agent::proto::stream_config Struct Reference . . . 254
10.55.1 Detailed Description . . . 255
10.55.2 Field Documentation . . . 255
10.55.2.1 audio . . . 255
10.55.2.2 video . . . 255
10.56 vxg::cloud::stream_storage Class Reference . . . 255
10.56.1 Detailed Description . . . 256

10.56.2 Member Typedef Documentation . . . 256
10.56.2.1 ptr . . . 256
10.56.3 Constructor & Destructor Documentation . . . 257
10.56.3.1 stream_storage() . . . 257
10.56.3.2 ~stream_storage() . . . 257
10.56.4 Member Function Documentation . . . 257
10.56.4.1 erase() . . . 257
10.56.4.2 list() . . . 257
10.56.4.3 load() . . . 258
10.56.4.4 store() . . . 258
10.56.4.5 store_async() . . . 258
10.57 vxg::media::Streamer::StreamInfo Struct Reference . . . 258
10.57.1 Detailed Description . . . 259
10.57.2 Member Enumeration Documentation . . . 259
10.57.2.1 AudioCodec . . . 259
10.57.2.2 DataCodec . . . 260
10.57.2.3 StreamType . . . 260
10.57.2.4 VideoCodec . . . 261
10.57.3 Field Documentation . . . 261
10.57.3.1 audio . . . 261
10.57.3.2 type . . . 261
10.57.3.3 video . . . 261
10.58 vxg::cloud::agent::supported_stream_config Struct Reference . . . 262
10.58.1 Detailed Description . . . 262
10.58.2 Field Documentation . . . 262
10.58.2.1 audio . . . 262
10.58.2.2 id . . . 263
10.58.2.3 video . . . 263
10.59 vxg::cloud::agent::supported_streams_config Struct Reference . . . 263
10.59.1 Detailed Description . . . 264
10.59.2 Field Documentation . . . 264
10.59.2.1 audio_es . . . 264
10.59.2.2 streams . . . 264
10.59.2.3 video_es . . . 264
10.60 vxg::cloud::agent::synchronizer::sync_request Struct Reference . . . 265
10.60.1 Detailed Description . . . 265
10.60.2 Field Documentation . . . 265
10.60.2.1 segmenter . . . 265
10.61 vxg::cloud::agent::synchronizer Class Reference . . . 265
10.61.1 Detailed Description . . . 266
10.61.2 Member Typedef Documentation . . . 266
10.61.2.1 ptr . . . 266

10.61.2.2 segmenter_ptr . . . 267
10.61.2.3 sync_request_ptr . . . 267
10.61.2.4 sync_status_report_cb . . . 267
10.61.3 Member Enumeration Documentation . . . 267
10.61.3.1 sync_request_status . . . 267
10.61.4 Member Function Documentation . . . 267
10.61.4.1 create() . . . 268
10.61.4.2 start() . . . 268
10.61.4.3 stop() . . . 268
10.61.4.4 sync() . . . 268
10.61.4.5 sync_cancel() . . . 268
10.61.4.6 sync_finalize() . . . 269
10.62 vxg::cloud::timed_storage Class Reference . . . 269
10.62.1 Detailed Description . . . 270
10.62.2 Member Typedef Documentation . . . 270
10.62.2.1 async_store_finished_cb . . . 270
10.62.2.2 async_store_is_canceled_cb . . . 270
10.62.2.3 item_ptr . . . 270
10.62.3 Constructor & Destructor Documentation . . . 270
10.62.3.1 timed_storage() . . . 270
10.62.3.2 ∼timed_storage() . . . 270
10.62.4 Member Function Documentation . . . 271
10.62.4.1 erase() . . . 271
10.62.4.2 finit() . . . 271
10.62.4.3 init() . . . 271
10.62.4.4 list() . . . 271
10.62.4.5 load() . . . 271
10.62.4.6 store() . . . 272
10.62.4.7 store_async() . . . 272
10.63 vxg::cloud::timeline< T > Class Template Reference . . . 272
10.63.1 Detailed Description . . . 272
10.63.2 Constructor & Destructor Documentation . . . 272
10.63.2.1 timeline() [1/2] . . . 273
10.63.2.2 timeline() [2/2] . . . 273
10.63.3 Member Function Documentation . . . 273
10.63.3.1 _squash_periods() . . . 273
10.63.3.2 slices() . . . 273
10.64 vxg::cloud::sync::timeline Class Reference . . . 273
10.64.1 Detailed Description . . . 274
10.64.2 Member Typedef Documentation . . . 274
10.64.2.1 async_store_finished_cb . . . 274
10.64.2.2 async_store_is_canceled_cb . . . 274

10.64.3 Constructor & Destructor Documentation . . . 274
10.64.3.1 timeline() . . . 275
10.64.3.2 ~timeline() . . . 275
10.64.4 Member Function Documentation . . . 275
10.64.4.1 _squash_periods() . . . 275
10.64.4.2 finit() . . . 275
10.64.4.3 init() . . . 275
10.64.4.4 list() . . . 276
10.64.4.5 load() . . . 276
10.64.4.6 slices() . . . 276
10.64.4.7 store() . . . 276
10.64.4.8 store_async() . . . 276
10.65 vxg::cloud::utils::uri Struct Reference . . . 277
10.65.1 Detailed Description . . . 277
10.65.2 Member Function Documentation . . . 277
10.65.2.1 parse() . . . 278
10.65.3 Field Documentation . . . 278
10.65.3.1 fragment . . . 278
10.65.3.2 host . . . 278
10.65.3.3 password . . . 278
10.65.3.4 path . . . 278
10.65.3.5 port . . . 279
10.65.3.6 query . . . 279
10.65.3.7 scheme . . . 279
10.65.3.8 user . . . 279
10.66 vxg::cloud::agent::proto::video_caps Struct Reference . . . 279
10.66.1 Detailed Description . . . 280
10.66.2 Field Documentation . . . 280
10.66.2.1 brightness . . . 280
10.66.2.2 contrast . . . 281
10.66.2.3 horz_flip . . . 281
10.66.2.4 ir_light . . . 281
10.66.2.5 nr_level . . . 281
10.66.2.6 nr_type . . . 281
10.66.2.7 pwr_frequency . . . 282
10.66.2.8 saturation . . . 282
10.66.2.9 sharpness . . . 282
10.66.2.10 tdn . . . 282
10.66.2.11 vert_flip . . . 282
10.66.2.12 wb_type . . . 283
10.67 vxg::cloud::agent::proto::video_clip_info Struct Reference . . . 283
10.67.1 Detailed Description . . . 284

10.67.2 Field Documentation . . . 284
10.67.2.1 data . . . 284
10.67.2.2 local_start . . . 284
10.67.2.3 local_stop . . . 284
10.67.2.4 tp_start . . . 284
10.67.2.5 tp_stop . . . 285
10.67.2.6 video_height . . . 285
10.67.2.7 video_width . . . 285
10.68 vxg::cloud::agent::proto::video_config Struct Reference . . . 285
10.68.1 Detailed Description . . . 287
10.68.2 Field Documentation . . . 287
10.68.2.1 brightness . . . 287
10.68.2.2 caps . . . 287
10.68.2.3 contrast . . . 287
10.68.2.4 horz_flip . . . 288
10.68.2.5 ir_light . . . 288
10.68.2.6 nr_level . . . 288
10.68.2.7 nr_type . . . 288
10.68.2.8 pwr_frequency . . . 288
10.68.2.9 saturation . . . 289
10.68.2.10 sharpness . . . 289
10.68.2.11 tdn . . . 289
10.68.2.12 vert_flip . . . 289
10.68.2.13 wb_type . . . 289
10.69 vxg::cloud::agent::proto::video_stream_config Struct Reference . . . 290
10.69.1 Detailed Description . . . 291
10.69.2 Field Documentation . . . 291
10.69.2.1 brt . . . 291
10.69.2.2 format . . . 291
10.69.2.3 fps . . . 291
10.69.2.4 gop . . . 291
10.69.2.5 horz . . . 292
10.69.2.6 profile . . . 292
10.69.2.7 quality . . . 292
10.69.2.8 smoothing . . . 292
10.69.2.9 stream . . . 292
10.69.2.10 vbr . . . 293
10.69.2.11 vbr_brt . . . 293
10.69.2.12 vert . . . 293
10.70 vxg::media::Streamer::StreamInfo::VideoInfo Struct Reference . . . 293
10.70.1 Detailed Description . . . 294
10.70.2 Field Documentation . . . 294

10.70.2.1 bitrate . . . 294
10.70.2.2 codec . . . 294
10.70.2.3 extradata . . . 295
10.70.2.4 framerate . . . 295
10.70.2.5 height . . . 295
10.70.2.6 timebase . . . 295
10.70.2.7 width . . . 295
10.71 vxg::cloud::agent::proto::wifi_config Struct Reference . . . 296
10.71.1 Detailed Description . . . 296
10.71.2 Field Documentation . . . 296
10.71.2.1 networks . . . 296
10.72 vxg::cloud::agent::proto::wifi_network Struct Reference . . . 297
10.72.1 Detailed Description . . . 297
10.72.2 Field Documentation . . . 297
10.72.2.1 encryption . . . 298
10.72.2.2 encryption_caps . . . 298
10.72.2.3 mac . . . 298
10.72.2.4 password . . . 298
10.72.2.5 signal . . . 298
10.72.2.6 ssid . . . 298

**11 File Documentation** **299**

11.1 app-dev.md File Reference . . . 299
11.2 arm-example.txt File Reference . . . 299
11.3 base_streamer.h File Reference . . . 299
11.3.1 Macro Definition Documentation . . . 301
11.3.1.1 __BASE_STREAMER_H . . . 301
11.4 build-system.md File Reference . . . 301
11.5 callback.h File Reference . . . 301
11.6 caps.h File Reference . . . 302
11.6.1 Macro Definition Documentation . . . 304
11.6.1.1 ignore_exception . . . 305
11.6.2 Typedef Documentation . . . 305
11.6.2.1 json . . . 305
11.7 cloud-agent-minimal.cc File Reference . . . 305
11.7.1 Function Documentation . . . 306
11.7.1.1 main() . . . 306
11.7.1.2 parse_args() . . . 306
11.7.1.3 signal_handler() . . . 306
11.7.2 Variable Documentation . . . 306
11.7.2.1 agent_config . . . 306
11.7.2.2 props . . . 307

11.7.2.3 quit . . . 307
11.7.2.4 rtsp_url . . . 307
11.7.2.5 vxg_cloud_token . . . 307
11.8 cloud-agent.cc File Reference . . . 307
11.8.1 Function Documentation . . . 308
11.8.1.1 main() . . . 308
11.8.1.2 parse_args() . . . 308
11.8.1.3 signal_handler() . . . 309
11.8.2 Variable Documentation . . . 309
11.8.2.1 agent_config . . . 309
11.8.2.2 props . . . 309
11.8.2.3 quit . . . 309
11.8.2.4 rtsp_url . . . 309
11.8.2.5 vxg_cloud_token . . . 310
11.9 compile.md File Reference . . . 310
11.10 config.h File Reference . . . 310
11.10.1 Detailed Description . . . 313
11.11 event-manager.h File Reference . . . 313
11.12 event-state.h File Reference . . . 314
11.13 event-stream.h File Reference . . . 315
11.14 ffmpeg_sink.h File Reference . . . 316
11.15 ffmpeg_source.cc File Reference . . . 317
11.16 ffmpeg_source.h File Reference . . . 317
11.17 logging.h File Reference . . . 318
11.18 mainpage.md File Reference . . . 319
11.19 manager.h File Reference . . . 319
11.20 meson.build File Reference . . . 320
11.21 queued-handler.h File Reference . . . 320
11.22 rtmp_sink.h File Reference . . . 322
11.22.1 Detailed Description . . . 323
11.23 rtmp_source.h File Reference . . . 323
11.23.1 Detailed Description . . . 323
11.24 rtsp-stream.h File Reference . . . 323
11.25 rtsp_source.h File Reference . . . 324
11.25.1 Detailed Description . . . 325
11.26 stream-storage.h File Reference . . . 325
11.27 stream.h File Reference . . . 326
11.28 stream.h File Reference . . . 327
11.29 timeline-synchronizer.h File Reference . . . 328
11.30 timeline.h File Reference . . . 330
11.31 unset-helper.h File Reference . . . 331
11.31.1 Function Documentation . . . 333

11.31.1.1 __is_unset() [1/2] . . . 333
11.31.1.2 __is_unset() [2/2] . . . 334
11.31.1.3 __is_unset< alter_bool >() . . . 334
11.31.1.4 __is_unset< double >() . . . 334
11.31.1.5 __is_unset< int >() . . . 334
11.31.1.6 __is_unset< nlohmann::json >() . . . 335
11.31.1.7 __is_unset< std::nullptr_t >() . . . 335
11.31.1.8 __is_unset< std::string >() . . . 335
11.31.1.9 __is_unset< vxg::cloud::duration >() . . . 336
11.31.1.10 __is_unset< vxg::cloud::time >() . . . 336
11.31.1.11 unset_value_for() . . . 336
11.31.1.12 unset_value_for_impl() [1/10] . . . 336
11.31.1.13 unset_value_for_impl() [2/10] . . . 337
11.31.1.14 unset_value_for_impl() [3/10] . . . 337
11.31.1.15 unset_value_for_impl() [4/10] . . . 337
11.31.1.16 unset_value_for_impl() [5/10] . . . 337
11.31.1.17 unset_value_for_impl() [6/10] . . . 337
11.31.1.18 unset_value_for_impl() [7/10] . . . 338
11.31.1.19 unset_value_for_impl() [8/10] . . . 338
11.31.1.20 unset_value_for_impl() [9/10] . . . 338
11.31.1.21 unset_value_for_impl() [10/10] . . . 338
11.31.2 Variable Documentation . . . 338
11.31.2.1 UnsetDouble . . . 338
11.31.2.2 UnsetDuration . . . 339
11.31.2.3 UnsetFloat . . . 339
11.31.2.4 UnsetInt . . . 339
11.31.2.5 UnsetInt64 . . . 339
11.31.2.6 UnsetString . . . 339
11.31.2.7 UnsetTime . . . 339
11.31.2.8 UnsetUInt64 . . . 340
11.32 utils.h File Reference . . . 340

**Index** **343**

# Chapter 1

# VXG Cloud Agent Library


1. Build system
2. Library compilation
3. Application development
4. API reference

# Chapter 2

# Build System

### 2.0.1 Overview

VXG Cloud Agent library uses Meson build system as a modern, fast and flexible build system that supports easy to set up and maintain a cross-compilation process.

It's recommended to refer to the Meson guide.

### 2.0.2 C++ Toolchain Requirements

**IMPORTANT: This projects requires C++ toolchain with C++11 support**

VXG Cloud Agent Library requires modern C++11 so in order to build and use this library the user needs a compiler with C++11 support.
GCC supports C++11 since version 4.8.1 released on May 31, 2013.

> **C++11 Support in GCC**
> GCC 4.8.1 was the first feature-complete implementation of the 2011 C++ standard, previously known as C++0x.
>
> This mode can be selected with the -std=c++11 command-line flag, or -std=gnu++11 to enable GNU extensions as well.

### 2.0.3 Build system installation

**IMPORTANT: This projects requires Meson version >= 0.56.0**

It's recommended to use Ubuntu 20.04 LTS distribution in development process but other distributions or operation systems are also supported by Meson.

Please refer to Meson installation guide to get and install Meson, preferable way to install Meson is pip method.

Quick install guide for Ubuntu 20.04. If you have an old version of meson already installed please remove it first.

```
sudo apt-get update
sudo apt-get install -y python3-pip git ninja-build curl tzdata python3-tz
pip3 install git+https://github.com/mesonbuild/meson@0.56.0
# pip3 puts meson main script into the $HOME/.local/bin/ directory, you need to
# add $HOME/.local/bin/ into your PATH environment variable, for bash shell you
# can run the following command and restart the shell session.
echo 'export PATH=$HOME/.local/bin:$PATH' » $HOME/.bashrc
# Check currently installed meson version
meson -v
```

# Chapter 3

# Application Development

## 3.1 Overview

An application that uses VXG Cloud Agent Library should implement 3 classes derived from the base classes provided by the library:

- agent::callback - common callbacks class, only on_bye callback is mandatory for implementation
- agent::media::stream class, abstract class for media streams, library provides basic media::rtsp_stream implementation which retransmits RTSP source stream to the endpoint of the VXG Cloud, all callbacks are stubbed. Developer normally should implement own class derived from the media::stream with own vxg::media::Streamer::ISource implementation(vxg::media::ffmpeg::Source class implementation from the ffmpeg_source.cc can be used as a reference), or if RTSP source is acceptable developer can implement own class derived from the media::rtsp_stream but with callbacks implemented.
- agent::event_stream class, abstract class for events generation.

Any callback implementation as well as ISource::init and ISource::finit implementations should be non-blocking, VXG Cloud messages processing is single-threaded which means any VXG Cloud messages are handled sequentially hence no new message will be processed until the callback triggered by the previous message is returned.

The library provides the stub implementation for most of the virtual methods of these classes, the stub implementation prints a log message about this method is not implemented and returns an error, the final application should implement all virtual methods on its own.

Most of the callbacks are just getter/setter for the library's objects.

## 3.2 Examples

### 3.2.1 Minimal application example

Headers and namespaces:

```
#include <agent/manager.h>
#include <agent/rtsp-stream.h>
#include <utils/logging.h>
#include <utils/properties.h>
using namespace vxg::cloud;
using namespace vxg::cloud::agent;
```

Common callbacks class, minimal implementation derived from the agent::callback class:

```
using namespace vxg::cloud;
class agent_callback_minimal : public agent::callback {
public:
    virtual void on_bye(proto::bye_reason reason) override {
        vxg::logger::warn("Connection close {}", json(reason).dump());
    }
    virtual void on_registered(const std::string& sid) override {
        // Save Cloud registration session id in the local properties file.
        // This is required for the fast reconnection to the Cloud.
        props.set("prev_sid", sid);
    }
};
```

Create and start agent object agent::manager with one basic media stream agent::media::rtsp_stream

```
    using namespace vxg::cloud::agent;
    // Agent
    manager::ptr agent;
    // VXG Cloud token
    auto access_token =
        proto::access_token::parse(vxg_cloud_token);
    // Agent callback
    callback::ptr cb = std::make_unique<agent_callback_minimal>();
    // Media stream
    std::vector<agent::media::stream::ptr> streams;
    media::stream::ptr stream =
        std::make_shared<media::rtsp_stream>(rtsp_url, "DemoStream");
    streams.push_back(stream);
    // Create agent
    if ((agent = agent::manager::create(agent_config, std::move(cb),
                                        access_token, streams)) == nullptr) {
        vxg::logger::error("Failed to create agent");
        return EXIT_FAILURE;
    }
    if (!quit && !agent->start())
        quit = true;
```

Complete minimal example:

```
#include <signal.h>
#include <args.hxx>
#include <agent/manager.h>
#include <agent/rtsp-stream.h>
#include <utils/logging.h>
#include <utils/properties.h>
using namespace vxg::cloud;
using namespace vxg::cloud::agent;
agent::config agent_config;
static bool quit = 0;
static vxg::properties props;
#if !defined(_WIN32)
static void signal_handler(int sig) {
    if (sig == SIGINT || sig == SIGTERM) {
        fprintf(stderr, "\nSIGTERM received\n\n");
        quit = true;
    }
}
#endif
using namespace vxg::cloud;
class agent_callback_minimal : public agent::callback {
public:
    virtual void on_bye(proto::bye_reason reason) override {
        vxg::logger::warn("Connection close {}", json(reason).dump());
    }
    virtual void on_registered(const std::string& sid) override {
        // Save Cloud registration session id in the local properties file.
        // This is required for the fast reconnection to the Cloud.
        props.set("prev_sid", sid);
    }
};
std::string vxg_cloud_token;
std::string rtsp_url;
bool parse_args(int argc, char** argv) {
    args::ArgumentParser parser("This is a test program.", "");
    args::HelpFlag help(parser, "help", "Display this help menu",
                        {'h', "help"});
    args::CompletionFlag completion(parser, {"complete"});
    args::Positional<std::string> token(parser, "vxg_cloud_token",
                                        "VXG Cloud Access Token", "",
                                        args::Options::Required);
    args::Positional<std::string> url(parser, "rtsp_url", "RTSP stream url", "",
                                      args::Options::Required);
    args::Flag secure_connection_arg(
        parser, "",
        "Use secure cloud connetion(enables encryption, cloud agent library "
        "must be compiled with openssl support enabled)",
```

```
        {"secure-channel", 's'});
    try {
        parser.ParseCLI(argc, argv);
        vxg_cloud_token = args::get(token);
        rtsp_url = args::get(url);
        agent_config.insecure_cloud_channel =
            !args::get(secure_connection_arg);
    } catch (const args::RequiredError& e) {
        std::cout << e.what() << std::endl;
        return false;
    } catch (const args::Completion& e) {
        std::cout << e.what();
        return false;
    } catch (const args::Help&) {
        std::cout << parser;
        return false;
    } catch (const args::ParseError& e) {
        std::cerr << e.what() << std::endl;
        std::cerr << parser;
        return false;
    }
    return true;
}
int main(int argc, char** argv) {
    vxg::properties::reset("agent-test.props");
    // Try to load and set previously saved session id.
    // This is required for the fast reconnection to the Cloud.
    if (!props.get("prev_sid").empty())
        agent_config.cm_registration_sid = props.get("prev_sid");
    // Parse args and retrieve token and rtsp url
    if (!parse_args(argc, argv))
        return EXIT_FAILURE;
#if !defined(_WIN32)
    // Catch signal
    signal(SIGINT, signal_handler);
    signal(SIGTERM, signal_handler);
    signal(SIGPIPE, SIG_IGN);
#endif
    vxg::logger::info("VXG Cloud Agent Library Version: {}",
                      vxg::cloud::agent::version());
    using namespace vxg::cloud::agent;
    // Agent
    manager::ptr agent;
    // VXG Cloud token
    auto access_token =
        proto::access_token::parse(vxg_cloud_token);
    // Agent callback
    callback::ptr cb = std::make_unique<agent_callback_minimal>();
    // Media stream
    std::vector<agent::media::stream::ptr> streams;
    media::stream::ptr stream =
        std::make_shared<media::rtsp_stream>(rtsp_url, "DemoStream");
    streams.push_back(stream);
    // Create agent
    if ((agent = agent::manager::create(agent_config, std::move(cb),
                                        access_token, streams)) == nullptr) {
        vxg::logger::error("Failed to create agent");
        return EXIT_FAILURE;
    }
    if (!quit && !agent->start())
        quit = true;
    // Spin main thread until stopped
    while (!quit) {
        std::this_thread::sleep_for(std::chrono::seconds(1));
    }
    agent->stop();
    agent = nullptr;
    vxg::logger::info("Agent stopped");
    return EXIT_SUCCESS;
}
```

### 3.2.2 Complete application example

**Common callback class:** derived from agent::callback

```
using namespace vxg::cloud;
class my_agent_callback : public agent::callback {
public:
    virtual void on_registered(const std::string& sid) override {
        // Save Cloud registration session id in the local properties file.
        // This is required for the fast reconnection to the Cloud.
        props.set("prev_sid", sid);
    }
```

```
virtual void on_bye(proto::bye_reason reason) override {
    if (reason != proto::bye_reason::BR_RECONNECT)
        vxg::logger::error("Error {}", json(reason));
}
virtual bool on_raw_msg(std::string client_id, std::string& data) override {
    vxg::logger::info("Raw message {} from client '{}'", data, client_id);
    // Reply json
    data = "{\"reply\": \"OK\"}";
    return true;
}
virtual bool on_get_log(std::string& log_data) override {
    log_data = "log messages...";
    vxg::logger::warn("{} not implemented", __func__);
    return true;
}
virtual bool on_start_backward_audio(std::string url) override {
    // Start backward audio playback from url
    vxg::logger::warn("{} not implemented", __func__);
    return false;
}
virtual bool on_stop_backward_audio(std::string url) override {
    vxg::logger::warn("{} not implemented", __func__);
    return false;
}
virtual bool on_get_cam_video_config(proto::video_config& config) override {
    vxg::logger::warn("{} not implemented", __func__);
    return false;
}
virtual bool on_set_cam_video_config(
    const proto::video_config& config) override {
    vxg::logger::warn("{} not implemented", __func__);
    return false;
}
virtual bool on_get_cam_audio_config(proto::audio_config& config) override {
    vxg::logger::warn("{} not implemented", __func__);
    return false;
}
virtual bool on_set_cam_audio_config(
    const proto::audio_config& config) override {
    vxg::logger::warn("{} not implemented", __func__);
    return false;
}
virtual bool on_get_ptz_config(proto::ptz_config& config) override {
    vxg::logger::warn("{} not implemented", __func__);
    return false;
}
virtual bool on_cam_ptz(proto::ptz_command& command) override {
    vxg::logger::warn("{} not implemented", __func__);
    return false;
}
virtual bool on_get_osd_config(proto::osd_config& config) override {
    vxg::logger::warn("{} not implemented", __func__);
    return false;
}
virtual bool on_set_osd_config(const proto::osd_config& config) override {
    vxg::logger::warn("{} not implemented", __func__);
    return false;
}
virtual bool on_get_wifi_config(proto::wifi_config& config) override {
    vxg::logger::warn("{} not implemented", __func__);
    return false;
}
virtual bool on_set_wifi_config(
    const proto::wifi_network& config) override {
    vxg::logger::warn("{} not implemented", __func__);
    return false;
}
virtual bool on_get_motion_detection_config(
    proto::motion_detection_config& config) override {
    vxg::logger::warn("{} not implemented", __func__);
    return false;
}
virtual bool on_set_motion_detection_config(
    const proto::motion_detection_config& config) override {
    vxg::logger::warn("{} not implemented", __func__);
    return false;
}
virtual bool on_get_timezone(std::string& timezone) override {
    vxg::logger::warn("{} not implemented", __func__);
    return false;
}
virtual bool on_set_timezone(std::string timezone) override {
    vxg::logger::warn("{} not implemented", __func__);
    return false;
}
virtual bool on_get_memorycard_info(
    proto::event_object::memorycard_info_object& info) override {
```

```
        vxg::logger::warn("{} not implemented", __func__);
        return false;
    }
    virtual bool on_set_audio_detection(
        const proto::audio_detection_config& conf) {
        vxg::logger::warn("{} not implemented", __func__);
        return false;
    }
    virtual bool on_get_audio_detection(proto::audio_detection_config& conf) {
        vxg::logger::warn("{} not implemented", __func__);
        return false;
    }
};
```

**Media stream callback class:** derived from agent::media::stream

```
class my_media_stream : public media::rtsp_stream {
public:
    my_media_stream(std::string url, std::string name)
        : media::rtsp_stream(url, name) {
        set_on_error_cb([&](const vxg::media::stream_error::report& report) {
            using namespace vxg::media;
            vxg::logger::instance(std::string("my-media-stream-") + name)
                ->error("Error {} from {} received", report.code, report.from);
            // switch (report.from)
            //  case : stream_error::origin::O_SOURCE - RTSP input stream error
            //  case : stream_error::origin::O_SINK - Cloud streaming error
        });
    }
    virtual bool get_supported_stream(
        proto::supported_stream_config& config) override {
        vxg::logger::warn("{} default implementation should be overriden",
                          __func__);
        config.id = cloud_name();
        config.video = "Video" + std::to_string(0);
        // config.audio = "Audio" + std::to_string(0);
        return true;
    }
    virtual bool get_stream_caps(proto::stream_caps& caps) override {
        vxg::logger::warn("{} not implemented", __func__);
        return false;
    }
    virtual bool get_stream_config(
        proto::stream_config& streamConfig) override {
        vxg::logger::warn("{} not implemented", __func__);
        return false;
    }
    virtual bool set_stream_config(
        const proto::stream_config& streamConfig) override {
        vxg::logger::warn("{} not implemented", __func__);
        return false;
    }
    virtual bool get_snapshot(
        proto::event_object::snapshot_info_object& snapshot) override {
        vxg::logger::warn("{} not implemented", __func__);
        return false;
    }
    virtual std::vector<proto::video_clip_info> record_get_list(
        vxg::cloud::time begin,
        vxg::cloud::time end,
        bool align) override {
        std::vector<proto::video_clip_info> empty_vector(0);
        vxg::logger::warn("{} not implemented", __func__);
        return empty_vector;
    }
    virtual proto::video_clip_info record_export(
        vxg::cloud::time begin,
        vxg::cloud::time end) override {
        proto::video_clip_info clip;
        vxg::logger::warn("{} not implemented", __func__);
        // empty clip
        return clip;
    }
    virtual bool start_record() override {
        vxg::logger::warn("{} not implemented", __func__);
        return false;
    }
    virtual void stop_record() override {
        vxg::logger::warn("{} not implemented", __func__);
    }
};
```

**Event stream callback class:** derived from agent::media::event_stream

```
class my_event_stream : public agent::event_stream {
public:
    my_event_stream(std::string name) : agent::event_stream(name) {}
```

```
    virtual bool start() {
        vxg::logger::warn("{} not implemented", __func__);
        return false;
    }
    virtual void stop() { vxg::logger::warn("{} not implemented", __func__); }
    virtual bool init() {
        vxg::logger::warn("{} not implemented", __func__);
        return false;
    }
    virtual void finit() { vxg::logger::warn("{} not implemented", __func__); }
    virtual bool set_trigger_recording(bool enabled, int pre, int post) {
        vxg::logger::warn("{} not implemented", __func__);
        return false;
    }
    virtual bool get_events(std::vector<proto::event_config>& configs) {
        return false;
    }
    virtual bool set_events(const std::vector<proto::event_config>& config) {
        return false;
    }
};
```

**Creating and start agent instance with all callbacks:**

```
    using namespace vxg::cloud::agent;
    // Agent
    manager::ptr agent;
    // VXG Cloud token
    auto access_token = proto::access_token::parse(vxg_cloud_token);
    // Agent callback
    callback::ptr cb = std::make_unique<my_agent_callback>();
    // Media stream
    std::vector<agent::media::stream::ptr> streams;
    media::stream::ptr stream =
        std::make_shared<my_media_stream>(rtsp_url, "MyMediaStream");
    streams.push_back(stream);
    // Event stream
    std::vector<agent::event_stream::ptr> event_streams;
    event_stream::ptr event_stream =
        std::make_shared<my_event_stream>("MyEventStream");
    event_streams.push_back(event_stream);
    // Create agent
    if ((agent =
             agent::manager::create(agent_config, std::move(cb), access_token,
                                    streams, event_streams)) == nullptr) {
        vxg::logger::error("Failed to create agent");
        return EXIT_FAILURE;
    }
    if (!quit && !agent->start())
        quit = true;
```

### 3.2.3 Linking application against the VXG Agent Cloud Library

There are 3 possible ways of how to build and link your application

1. Building the application inside the VXG CLoud Agent library's `Meson project`, the app will be assembled during the library project compilation in this case.
   You need to add a new executable target into the main `meson.build` file, please refer to the example app build target declaration:
   ```
   cloud_agent_minimal = executable('cloud-agent-minimal', 'src/cloud-agent-minimal.cc',
     install : true, dependencies: dep)
   ```
   User must declare own executable target with a list of sources and dependencies, user may need to declare own dependencies if application requires it.

   **This method is not recommended as it makes updating of the VXG Cloud Agent library mostly not possible or very difficult for application developer**

2. Building your app using your own build system and linking against the installed library.
   Running the `install` step from the compile section installs the binary libraries and headers into the directory you specified during the `setup` step, it also puts the `pkg-config`'s `.pc` files into the prefix directory which could be used by your own build system.

3. Preferred and recommended way of application development is to hold the app as a separate `Meson project` and use the VXG Cloud Agent library as a `Meson subproject` of the application's `Meson project`.
   Using this approach gives the most flexible and convenient workflow for updating the VXG Cloud Library, all library dependencies will be promoted to the main project and will be also accessible by the application.
   **How does it work**

   - Assuming you have a `Meson` build system installed
   - Start a new `Meson project` with a following command:
     ```
     meson init -l cpp -n your-project-name
     ```
   - As a result of this command you should have the following files tree:
     ```
     |-- meson.build
     |-- your_project_name.cpp
     ```
   - Add VXG Cloud Agent library as a `Meson subproject`
     All subprojects should be located in the `subprojects` directory so you have to create it first
     ```
     mkdir subprojects
     ```

   Now you have 2 options depending on how you want to store the VXG Cloud Agent library sources:

   (a) If you want to store the VXG Cloud Agent library as a files tree locally.

   - Create a symlink to the library path inside the subprojects dir:
     ```
     ln -s path/to/vxgcloudagent subprojects/vxgcloudagent
     ```

   Or you can just move vxgcloudagent directory inside the subprojects dir.

   - Create a library's `Meson` wrap file inside the subprojects dir, the name of the file should be the same as symlink you created in 1.1 and the content of the file should be:
     ```
     [wrap-file]
     directory = vxgcloudagent
     [provide]
     vxgcloudagent = vxgcloudagent_dep
     ```

   (b) If you want to store the library in a git repository you just need to create a wrap file with the content like below:
   ```
   [wrap-git]
   url=https://your-git-repo-url.com/path/vxgcloudagent.git
   # You can specify tag, branch or commit hash as revision
   revision=master
   [provide]
   vxgcloudagent = vxgcloudagent_dep
   ```

   You can find the example app `Meson project` in the example/app directory of the VXG Cloud library sources package.

# Chapter 4

# Library Compilation Guide

### 4.0.1 Library build process

Here is a compilation quickstart guide:

- First of all you need to have a build system and toolchain installed
- **Setup** the build directory
```
meson setup --prefix=path/to/install --strip -Dbuildtype=debug builddir/
# --prefix=path specifies the installation path
# --strip indicates that final binaries should be stripped
# -Dbuildtype= specifies the debug/release build type, please check the Meson docs about full list of
 the build types.
```
- **Build**
```
meson compile -C builddir
# Or
ninja -C builddir
```
- **Install**
```
meson install -C builddir
# Or
ninja -C builddir/ install
```
  As a result of the `install` step you should have the library compiled and installed into the prefix directory you specified during the `setup` step.
- **Clean**
```
ninja -C builddir clean
```
  Or you can just delete the builddir, you will need to `setup` it again in this case.
```
rm -rf builddir
```

### 4.0.2 Cross-compilation

- By default `Meson` builds project for the host platform, but it's also possible to cross-compile the library and your application using `Meson`.
- Full `Meson` cross-compilation documentation can be found `here`.
- The difference between the host compilation described above and the cross-compilation is the additional `--cross-file=path/to/cross-file.txt` flag for the Meson `Setup` step, the `Setup` command should look like below:
```
meson setup --prefix=path/to/install --strip -Dbuildtype=debug --cross-file=path/to/cross-file.txt
 builddir/
```
  `cross-file.txt` is the target platform description which in terms of Meson called a `cross-file`.

- `cross-file` example below is for the Debian provided `arm-linux-gnueabihf` toolchain installable using the Ubuntu's package manager command
  `sudo apt install g++-arm-linux-gnueabihf`

- Example of the ARMv7 `cross-file`:

```
[host_machine]
system = 'linux'
cpu_family = 'arm'
cpu = 'armv7-a'
endian = 'little'
[built-in options]
# Example of platform specific CFLAGS and CXXFLAGS
c_args = ['-mfloat-abi=hard', '-march=armv7-a+vfpv3']
cpp_args = c_args
default_library = 'static'
[properties]
# If your toolchain requires specifying the sysroot dir you can setup it like below, sysroot_dir is a
 constant declared in [constants] section of the cross-file
#sys_root = sysroot_dir
# Meson uses pkg-config and cmake to detect external dependencies
# Set the correct path to your cross-compilation pkgconfig directory if your app depends on some
 external dependencies like platform specific libs.
#pkg_config_libdir = sysroot_dir / 'usr/lib/pkgconfig/'
[constants]
cross_prefix = 'arm-linux-gnueabihf-'
#sysroot_dir = '/opt/arm-linux-gnueabihf/sysroot/'
[binaries]
c = cross_prefix + 'gcc'
cpp = cross_prefix + 'g++'
ar = cross_prefix + 'ar'
strip = cross_prefix + 'strip'
# You should specify your platform toolchain pkg-config binary here
#pkgconfig = '/opt/arm-linux-gnueabihf/bin/pkg-config'
```

# Chapter 5

# Deprecated List

**Global vxg::logger::reset (int argc, char ∗∗argv, loglevel l, std::string syslog_ident="VXGCloudAgent↩ Default", std::string crash_logfile_path="", std::string logfile_path="", size_t logfile_max_size=(1024 ∗1024), size_t logfile_max_files=3)**

Use reset(const options& opts)

# Chapter 6

# Hierarchical Index

## 6.1 Class Hierarchy

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


vxg::cloud::agent::access_token . . . 71
alter_bool . . . 73
vxg::cloud::agent::proto::audio_caps . . . 76
vxg::cloud::agent::audio_config . . . 78
vxg::cloud::agent::audio_detection_config::audio_detection_conf_caps . . . 80
vxg::cloud::agent::audio_detection_config . . . 82
vxg::cloud::agent::proto::audio_stream_config . . . 84
vxg::media::Streamer::StreamInfo::AudioInfo . . . 86
vxg::cloud::agent::callback . . . 88
vxg::cloud::agent::proto::stream_caps::caps_audio_object . . . 100
vxg::cloud::agent::proto::stream_caps::caps_video_object . . . 102
command_handler
  vxg::cloud::agent::manager . . . 161
common
  vxg::media::ffmpeg::Sink . . . 224
    vxg::media::rtmp_sink . . . 206
  vxg::media::ffmpeg::Source . . . 229
    vxg::media::rtmp_source . . . 210
    vxg::media::rtsp_source . . . 212
vxg::cloud::agent::event_manager::config . . . 108
vxg::cloud::agent::synchronizer::config . . . 110
std::enable_shared_from_this< manager >[external]
  vxg::cloud::agent::manager . . . 161
vxg::cloud::agent::proto::event_caps . . . 111
vxg::cloud::agent::event_config . . . 113
vxg::cloud::agent::event_manager . . . 117
vxg::cloud::agent::event_state . . . 119
vxg::cloud::agent::event_state::event_state_changed_cb . . . 124
vxg::cloud::agent::event_manager::event_state_report_cb . . . 126
  vxg::cloud::agent::manager . . . 161
vxg::cloud::agent::event_stream . . . 128
vxg::cloud::agent::events_config . . . 134
vxg::media::Streamer::ISink . . . 137
  vxg::media::ffmpeg::Sink . . . 224

vxg::media::Streamer::ISource . . . 144
vxg::media::ffmpeg::Source . . . 229
vxg::logger . . . 154
vxg::media::Streamer::MediaFrame . . . 175
vxg::cloud::agent::proto::motion_detection_caps . . . 178
vxg::cloud::agent::proto::motion_detection_config . . . 180
vxg::cloud::agent::proto::motion_region . . . 181
vxg::logger::options . . . 183
vxg::cloud::agent::proto::osd_caps . . . 186
vxg::cloud::agent::osd_config . . . 190
vxg::cloud::period . . . 193
vxg::cloud::agent::synchronizer::segmenter . . . 219
vxg::cloud::timed_storage::item . . . 150
vxg::cloud::agent::access_token::proxy_config . . . 197
vxg::cloud::agent::ptz_command . . . 198
vxg::cloud::agent::ptz_config . . . 199
vxg::cloud::agent::ptz_preset . . . 201
vxg::cloud::utils::queued_async_handler< T > . . . 202
vxg::cloud::utils::queued_async_handler< stream_error::report > . . . 202
vxg::media::stream . . . 234
vxg::cloud::agent::media::stream . . . 239
vxg::cloud::agent::media::rtsp_stream . . . 216
vxg::media::stream_error::report . . . 205
vxg::cloud::agent::media::stream_callbacks . . . 241
vxg::cloud::agent::media::stream_callbacks_stub . . . 247
vxg::cloud::agent::media::stream . . . 239
vxg::cloud::agent::proto::stream_caps . . . 253
vxg::cloud::agent::proto::stream_config . . . 254
vxg::media::Streamer::StreamInfo . . . 258
std::string [external]
vxg::cloud::utils::motion::map . . . 173
vxg::cloud::agent::supported_stream_config . . . 262
vxg::cloud::agent::supported_streams_config . . . 263
vxg::cloud::agent::synchronizer::sync_request . . . 265
vxg::cloud::agent::synchronizer . . . 265
vxg::cloud::timed_storage . . . 269
vxg::cloud::cloud_storage . . . 106
vxg::cloud::stream_storage . . . 255
vxg::cloud::timeline< T > . . . 272
vxg::cloud::sync::timeline . . . 273
vxg::cloud::utils::uri . . . 277
vxg::cloud::agent::proto::video_caps . . . 279
vxg::cloud::agent::proto::video_clip_info . . . 283
vxg::cloud::agent::proto::video_config . . . 285
vxg::cloud::agent::proto::video_stream_config . . . 290
vxg::media::Streamer::StreamInfo::VideoInfo . . . 293
vxg::cloud::agent::proto::wifi_config . . . 296
vxg::cloud::agent::proto::wifi_network . . . 297

# Chapter 7

# Data Structure Index

## 7.1 Data Structures

Here are the data structures with brief descriptions:


vxg::cloud::agent::access_token
VXG Cloud access token . . . 71
alter_bool
Alternative bool class Standard bool type has two states, this class adds 3rd state - undefined . 73
vxg::cloud::agent::proto::audio_caps
Audio capabilities . . . 76
vxg::cloud::agent::audio_config
Audio config . . . 78
vxg::cloud::agent::audio_detection_config::audio_detection_conf_caps . . . 80
vxg::cloud::agent::audio_detection_config
5.6 audio_detection_config (CM) Current audio detection settings . . . 82
vxg::cloud::agent::proto::audio_stream_config
Audio media stream config . . . 84
vxg::media::Streamer::StreamInfo::AudioInfo
Audio stream info . . . 86
vxg::cloud::agent::callback
VXG Cloud manager common callbacks class . . . 88
vxg::cloud::agent::proto::stream_caps::caps_audio_object
Audio streams capabilities . . . 100
vxg::cloud::agent::proto::stream_caps::caps_video_object
Video streams capabilities . . . 102
vxg::cloud::cloud_storage . . . 106
vxg::cloud::agent::event_manager::config . . . 108
vxg::cloud::agent::synchronizer::config . . . 110
vxg::cloud::agent::proto::event_caps
Events capabilies . . . 111
vxg::cloud::agent::event_config
Event config . . . 113
vxg::cloud::agent::event_manager . . . 117
vxg::cloud::agent::event_state . . . 119
vxg::cloud::agent::event_state::event_state_changed_cb . . . 124
vxg::cloud::agent::event_manager::event_state_report_cb . . . 126
vxg::cloud::agent::event_stream
Event stream, abstract class for event generation . . . 128
vxg::cloud::agent::events_config
Events config, list of event_config objects . . . 134

vxg::media::Streamer::ISink . . . 137
vxg::media::Streamer::ISource
ISource interface class . . . 144
vxg::cloud::timed_storage::item . . . 150
vxg::logger
Logger class, current implementation based on spdlog . . . 154
vxg::cloud::agent::manager
VXG Cloud agent manager class . . . 161
vxg::cloud::utils::motion::map . . . 173
vxg::media::Streamer::MediaFrame
Media frame container . . . 175
vxg::cloud::agent::proto::motion_detection_caps
Motion detection capabilities camera capabilities that limit possible motion detection configuration . . . 178
vxg::cloud::agent::proto::motion_detection_config
Motion detection config . . . 180
vxg::cloud::agent::proto::motion_region
Motion detection related structs . . . 181
vxg::logger::options . . . 183
vxg::cloud::agent::proto::osd_caps
OSD capabilities . . . 186
vxg::cloud::agent::osd_config
OSD config . . . 190
vxg::cloud::period . . . 193
vxg::cloud::agent::access_token::proxy_config
Socks proxy settings . . . 197
vxg::cloud::agent::ptz_command
PTZ command . . . 198
vxg::cloud::agent::ptz_config
PTZ config . . . 199
vxg::cloud::agent::ptz_preset
PTZ preset . . . 201
vxg::cloud::utils::queued_async_handler< T > . . . 202
vxg::media::stream_error::report
Media stream error report simple object . . . 205
vxg::media::rtmp_sink
RTMP sink class . . . 206
vxg::media::rtmp_source
RTMP source class . . . 210
vxg::media::rtsp_source
RTSP source class . . . 212
vxg::cloud::agent::media::rtsp_stream
Implementation of the media::stream with RTSP source and NIY stubs . . . 216
vxg::cloud::agent::synchronizer::segmenter . . . 219
vxg::media::ffmpeg::Sink
Base ffmpeg sink class . . . 224
vxg::media::ffmpeg::Source
Base ffmpeg source class . . . 229
vxg::media::stream
Base media stream abstract class . . . 234
vxg::cloud::agent::media::stream
Cloud agent media stream abstract class . . . 239
vxg::cloud::agent::media::stream_callbacks
Cloud agent media stream callbacks abstract class . . . 241
vxg::cloud::agent::media::stream_callbacks_stub . . . 247
vxg::cloud::agent::proto::stream_caps
Media stream capabilites . . . 253

vxg::cloud::agent::proto::stream_config
Media stream config . . . 254
vxg::cloud::stream_storage . . . 255
vxg::media::Streamer::StreamInfo
Stream info descriotion . . . 258
vxg::cloud::agent::supported_stream_config
Supported stream config . . . 262
vxg::cloud::agent::supported_streams_config
Supported streams config, list of supported_stream_config . . . 263
vxg::cloud::agent::synchronizer::sync_request . . . 265
vxg::cloud::agent::synchronizer . . . 265
vxg::cloud::timed_storage . . . 269
vxg::cloud::timeline< T > . . . 272
vxg::cloud::sync::timeline . . . 273
vxg::cloud::utils::uri . . . 277
vxg::cloud::agent::proto::video_caps
Video image capabilities . . . 279
vxg::cloud::agent::proto::video_clip_info
Video recoding(mp4 file) clip description, . . . 283
vxg::cloud::agent::proto::video_config
Video image config . . . 285
vxg::cloud::agent::proto::video_stream_config
Video stream config . . . 290
vxg::media::Streamer::StreamInfo::VideoInfo
Video stream info . . . 293
vxg::cloud::agent::proto::wifi_config
WiFi config . . . 296
vxg::cloud::agent::proto::wifi_network
WiFi network object . . . 297

# Chapter 8

# File Index

## 8.1 File List

Here is a list of all files with brief descriptions:


base_streamer.h . . . 299
callback.h . . . 301
caps.h . . . 302
cloud-agent-minimal.cc . . . 305
cloud-agent.cc . . . 307
config.h . . . 310
event-manager.h . . . 313
event-state.h . . . 314
event-stream.h . . . 315
ffmpeg_sink.h . . . 316
ffmpeg_source.cc . . . 317
ffmpeg_source.h . . . 317
logging.h . . . 318
manager.h . . . 319
meson.build . . . 320
queued-handler.h . . . 320
rtmp_sink.h . . . 322
rtmp_source.h . . . 323
rtsp-stream.h . . . 323
rtsp_source.h . . . 324
stream-storage.h . . . 325
streamer/stream.h . . . 326
agent/stream.h . . . 327
timeline-synchronizer.h . . . 328
timeline.h . . . 330
unset-helper.h . . . 331
utils.h . . . 340

# Chapter 9

# Namespace Documentation

## 9.1 nlohmann Namespace Reference

## 9.2 std Namespace Reference

### Namespaces

- **chrono**
- **experimental**
- **regex_constants**
- **rel_ops**
- **this_thread**

### Data Structures

- class **add_const**
- class **add_cv**
- class **add_lvalue_reference**
- class **add_pointer**
- class **add_rvalue_reference**
- class **add_volatile**
- class **adopt_lock_t**
- class **aligned_storage**
- class **aligned_union**
- class **alignment_of**
- class **allocator**
- class **allocator_arg_t**
- class **allocator_traits**
- class **array**
- class **atomic**
- class **atomic_flag**
- class **auto_ptr**
- class **back_insert_iterator**
- class **bad_alloc**
- class **bad_array_length**
- class **bad_array_new_length**

- class **bad_cast**
- class **bad_exception**
- class **bad_function_call**
- class **bad_optional_access**
- class **bad_typeid**
- class **bad_weak_ptr**
- class **basic_filebuf**
- class **basic_fstream**
- class **basic_ifstream**
- class **basic_ios**
- class **basic_iostream**
- class **basic_istream**
- class **basic_istringstream**
- class **basic_ofstream**
- class **basic_ostream**
- class **basic_ostringstream**
- class **basic_regex**
- class **basic_streambuf**
- class **basic_string**
- class **basic_stringbuf**
- class **basic_stringstream**
- class **bernoulli_distribution**
- class **bidirectional_iterator_tag**
- class **binary_function**
- class **binary_negate**
- class **binomial_distribution**
- class **bit_and**
- class **bit_not**
- class **bit_or**
- class **bitset**
- class **cauchy_distribution**
- class **centi**
- class **cerr**
- class **char_traits**
- class **chi_squared_distribution**
- class **cin**
- class **clock_t**
- class **clog**
- class **cmatch**
- class **codecvt**
- class **codecvt_base**
- class **codecvt_byname**
- class **codecvt_utf16**
- class **codecvt_utf8**
- class **codecvt_utf8_utf16**
- class **collate**
- class **collate_byname**
- class **common_type**
- class **complex**
- class **condition_variable**
- class **condition_variable_any**
- class **conditional**
- class **cout**
- class **cregex_iterator**
- class **cregex_token_iterator**

- class **csub_match**
- class **ctype**
- class **ctype_base**
- class **ctype_byname**
- class **deca**
- class **decay**
- class **deci**
- class **default_delete**
- class **default_random_engine**
- class **defer_lock_t**
- class **deque**
- class **discard_block_engine**
- class **discrete_distribution**
- class **divides**
- class **domain_error**
- class **dynarray**
- class **enable_if**
- class **enable_shared_from_this**
- class **equal_to**
- class **errc**
- class **error_category**
- class **error_code**
- class **error_condition**
- class **exa**
- class **exception**
- class **exception_ptr**
- class **exponential_distribution**
- class **extent**
- class **extreme_value_distribution**
- class **false_type**
- class **femto**
- class **FILE**
- class **filebuf**
- class **fisher_f_distribution**
- class **forward_iterator_tag**
- class **forward_list**
- class **fpos**
- class **fpos_t**
- class **front_insert_iterator**
- class **fstream**
- class **function**
- class **future**
- class **future_error**
- class **gamma_distribution**
- class **geometric_distribution**
- class **giga**
- class **greater**
- class **greater_equal**
- class **has_virtual_destructor**
- class **hash**
- class **hecto**
- class **ifstream**
- class **independent_bits_engine**
- class **initializer_list**
- class **input_iterator_tag**

- class **insert_iterator**
- class **int16_t**
- class **int32_t**
- class **int64_t**
- class **int8_t**
- class **int_fast16_t**
- class **int_fast32_t**
- class **int_fast64_t**
- class **int_fast8_t**
- class **int_least16_t**
- class **int_least32_t**
- class **int_least64_t**
- class **int_least8_t**
- class **integer_sequence**
- class **integral_constant**
- class **intmax_t**
- class **intptr_t**
- class **invalid_argument**
- class **ios_base**
- class **iostream**
- class **is_abstract**
- class **is_arithmetic**
- class **is_array**
- class **is_assignable**
- class **is_base_of**
- class **is_bind_expression**
- class **is_class**
- class **is_compound**
- class **is_const**
- class **is_constructible**
- class **is_convertible**
- class **is_copy_assignable**
- class **is_copy_constructible**
- class **is_default_constructible**
- class **is_destructible**
- class **is_empty**
- class **is_enum**
- class **is_error_code_enum**
- class **is_error_condition_enum**
- class **is_floating_point**
- class **is_function**
- class **is_fundamental**
- class **is_integral**
- class **is_literal_type**
- class **is_lvalue_reference**
- class **is_member_function_pointer**
- class **is_member_object_pointer**
- class **is_member_pointer**
- class **is_move_assignable**
- class **is_move_constructible**
- class **is_nothrow_assignable**
- class **is_nothrow_constructible**
- class **is_nothrow_copy_assignable**
- class **is_nothrow_copy_constructible**
- class **is_nothrow_default_constructible**

- class **is_nothrow_destructible**
- class **is_nothrow_move_assignable**
- class **is_nothrow_move_constructible**
- class **is_object**
- class **is_placeholder**
- class **is_pod**
- class **is_pointer**
- class **is_polymorphic**
- class **is_reference**
- class **is_rvalue_reference**
- class **is_same**
- class **is_scalar**
- class **is_signed**
- class **is_standard_layout**
- class **is_trivial**
- class **is_trivially_assignable**
- class **is_trivially_constructible**
- class **is_trivially_copy_assignable**
- class **is_trivially_copy_constructible**
- class **is_trivially_copyable**
- class **is_trivially_default_constructible**
- class **is_trivially_destructible**
- class **is_trivially_move_assignable**
- class **is_trivially_move_constructible**
- class **is_union**
- class **is_unsigned**
- class **is_void**
- class **is_volatile**
- class **istream**
- class **istream_iterator**
- class **istreambuf_iterator**
- class **istringstream**
- class **istrstream**
- class **iterator**
- class **iterator_traits**
- class **jmp_buf**
- class **kilo**
- class **knuth_b**
- class **lconv**
- class **length_error**
- class **less**
- class **less_equal**
- class **linear_congruential_engine**
- class **list**
- class **locale**
- class **lock_guard**
- class **logic_error**
- class **logical_and**
- class **logical_not**
- class **logical_or**
- class **lognormal_distribution**
- class **make_signed**
- class **make_unsigned**
- class **map**
- class **match_results**

- class **max_align_t**
- class **mbstate_t**
- class **mega**
- class **mersenne_twister_engine**
- class **messages**
- class **messages_base**
- class **messages_byname**
- class **micro**
- class **milli**
- class **minstd_rand**
- class **minstd_rand0**
- class **minus**
- class **modulus**
- class **money_base**
- class **money_get**
- class **money_put**
- class **moneypunct**
- class **moneypunct_byname**
- class **move_iterator**
- class **mt19937**
- class **mt19937_64**
- class **multimap**
- class **multiplies**
- class **multiset**
- class **mutex**
- class **nano**
- class **negate**
- class **negative_binomial_distribution**
- class **nested_exception**
- class **new_handler**
- class **normal_distribution**
- class **not_equal_to**
- class **nothrow_t**
- class **nullptr_t**
- class **num_get**
- class **num_put**
- class **numeric_limits**
- class **numpunct**
- class **numpunct_byname**
- class **ofstream**
- class **once_flag**
- class **ostream**
- class **ostream_iterator**
- class **ostreambuf_iterator**
- class **ostringstream**
- class **ostrstream**
- class **out_of_range**
- class **output_iterator_tag**
- class **overflow_error**
- class **owner_less**
- class **packaged_task**
- class **pair**
- class **peta**
- class **pico**
- class **piecewise_constant_distribution**

- class **piecewise_construct_t**
- class **piecewise_linear_distribution**
- class **placeholders**
- class **plus**
- class **pointer_safety**
- class **pointer_traits**
- class **poisson_distribution**
- class **priority_queue**
- class **promise**
- class **ptrdiff_t**
- class **queue**
- class **random_access_iterator_tag**
- class **random_device**
- class **range_error**
- class **rank**
- class **ranlux24**
- class **ranlux24_base**
- class **ranlux48**
- class **ranlux48_base**
- class **ratio**
- class **ratio_add**
- class **ratio_divide**
- class **ratio_equal**
- class **ratio_greater**
- class **ratio_greater_equal**
- class **ratio_less**
- class **ratio_less_equal**
- class **ratio_multiply**
- class **ratio_not_equal**
- class **ratio_subtract**
- class **raw_storage_iterator**
- class **recursive_mutex**
- class **recursive_timed_mutex**
- class **reference_wrapper**
- class **regex**
- class **regex_error**
- class **regex_iterator**
- class **regex_token_iterator**
- class **regex_traits**
- class **remove_all_extents**
- class **remove_const**
- class **remove_cv**
- class **remove_extent**
- class **remove_pointer**
- class **remove_reference**
- class **remove_volatile**
- class **result_of**
- class **reverse_iterator**
- class **runtime_error**
- class **scoped_allocator_adaptor**
- class **seed_seq**
- class **set**
- class **shared_future**
- class **shared_lock**
- class **shared_ptr**

- class **shared_timed_mutex**
- class **shuffle_order_engine**
- class **sig_atomic_t**
- class **size_t**
- class **smatch**
- class **sregex_iterator**
- class **sregex_token_iterator**
- class **ssub_match**
- class **stack**
- class **streambuf**
- class **streamoff**
- class **streampos**
- class **streamsize**
- class **string**
- class **stringbuf**
- class **stringstream**
- class **strstream**
- class **strstreambuf**
- class **student_t_distribution**
- class **sub_match**
- class **subtract_with_carry_engine**
- class **system_error**
- class **tera**
- class **terminate_handler**
- class **thread**
- class **time_base**
- class **time_get**
- class **time_get_byname**
- class **time_put**
- class **time_put_byname**
- class **time_t**
- class **timed_mutex**
- class **tm**
- class **true_type**
- class **try_to_lock_t**
- class **tuple**
- class **type_index**
- class **type_info**
- class **u16streampos**
- class **u16string**
- class **u32streampos**
- class **u32string**
- class **uint16_t**
- class **uint32_t**
- class **uint64_t**
- class **uint8_t**
- class **uint_fast16_t**
- class **uint_fast32_t**
- class **uint_fast64_t**
- class **uint_fast8_t**
- class **uint_least16_t**
- class **uint_least32_t**
- class **uint_least64_t**
- class **uint_least8_t**
- class **uintmax_t**

- class **uintptr_t**
- class **unary_function**
- class **unary_negate**
- class **underflow_error**
- class **underlying_type**
- class **unexpected_handler**
- class **uniform_int_distribution**
- class **uniform_real_distribution**
- class **unique_lock**
- class **unique_ptr**
- class **unordered_map**
- class **unordered_multimap**
- class **unordered_multiset**
- class **unordered_set**
- class **uses_allocator**
- class **valarray**
- class **vector**
- class **wbuffer_convert**
- class **wcerr**
- class **wcin**
- class **wclog**
- class **wcmatch**
- class **wcout**
- class **wcregex_iterator**
- class **wcregex_token_iterator**
- class **wcsub_match**
- class **weak_ptr**
- class **weibull_distribution**
- class **wfilebuf**
- class **wfstream**
- class **wifstream**
- class **wiostream**
- class **wistream**
- class **wistringstream**
- class **wofstream**
- class **wostream**
- class **wostringstream**
- class **wregex**
- class **wsmatch**
- class **wsregex_iterator**
- class **wsregex_token_iterator**
- class **wssub_match**
- class **wstreambuf**
- class **wstreampos**
- class **wstring**
- class **wstring_convert**
- class **wstringbuf**
- class **wstringstream**
- class **yocto**
- class **yotta**
- class **zetta**

## Functions

- T **atomic_fetch_and_explicit** (T... args)
- T **atomic_fetch_xor_explicit** (T... args)
- T **set_unexpected** (T... args)
- T **fputs** (T... args)
- T **modf** (T... args)
- T **not2** (T... args)
- T **strlen** (T... args)
- T **exp2** (T... args)
- T **setiosflags** (T... args)
- T **adjacent_difference** (T... args)
- T **cos** (T... args)
- T **fwscanf** (T... args)
- T **atomic_init** (T... args)
- T **forward_as_tuple** (T... args)
- T **abort** (T... args)
- T **wcsncmp** (T... args)
- T **set_intersection** (T... args)
- T **atomic_signal_fence** (T... args)
- T **llabs** (T... args)
- T **make_move_iterator** (T... args)
- T **scanf** (T... args)
- T **nextafter** (T... args)
- T **stol** (T... args)
- T **strcspn** (T... args)
- T **ungetwc** (T... args)
- T **transform** (T... args)
- T **putc** (T... args)
- T **iswdigit** (T... args)
- T **rint** (T... args)
- T **memset** (T... args)
- T **isgraph** (T... args)
- T **replace_copy_if** (T... args)
- T **scalbn** (T... args)
- T **partial_sort_copy** (T... args)
- T **make_exception_ptr** (T... args)
- T **frexp** (T... args)
- T **isxdigit** (T... args)
- T **atomic_exchange_explicit** (T... args)
- T **wprintf** (T... args)
- T **fdim** (T... args)
- T **wctype** (T... args)
- T **mbrtoc32** (T... args)
- T **setw** (T... args)
- T **get_temporary_buffer** (T... args)
- T **fmax** (T... args)
- T **atomic_thread_fence** (T... args)
- T **atomic_exchange** (T... args)
- T **fgetwc** (T... args)
- T **swprintf** (T... args)
- T **prev_permutation** (T... args)
- T **max_element** (T... args)
- T **set_symmetric_difference** (T... args)
- T **wcscpy** (T... args)

- T **const_pointer_cast** (T... args)
- T **minmax_element** (T... args)
- T **wcstok** (T... args)
- T **ref** (T... args)
- T **feupdateenv** (T... args)
- T **endl** (T... args)
- T **end** (T... args)
- T **wmemmove** (T... args)
- T **fmin** (T... args)
- T **uninitialized_fill_n** (T... args)
- T **nouppercase** (T... args)
- T **noshowpos** (T... args)
- T **ctime** (T... args)
- T **wmemset** (T... args)
- T **iswpunct** (T... args)
- T **pop_heap** (T... args)
- T **sprintf** (T... args)
- T **fixed** (T... args)
- T **make_shared** (T... args)
- T **make_heap** (T... args)
- T **fmod** (T... args)
- T **atol** (T... args)
- T **uninitialized_copy** (T... args)
- T **dynamic_pointer_cast** (T... args)
- T **set_union** (T... args)
- T **hexfloat** (T... args)
- T **vswprintf** (T... args)
- T **asctime** (T... args)
- T **iswspace** (T... args)
- T **nan** (T... args)
- T **sort** (T... args)
- T **quick_exit** (T... args)
- T **log10** (T... args)
- T **mbstowcs** (T... args)
- T **isspace** (T... args)
- T **strncat** (T... args)
- T **isinf** (T... args)
- T **atof** (T... args)
- T **erf** (T... args)
- T **is_sorted_until** (T... args)
- T **cbrt** (T... args)
- T **log1p** (T... args)
- T **return_temporary_buffer** (T... args)
- T **mbsrtowcs** (T... args)
- T **feraiseexcept** (T... args)
- T **fseek** (T... args)
- T **atomic_fetch_or_explicit** (T... args)
- T **log** (T... args)
- T **putchar** (T... args)
- T **make_tuple** (T... args)
- T **expm1** (T... args)
- T **fma** (T... args)
- T **remove_copy_if** (T... args)
- T **showpoint** (T... args)
- T **fscanf** (T... args)

- T **stable_partition** (T... args)
- T **fill_n** (T... args)
- T **remove_copy** (T... args)
- T **atomic_compare_exchange_strong_explicit** (T... args)
- T **wctomb** (T... args)
- T **fgets** (T... args)
- T **remainder** (T... args)
- T **allocate_shared** (T... args)
- T **unique** (T... args)
- T **includes** (T... args)
- T **iswalnum** (T... args)
- T **exit** (T... args)
- T **put_time** (T... args)
- T **to_string** (T... args)
- T **is_heap_until** (T... args)
- T **wcstold** (T... args)
- T **stold** (T... args)
- T **ftell** (T... args)
- T **copy_backward** (T... args)
- T **wcstoll** (T... args)
- T **perror** (T... args)
- T **vwscanf** (T... args)
- T **stable_sort** (T... args)
- T **generic_category** (T... args)
- T **abs(int)** (T... args)
- T **fgetws** (T... args)
- T **showpos** (T... args)
- T **exp** (T... args)
- T **fill** (T... args)
- T **isalpha** (T... args)
- T **lgamma** (T... args)
- T **feclearexcept** (T... args)
- T **wcsncpy** (T... args)
- T **undeclare_reachable** (T... args)
- T **oct** (T... args)
- T **strspn** (T... args)
- T **realloc** (T... args)
- T **copy** (T... args)
- T **binary_search** (T... args)
- T **system_category** (T... args)
- T **mbrtowc** (T... args)
- T **strtof** (T... args)
- T **mem_fn** (T... args)
- T **distance** (T... args)
- T **lock** (T... args)
- T **strcmp** (T... args)
- T **tmpfile** (T... args)
- T **hypot** (T... args)
- T **getenv** (T... args)
- T **strrchr** (T... args)
- T **count** (T... args)
- T **tan** (T... args)
- T **strftime** (T... args)
- T **stod** (T... args)
- T **towupper** (T... args)

- T **atoll** (T... args)
- T **atomic_store** (T... args)
- T **stoi** (T... args)
- T **rethrow_exception** (T... args)
- T **sin** (T... args)
- T **atomic_fetch_sub_explicit** (T... args)
- T **unexpected** (T... args)
- T **mbtowc** (T... args)
- T **get_time** (T... args)
- T **partition** (T... args)
- T **next** (T... args)
- T **isfinite** (T... args)
- T **boolalpha** (T... args)
- T **fetestexcept** (T... args)
- T **mbrlen** (T... args)
- T **iswgraph** (T... args)
- T **time** (T... args)
- T **atomic_compare_exchange_strong** (T... args)
- T **wcschr** (T... args)
- T **uppercase** (T... args)
- T **lower_bound** (T... args)
- T **copy_if** (T... args)
- T **isnan** (T... args)
- T **has_facet** (T... args)
- T **kill_dependency** (T... args)
- T **uninitialized_copy_n** (T... args)
- T **feholdexcept** (T... args)
- T **div** (T... args)
- T **at_quick_exit** (T... args)
- T **wcspbrk** (T... args)
- T **search** (T... args)
- T **find_first_of** (T... args)
- T **iota** (T... args)
- T **declare_reachable** (T... args)
- T **atomic_compare_exchange_weak** (T... args)
- T **strtod** (T... args)
- T **accumulate** (T... args)
- T **wcsrchr** (T... args)
- T **min_element** (T... args)
- T **clearerr** (T... args)
- T **random_shuffle** (T... args)
- T **iswalpha** (T... args)
- T **atomic_fetch_and** (T... args)
- T **wmemchr** (T... args)
- T **bsearch** (T... args)
- T **ilogb** (T... args)
- T **unique_copy** (T... args)
- T **_Exit** (T... args)
- T **move** (T... args)
- T **find_end** (T... args)
- T **fesetexceptflag** (T... args)
- T **nth_element** (T... args)
- T **gets** (T... args)
- T **lexicographical_compare** (T... args)
- T **nearbyint** (T... args)

- T **memcpy** (T... args)
- T **fwrite** (T... args)
- T **unitbuf** (T... args)
- T **iswlower** (T... args)
- T **mblen** (T... args)
- T **swscanf** (T... args)
- T **wcstoimax** (T... args)
- T **fprintf** (T... args)
- T **find_if** (T... args)
- T **strtoimax** (T... args)
- T **isalnum** (T... args)
- T **atomic_fetch_add_explicit** (T... args)
- T **push_heap** (T... args)
- T **min** (T... args)
- T **fwprintf** (T... args)
- T **uncaught_exception** (T... args)
- T **strtoll** (T... args)
- T **throw_with_nested** (T... args)
- T **shuffle** (T... args)
- T **isprint** (T... args)
- T **get_new_handler** (T... args)
- T **call_once** (T... args)
- T **trunc** (T... args)
- T **wcscspn** (T... args)
- T **mbrtoc16** (T... args)
- T **lround** (T... args)
- T **pow** (T... args)
- T **tgamma** (T... args)
- T **erfc** (T... args)
- T **llround** (T... args)
- T **abs(float)** (T... args)
- T **asinh** (T... args)
- T **feof** (T... args)
- T **noskipws** (T... args)
- T **find** (T... args)
- T **atoi** (T... args)
- T **not1** (T... args)
- T **vfscanf** (T... args)
- T **stof** (T... args)
- T **regex_search** (T... args)
- T **rotate_copy** (T... args)
- T **set_new_handler** (T... args)
- T **undeclare_no_pointers** (T... args)
- T **async** (T... args)
- T **partition_point** (T... args)
- T **vsscanf** (T... args)
- T **fesetround** (T... args)
- T **atomic_is_lock_free** (T... args)
- T **tanh** (T... args)
- T **ldiv** (T... args)
- T **setbase** (T... args)
- T **remove** (T... args)
- T **strtol** (T... args)
- T **strpbrk** (T... args)
- T **signbit** (T... args)

- T **wcsncat** (T... args)
- T **get_money** (T... args)
- T **set_difference** (T... args)
- T **cref** (T... args)
- T **getline** (T... args)
- T **to_wstring** (T... args)
- T **system** (T... args)
- T **static_pointer_cast** (T... args)
- T **wcstoumax** (T... args)
- T **memmove** (T... args)
- T **getwchar** (T... args)
- T **scientific** (T... args)
- T **wcsftime** (T... args)
- T **begin** (T... args)
- T **ceil** (T... args)
- T **sinh** (T... args)
- T **is_permutation** (T... args)
- T **generate_n** (T... args)
- T **acosh** (T... args)
- T **advance** (T... args)
- T **flush** (T... args)
- T **atomic_fetch_xor** (T... args)
- T **ws** (T... args)
- T **signal** (T... args)
- T **noshowbase** (T... args)
- T **generate** (T... args)
- T **ldexp** (T... args)
- T **vsnprintf** (T... args)
- T **remove_if** (T... args)
- T **stoull** (T... args)
- T **fegetexceptflag** (T... args)
- T **find_if_not** (T... args)
- T **merge** (T... args)
- T **free** (T... args)
- T **count_if** (T... args)
- T **clock** (T... args)
- T **mktime** (T... args)
- T **inserter** (T... args)
- T **puts** (T... args)
- T **asin** (T... args)
- T **iscntrl** (T... args)
- T **difftime** (T... args)
- T **terminate** (T... args)
- T **memcmp** (T... args)
- T **uninitialized_fill** (T... args)
- T **hex** (T... args)
- T **tie** (T... args)
- T **back_inserter** (T... args)
- T **upper_bound** (T... args)
- T **adjacent_find** (T... args)
- T **use_facet** (T... args)
- T **vfwprintf** (T... args)
- T **atomic_fetch_add** (T... args)
- T **fsetpos** (T... args)
- T **malloc** (T... args)

- T **localtime** (T... args)
- T **wcscmp** (T... args)
- T **c32rtomb** (T... args)
- T **isupper** (T... args)
- T **wcstod** (T... args)
- T **tolower** (T... args)
- T **sort_heap** (T... args)
- T **isdigit** (T... args)
- T **wcslen** (T... args)
- T **wmemcmp** (T... args)
- T **move_if_noexcept** (T... args)
- T **declval** (T... args)
- T **fpclassify** (T... args)
- T **iswupper** (T... args)
- T **rand** (T... args)
- T **atomic_compare_exchange_weak_explicit** (T... args)
- T **partial_sort** (T... args)
- T **llrint** (T... args)
- T **fclose** (T... args)
- T **reverse** (T... args)
- T **partial_sum** (T... args)
- T **showbase** (T... args)
- T **vswscanf** (T... args)
- T **atan** (T... args)
- T **atanh** (T... args)
- T **iter_swap** (T... args)
- T **scalbln** (T... args)
- T **reverse_copy** (T... args)
- T **forward** (T... args)
- T **getc** (T... args)
- T **equal_range** (T... args)
- T **atomic_fetch_sub** (T... args)
- T **is_partitioned** (T... args)
- T **next_permutation** (T... args)
- T **isblank** (T... args)
- T **noshowpoint** (T... args)
- T **atan2** (T... args)
- T **nanf** (T... args)
- T **towctrans** (T... args)
- T **right** (T... args)
- T **fputwc** (T... args)
- T **strtoul** (T... args)
- T **is_heap** (T... args)
- T **fflush** (T... args)
- T **strtoumax** (T... args)
- T **nexttoward** (T... args)
- T **nounitbuf** (T... args)
- T **ispunct** (T... args)
- T **noboolalpha** (T... args)
- T **make_pair** (T... args)
- T **iswctype** (T... args)
- T **srand** (T... args)
- T **replace_copy** (T... args)
- T **future_category** (T... args)
- T **resetiosflags** (T... args)

- T **vprintf** (T... args)
- T **gmtime** (T... args)
- T **align** (T... args)
- T **tuple_cat** (T... args)
- T **ends** (T... args)
- T **set_terminate** (T... args)
- T **lrint** (T... args)
- T **none_of** (T... args)
- T **wscanf** (T... args)
- T **fputc** (T... args)
- T **dec** (T... args)
- T **strcat** (T... args)
- T **raise** (T... args)
- T **wcsspn** (T... args)
- T **fabs** (T... args)
- T **wmemcpy** (T... args)
- T **copy_n** (T... args)
- T **rethrow_if_nested** (T... args)
- T **setlocale** (T... args)
- T **addressof** (T... args)
- T **calloc** (T... args)
- T **strerror** (T... args)
- T **strcpy** (T... args)
- T **wcstoull** (T... args)
- T **c16rtomb** (T... args)
- T **generate_canonical** (T... args)
- T **vfprintf** (T... args)
- T **notify_all_at_thread_exit** (T... args)
- T **rotate** (T... args)
- T **current_exception** (T... args)
- T **strtok** (T... args)
- T **wcscat** (T... args)
- T **strncpy** (T... args)
- T **towlower** (T... args)
- T **floor** (T... args)
- T **left** (T... args)
- T **ferror** (T... args)
- T **atomic_load_explicit** (T... args)
- T **swap** (T... args)
- T **acos** (T... args)
- T **wcscoll** (T... args)
- T **sqrt** (T... args)
- T **mbsinit** (T... args)
- T **qsort** (T... args)
- T **stoll** (T... args)
- T **put_money** (T... args)
- T **wcstoul** (T... args)
- T **wcstol** (T... args)
- T **atexit** (T... args)
- T **atomic_fetch_or** (T... args)
- T **rewind** (T... args)
- T **wcsxfrm** (T... args)
- T **round** (T... args)
- T **vwprintf** (T... args)
- T **all_of** (T... args)

- T **replace** (T... args)
- T **remquo** (T... args)
- T **setbuf** (T... args)
- T **strncmp** (T... args)
- T **localeconv** (T... args)
- T **wctrans** (T... args)
- T **any_of** (T... args)
- T **equal** (T... args)
- T **max** (T... args)
- T **strxfrm** (T... args)
- T **iswxdigit** (T... args)
- T **labs** (T... args)
- T **regex_match** (T... args)
- T **fputws** (T... args)
- T **wcrtomb** (T... args)
- T **setprecision** (T... args)
- T **setvbuf** (T... args)
- T **regex_replace** (T... args)
- T **freopen** (T... args)
- T **logb** (T... args)
- T **wctob** (T... args)
- T **atomic_load** (T... args)
- T **search_n** (T... args)
- T **toupper** (T... args)
- T **move_backward** (T... args)
- T **is_sorted** (T... args)
- T **strtoull** (T... args)
- T **iswblank** (T... args)
- T **get_pointer_safety** (T... args)
- T **get_unexpected** (T... args)
- T **sscanf** (T... args)
- T **fesetenv** (T... args)
- T **atomic_store_explicit** (T... args)
- T **strtold** (T... args)
- T **fread** (T... args)
- T **memchr** (T... args)
- T **btowc** (T... args)
- T **replace_if** (T... args)
- T **strcoll** (T... args)
- T **vsprintf** (T... args)
- T **mismatch** (T... args)
- T **getchar** (T... args)
- T **islower** (T... args)
- T **tmpnam** (T... args)
- T **nanl** (T... args)
- T **fopen** (T... args)
- T **for_each** (T... args)
- T **fegetround** (T... args)
- T **ungetc** (T... args)
- T **internal** (T... args)
- T **vfwscanf** (T... args)
- T **fgetc** (T... args)
- T **wcstof** (T... args)
- T **bind** (T... args)
- T **skipws** (T... args)

- T **iswprint** (T... args)
- T **wcstombs** (T... args)
- T **inplace_merge** (T... args)
- T **copysign** (T... args)
- T **putwchar** (T... args)
- T **wcsstr** (T... args)
- T **fegetenv** (T... args)
- T **longjmp** (T... args)
- T **iswcntrl** (T... args)
- T **declare_no_pointers** (T... args)
- T **isnormal** (T... args)
- T **swap_ranges** (T... args)
- T **minmax** (T... args)
- T **defaultfloat** (T... args)
- T **rename** (T... args)
- T **snprintf** (T... args)
- T **try_lock** (T... args)
- T **stoul** (T... args)
- T **fgetpos** (T... args)
- T **partition_copy** (T... args)
- T **vscanf** (T... args)
- T **front_inserter** (T... args)
- T **get_terminate** (T... args)
- T **cosh** (T... args)
- T **prev** (T... args)
- T **strchr** (T... args)
- T **strstr** (T... args)
- T **printf** (T... args)
- T **setfill** (T... args)
- T **inner_product** (T... args)
- template<typename T , typename... CONSTRUCTOR_ARGS>
  **std::unique_ptr**< T > make_unique (CONSTRUCTOR_ARGS &&... constructor_args)

### 9.2.1 Function Documentation

#### 9.2.1.1 make_unique()

```
template<typename T , typename...  CONSTRUCTOR_ARGS>
std::unique_ptr<T> std::make_unique (
            CONSTRUCTOR_ARGS &&...  constructor_args )
```

Definition at line 203 of file utils.h.

## 9.3 vxg Namespace Reference

### Namespaces

- cloud
- media

### Data Structures

- class logger

  *Logger class, current implementation based on spdlog.*

## 9.4 vxg::cloud Namespace Reference

### Namespaces

- agent

  *VXG Cloud Agent namespace.*
- sync
- time_spec

  *time point*
- utils

### Data Structures

- class cloud_storage
- struct period
- class stream_storage
- class timed_storage
- class timeline

### Typedefs

- using time = **std::chrono::time_point**< **std::chrono::system_clock**, time_spec::precision >
- using duration = time_spec::duration< time_spec::precision >
- typedef **std::shared_ptr**< timed_storage > timed_storage_ptr

### Functions

- bool operator< (const timed_storage::item_ptr l, const timed_storage::item_ptr r)

### 9.4.1 Typedef Documentation

#### 9.4.1.1 duration

```
typedef time_spec::duration< time_spec::precision > vxg::cloud::duration
```

Definition at line 40 of file config.h.

#### 9.4.1.2 time

```
typedef std::chrono::time_point< std::chrono::system_clock, time_spec::precision > vxg::cloud::time
```

Definition at line 39 of file config.h.

#### 9.4.1.3 timed_storage_ptr

```
typedef std::shared_ptr<timed_storage> vxg::cloud::timed_storage_ptr
```

Definition at line 131 of file timeline.h.

### 9.4.2 Function Documentation

#### 9.4.2.1 operator<()

```
bool vxg::cloud::operator< (
            const timed_storage::item_ptr l,
            const timed_storage::item_ptr r )  [inline]
```

Definition at line 127 of file timeline.h.

## 9.5 vxg::cloud::agent Namespace Reference

VXG Cloud Agent namespace.

### Namespaces

- media
- proto

## Data Structures

- struct access_token

  *VXG Cloud access token.*
- struct audio_config

  *Audio config.*
- struct audio_detection_config

  *5.6 audio_detection_config (CM) Current audio detection settings.*
- class callback

  *VXG Cloud manager common callbacks class.*
- struct event_config

  *Event config.*
- class event_manager
- class event_state
- class event_stream

  *Event stream, abstract class for event generation.*
- struct events_config

  *Events config, list of event_config objects.*
- class manager

  *VXG Cloud agent manager class.*
- struct osd_config

  *OSD config.*
- struct ptz_command

  *PTZ command.*
- struct ptz_config

  *PTZ config.*
- struct ptz_preset

  *PTZ preset.*
- struct supported_stream_config

  *Supported stream config.*
- struct supported_streams_config

  *Supported streams config, list of supported_stream_config.*
- class synchronizer

## Typedefs

- using event_manager_ptr = **std::shared_ptr**< event_manager >
- using event_state_ptr = **std::shared_ptr**< event_state >
- using synchronizer_ptr = **std::shared_ptr**< synchronizer >

## Functions

- **std::string** version ()

  *VXG Cloud Agent library version.*

### 9.5.1 Detailed Description

VXG Cloud Agent namespace.

### 9.5.2 Typedef Documentation

#### 9.5.2.1 event_manager_ptr

```
using vxg::cloud::agent::event_manager_ptr = typedef  std::shared_ptr<event_manager>
```

Definition at line 210 of file event-manager.h.

#### 9.5.2.2 event_state_ptr

```
using vxg::cloud::agent::event_state_ptr = typedef  std::shared_ptr<event_state>
```

Definition at line 200 of file event-state.h.

#### 9.5.2.3 synchronizer_ptr

```
using vxg::cloud::agent::synchronizer_ptr = typedef  std::shared_ptr<synchronizer>
```

Definition at line 803 of file timeline-synchronizer.h.

### 9.5.3 Function Documentation

#### 9.5.3.1 version()

```
std::string vxg::cloud::agent::version ( )
```

VXG Cloud Agent library version.

**Returns**

**std::string** version string

## 9.6 vxg::cloud::agent::media Namespace Reference

### Data Structures

- class rtsp_stream

  *Implementation of the media::stream with RTSP source and NIY stubs.*
- class stream

  *Cloud agent media stream abstract class.*
- class stream_callbacks

  *Cloud agent media stream callbacks abstract class.*
- class stream_callbacks_stub

### Typedefs

- using stream_ptr = **std::shared_ptr**< stream >

### 9.6.1 Typedef Documentation

#### 9.6.1.1 stream_ptr

```
using vxg::cloud::agent::media::stream_ptr = typedef  std::shared_ptr<stream>
```

Definition at line 236 of file agent/stream.h.

## 9.7 vxg::cloud::agent::proto Namespace Reference

### Data Structures

- struct audio_caps
  *Audio capabilities.*
- struct audio_stream_config
  *Audio media stream config.*
- struct event_caps
  *Events capabilies.*
- struct motion_detection_caps
  *Motion detection capabilities camera capabilities that limit possible motion detection configuration.*
- struct motion_detection_config
  *Motion detection config.*
- struct motion_region
  *Motion detection related structs.*
- struct osd_caps
  *OSD capabilities.*
- struct stream_caps
  *Media stream capabilites.*
- struct stream_config
  *Media stream config.*
- struct video_caps
  *Video image capabilities.*
- struct video_clip_info
  *Video recoding(mp4 file) clip description,.*
- struct video_config
  *Video image config.*
- struct video_stream_config
  *Video stream config.*
- struct wifi_config
  *WiFi config.*
- struct wifi_network
  *WiFi network object.*

## Typedefs

- typedef wifi_config wifi_list

  *wifi_config*

## Enumerations

- enum mode { M_OFF, M_ON, M_AUTO, M_INVALID }

  *Mode on/off.*
- enum video_format { VF_H264, VF_H265, VF_MJPEG, VF_INVALID }

  *Video codec format.*
- enum audio_format {
  AF_G711A, AF_G711U, AF_RAW, AF_ADPCM,
  AF_MP3, AF_NELLY8, AF_NELLY16, AF_NELLY,
  AF_OPUS, AF_AAC, AF_SPEEX, AF_INVALID }

  *Audio codec format.*
- enum audio_file_format { AFF_AU_G711U, AFF_MP3, AFF_WAV_PCM, AFF_INVALID }

  *Audio file format.*
- enum motion_sensitivity { MS_REGION, MS_FRAME, MS_INVALID }

  *Motion sensitivity.*
- enum motion_region_shape { MR_RECTANGLE, MR_ANY, MR_INVALID }

  *Motion region shape.*
- enum ptz_action {
  A_LEFT, A_RIGHT, A_TOP, A_BOTTOM,
  A_ZOOM_IN, A_ZOOM_OUT, A_STOP, A_INVALID }

  *PTZ actions.*
- enum ptz_preset_action {
  PA_CREATE, PA_DELETE, PA_GOTO, PA_UPDATE,
  PA_INVALID }

  *PTZ preset action.*
- enum time_format_n { TF_12H, TF_24H, TF_INVALID }

  *3.34 get_osd_conf (SRV) 3.35 osd_conf (CM) 3.36 set_osd_conf (SRV)*
- enum event_status { ES_OK, ES_ERROR, ES_INVALID }

  *Event status.*
- enum event_type {
  ET_MOTION, ET_SOUND, ET_NET, ET_RECORD,
  ET_MEMORYCARD, ET_WIFI, ET_CUSTOM, ET_INVALID }

  *Types of events.*
- enum memorycard_status {
  MCS_NONE, MCS_NORMAL, MCS_NEED_FORMAT, MCS_FORMATTING,
  MCS_INITIALIZATION, MCS_INVALID }

  *Memory card status.*
- enum wifi_encryption {
  WFE_OPEN, WFE_WEP, WFE_WPA, WFE_WPA2,
  WFE_WPA_ENTERPRISE, WFE_WPA2_ENTERPRISE, WFE_INVALID }

  *WiFi encryption type.*
- enum wifi_network_state {
  WNS_UNKNOWN, WNS_INITIALIZE_0, WNS_INITIALIZE_1, WNS_TRY_CONNECT,
  WNS_RECEIVING_IP, WNS_CONNECTED, WNS_INVALID }

  *WiFi connection state.*

## Functions

- **std::string** name () const

### 9.7.1 Typedef Documentation

#### 9.7.1.1 wifi_list

```
typedef wifi_config vxg::cloud::agent::proto::wifi_list
```

wifi_config

Definition at line 594 of file config.h.

### 9.7.2 Enumeration Type Documentation

#### 9.7.2.1 audio_file_format

```
enum vxg::cloud::agent::proto::audio_file_format
```

Audio file format.

**Enumerator**

| | |
|---|---|
| AFF_AU_G711U | AU file format, encoded in mu-law and sampled with 8 or 16 kHz;. |
| AFF_MP3 | MP3 file format, in mono or stereo with bitrate of 64 kbps to 320 kbps and sample rate of 8 to 48 kHz. |
| AFF_WAV_PCM | WAV file format, encoded in PCM audio that depends on what the product supports. It may support encoded as 8 or 16-bit mono or stereo and sample rate of 8 to 48 kHz; |
| AFF_INVALID | Invalid value. |

Definition at line 147 of file caps.h.

#### 9.7.2.2 audio_format

```
enum vxg::cloud::agent::proto::audio_format
```

Audio codec format.

**Enumerator**

| | |
|---|---|
| AF_G711A | G711A - PCMA, A-Law. |
| AF_G711U | G711U - PCMU, U-Law. |
| AF_RAW | PCM. |
| AF_ADPCM | G726LE. |
| AF_MP3 | |
| AF_NELLY8 | |
| AF_NELLY16 | |
| AF_NELLY | |
| AF_OPUS | |
| AF_AAC | AAC. |
| AF_SPEEX | |
| AF_INVALID | Invalid value. |

Definition at line 106 of file caps.h.

#### 9.7.2.3 event_status

`enum vxg::cloud::agent::proto::event_status`

Event status.

**Enumerator**

| | |
|---|---|
| ES_OK | Ok. |
| ES_ERROR | Error. |
| ES_INVALID | Default status, invalid. |

Definition at line 378 of file config.h.

#### 9.7.2.4 event_type

`enum vxg::cloud::agent::proto::event_type`

Types of events.

**Enumerator**

| | |
|---|---|
| ET_MOTION | "motion" for motion detection events |
| ET_SOUND | "sound" for audio detection |
| ET_NET | "net" for the camera network status change |
| ET_RECORD | "record" CM informs server about necessity of changing of recording state |
| ET_MEMORYCARD | "memorycard" camera's memory-card status change |
| ET_WIFI | "wifi" status of camera's currently used Wi-Fi |
| ET_CUSTOM | Custom event. |
| ET_INVALID | Invalid event type. |

Definition at line 401 of file config.h.

#### 9.7.2.5 memorycard_status

enum vxg::cloud::agent::proto::memorycard_status

Memory card status.

**Enumerator**

| | |
|---|---|
| MCS_NONE | No memorycard. |
| MCS_NORMAL | Memorycard is OK. |
| MCS_NEED_FORMAT | Need formatting. |
| MCS_FORMATTING | Formatting ongoing. |
| MCS_INITIALIZATION | Initialization, not mounted yet for example. |
| MCS_INVALID | Invalid value. |

Definition at line 481 of file config.h.

#### 9.7.2.6 mode

enum vxg::cloud::agent::proto::mode

Mode on/off.

**Enumerator**

| | |
|---|---|
| M_OFF | |
| M_ON | |
| M_AUTO | |
| M_INVALID | |

Definition at line 30 of file caps.h.

#### 9.7.2.7 motion_region_shape

enum vxg::cloud::agent::proto::motion_region_shape

Motion region shape.

**Enumerator**

| | |
|---|---|
| MR_RECTANGLE | Rectangle. |
| MR_ANY | Any shape. |
| MR_INVALID | Invalid. |

Definition at line 313 of file caps.h.

#### 9.7.2.8 motion_sensitivity

enum vxg::cloud::agent::proto::motion_sensitivity

Motion sensitivity.

**Enumerator**

| | |
|---|---|
| MS_REGION | Indicates if sensitivity can be set for region. |
| MS_FRAME | Indicates if sensitivity can be only for the full frame. |
| MS_INVALID | Invalid value. |

Definition at line 291 of file caps.h.

#### 9.7.2.9 ptz_action

enum vxg::cloud::agent::proto::ptz_action

PTZ actions.

**Enumerator**

| | |
|---|---|
| A_LEFT | Go left. |
| A_RIGHT | Go right. |
| A_TOP | Go tip. |
| A_BOTTOM | Go bottom. |
| A_ZOOM_IN | Zoom in. |
| A_ZOOM_OUT | Zoom out. |
| A_STOP | Stop current action. |
| A_INVALID | Invalid value. |

Definition at line 533 of file caps.h.

#### 9.7.2.10 ptz_preset_action

enum vxg::cloud::agent::proto::ptz_preset_action

PTZ preset action.

**Enumerator**

| | |
|---|---|
| PA_CREATE | |
| PA_DELETE | |
| PA_GOTO | |
| PA_UPDATE | |
| PA_INVALID | |

Definition at line 569 of file caps.h.

#### 9.7.2.11 time_format_n

`enum vxg::cloud::agent::proto::time_format_n`

3.34 get_osd_conf (SRV) 3.35 osd_conf (CM) 3.36 set_osd_conf (SRV)

Time format

**Enumerator**

| | |
|---|---|
| TF_12H | 12 hours |
| TF_24H | 24 hours |
| TF_INVALID | Invalid value. |

Definition at line 598 of file caps.h.

#### 9.7.2.12 video_format

`enum vxg::cloud::agent::proto::video_format`

Video codec format.

**Enumerator**

| | |
|---|---|
| VF_H264 | H264 (AVC) |
| VF_H265 | H265 (HEVC) |
| VF_MJPEG | Motion JPEG. |
| VF_INVALID | Invalid value. |

Definition at line 81 of file caps.h.

#### 9.7.2.13 wifi_encryption

`enum vxg::cloud::agent::proto::wifi_encryption`

WiFi encryption type.

**Enumerator**

| | |
|---|---|
| WFE_OPEN | No encryption. |
| WFE_WEP | WEP. |
| WFE_WPA | WPA-PSK. |
| WFE_WPA2 | WPA2-PSK. |
| WFE_WPA_ENTERPRISE | WPA-Enterprise. |
| WFE_WPA2_ENTERPRISE | WPA2-Enterprise. |
| WFE_INVALID | Default, invalid value. |

Definition at line 517 of file config.h.

#### 9.7.2.14 wifi_network_state

```
enum vxg::cloud::agent::proto::wifi_network_state
```

WiFi connection state.

**Enumerator**

| | |
|---|---|
| WNS_UNKNOWN | |
| WNS_INITIALIZE_0 | |
| WNS_INITIALIZE_1 | |
| WNS_TRY_CONNECT | |
| WNS_RECEIVING_IP | |
| WNS_CONNECTED | |
| WNS_INVALID | Invalid value. |

Definition at line 597 of file config.h.

### 9.7.3 Function Documentation

#### 9.7.3.1 name()

```
std::string vxg::cloud::agent::proto::name ( ) const
```

Definition at line 884 of file config.h.

## 9.8 vxg::cloud::sync Namespace Reference

### Data Structures

- class timeline

### Typedefs

- using timeline_ptr = **std::shared_ptr**< timeline >

### 9.8.1 Typedef Documentation

#### 9.8.1.1 timeline_ptr

```
using vxg::cloud::sync::timeline_ptr = typedef  std::shared_ptr<timeline>
```

Definition at line 591 of file timeline.h.

## 9.9 vxg::cloud::time_spec Namespace Reference

time point

### Typedefs

- using precision = **std::chrono::microseconds**
- template<typename T >
  using duration = typename **std::conditional**< **std::is_same**< T, precision >::value, precision, **std**↩**::chrono::duration**< T > >::type
- using precision_ratio = **std::micro**

### 9.9.1 Detailed Description

time point

### 9.9.2 Typedef Documentation

#### 9.9.2.1 duration

```
template<typename T >
using vxg::cloud::time_spec::duration = typedef typename  std::conditional< std::is_same<T,
precision>::value, precision,  std::chrono::duration<T> >::type
```

Definition at line 36 of file config.h.

#### 9.9.2.2 precision

```
typedef std::chrono::microseconds vxg::cloud::time_spec::precision
```

Definition at line 32 of file config.h.

#### 9.9.2.3 precision_ratio

```
using vxg::cloud::time_spec::precision_ratio = typedef std::micro
```

Definition at line 16 of file utils.h.

## 9.10 vxg::cloud::utils Namespace Reference

### Namespaces

- gcc_abi
- motion
- time

### Data Structures

- class queued_async_handler
- struct uri

### Typedefs

- template<class T >
  using queued_async_handler_ptr = **std::shared_ptr**< queued_async_handler< T > >

### Functions

- void set_thread_name ( **std::string** name)
- template<typename... Args>
  **std::string** string_format (const **std::string** &format, Args... args)
- **std::string** string_trim (const **std::string** &name, **std::regex** regx)
- **std::string** string_trim (const **std::string** &name)
- **std::vector**< **std::string** > string_split (const **std::string** &s, char delimiter)
- bool string_startswith ( **std::string** const &fullString, **std::string** const &start)
- bool string_endswith ( **std::string** const &fullString, **std::string** const &ending)
- bool string_replace ( **std::string** &str, const **std::string** &from, const **std::string** &to)
- **std::string** string_urlencode (const **std::string** &value)
- **std::string** string_urldecode (const **std::string** &text)
- **std::string** string_tolower (const **std::string** &s)
- **std::string** string_toupper (const **std::string** &s)
- bool string_contains ( **std::string** s, char c)
- bool string_contains ( **std::string** s, **std::string** substring)
- **std::string** dirname (const **std::string** &filepath)
- **std::string** random_string (size_t length=32)

### 9.10.1 Typedef Documentation

#### 9.10.1.1 queued_async_handler_ptr

```
template<class T >
using vxg::cloud::utils::queued_async_handler_ptr = typedef  std::shared_ptr<queued_async_handler<T>
>
```

Definition at line 61 of file queued-handler.h.

### 9.10.2 Function Documentation

#### 9.10.2.1 dirname()

```
 std::string vxg::cloud::utils::dirname (
             const  std::string & filepath )
```

#### 9.10.2.2 random_string()

```
 std::string vxg::cloud::utils::random_string (
             size_t length = 32 )  [inline]
```

Definition at line 182 of file utils.h.

#### 9.10.2.3 set_thread_name()

```
void vxg::cloud::utils::set_thread_name (
              std::string name )
```

#### 9.10.2.4 string_contains() [1/2]

```
bool vxg::cloud::utils::string_contains (
              std::string s,
             char c )  [inline]
```

Definition at line 170 of file utils.h.

#### 9.10.2.5 string_contains() [2/2]

```
bool vxg::cloud::utils::string_contains (
              std::string s,
              std::string substring )  [inline]
```

Definition at line 173 of file utils.h.

#### 9.10.2.6 string_endswith()

```
bool vxg::cloud::utils::string_endswith (
              std::string const & fullString,
              std::string const & ending )
```

#### 9.10.2.7 string_format()

```
template<typename...  Args>
std::string vxg::cloud::utils::string_format (
             const  std::string & format,
             Args...  args )
```

Definition at line 147 of file utils.h.

#### 9.10.2.8 string_replace()

```
bool vxg::cloud::utils::string_replace (
              std::string & str,
             const  std::string & from,
             const  std::string & to )
```

#### 9.10.2.9 string_split()

```
 std::vector< std::string> vxg::cloud::utils::string_split (
             const  std::string & s,
             char delimiter )
```

#### 9.10.2.10 string_startswith()

```
bool vxg::cloud::utils::string_startswith (
             std::string const & fullString,
             std::string const & start )
```

#### 9.10.2.11 string_tolower()

```
 std::string vxg::cloud::utils::string_tolower (
             const  std::string & s )
```

#### 9.10.2.12 string_toupper()

```
 std::string vxg::cloud::utils::string_toupper (
             const  std::string & s )
```

#### 9.10.2.13 string_trim() [1/2]

```
 std::string vxg::cloud::utils::string_trim (
             const  std::string & name )
```

#### 9.10.2.14 string_trim() [2/2]

```
 std::string vxg::cloud::utils::string_trim (
             const  std::string & name,
              std::regex regx )
```

#### 9.10.2.15 string_urldecode()

```
 std::string vxg::cloud::utils::string_urldecode (
             const  std::string & text )
```

#### 9.10.2.16 string_urlencode()

```
 std::string vxg::cloud::utils::string_urlencode (
             const  std::string & value )
```

## 9.11 vxg::cloud::utils::gcc_abi Namespace Reference

### Functions

- **std::string** demangle ( **std::string** name)

### 9.11.1 Function Documentation

#### 9.11.1.1 demangle()

```
std::string vxg::cloud::utils::gcc_abi::demangle (
            std::string name )
```

## 9.12 vxg::cloud::utils::motion Namespace Reference

### Data Structures

- struct map

## 9.13 vxg::cloud::utils::time Namespace Reference

### Functions

- cloud::time now ()
- **std::string** now_ISO8601_UTC ()
- **std::string** now_ISO8601_UTC_packed ()
- **std::string** to_iso_8601 (cloud::time t)
- **std::string** to_iso (cloud::time t)
- **std::string** to_iso2 (cloud::time t)
- **std::string** to_iso_packed (cloud::time t)
- **std::string** to_iso_local (cloud::time t)
- cloud::time from_double (double t)
- double to_double (cloud::time t)
- cloud::time from_iso ( **std::string** st)
- cloud::time from_iso2 ( **std::string** st)
- cloud::time from_iso_packed ( **std::string** st)
- bool iso_time_valid (const **std::string** &s)
- cloud::time null ()
- cloud::time epoch ()
- cloud::time max ()
- bool is_iso_packed (const **std::string** &s)
- bool is_iso (const **std::string** &s)

### 9.13.1 Function Documentation

#### 9.13.1.1 epoch()

```
cloud::time vxg::cloud::utils::time::epoch ( )  [inline]
```

Definition at line 54 of file utils.h.

#### 9.13.1.2 from_double()

```
cloud::time vxg::cloud::utils::time::from_double (
            double t )
```

#### 9.13.1.3 from_iso()

```
cloud::time vxg::cloud::utils::time::from_iso (
             std::string st )
```

#### 9.13.1.4 from_iso2()

```
cloud::time vxg::cloud::utils::time::from_iso2 (
             std::string st )
```

#### 9.13.1.5 from_iso_packed()

```
cloud::time vxg::cloud::utils::time::from_iso_packed (
             std::string st )
```

#### 9.13.1.6 is_iso()

```
bool vxg::cloud::utils::time::is_iso (
            const  std::string & s )
```

#### 9.13.1.7 is_iso_packed()

```
bool vxg::cloud::utils::time::is_iso_packed (
            const  std::string & s )
```

#### 9.13.1.8 iso_time_valid()

```
bool vxg::cloud::utils::time::iso_time_valid (
            const  std::string & s )
```

#### 9.13.1.9 max()

```
cloud::time vxg::cloud::utils::time::max ( )  [inline]
```

Definition at line 58 of file utils.h.

#### 9.13.1.10 now()

```
cloud::time vxg::cloud::utils::time::now ( )  [inline]
```

Definition at line 32 of file utils.h.

#### 9.13.1.11 now_ISO8601_UTC()

```
std::string vxg::cloud::utils::time::now_ISO8601_UTC ( )
```

#### 9.13.1.12 now_ISO8601_UTC_packed()

```
std::string vxg::cloud::utils::time::now_ISO8601_UTC_packed ( )
```

#### 9.13.1.13 null()

```
cloud::time vxg::cloud::utils::time::null ( )  [inline]
```

Definition at line 51 of file utils.h.

#### 9.13.1.14 to_double()

```
double vxg::cloud::utils::time::to_double (
            cloud::time t )
```

#### 9.13.1.15 to_iso()

```
std::string vxg::cloud::utils::time::to_iso (
            cloud::time t )
```

#### 9.13.1.16 to_iso2()

```
std::string vxg::cloud::utils::time::to_iso2 (
            cloud::time t )
```

#### 9.13.1.17 to_iso_8601()

```
std::string vxg::cloud::utils::time::to_iso_8601 (
            cloud::time t )
```

#### 9.13.1.18 to_iso_local()

```
std::string vxg::cloud::utils::time::to_iso_local (
            cloud::time t )
```

#### 9.13.1.19 to_iso_packed()

```
std::string vxg::cloud::utils::time::to_iso_packed (
            cloud::time t )
```

## 9.14 vxg::media Namespace Reference

### Namespaces

- ffmpeg
- stream_error

  *Media stream error namespace.*
- Streamer

### Data Structures

- class rtmp_sink

  *RTMP sink class.*
- class rtmp_source

  *RTMP source class.*
- class rtsp_source

  *RTSP source class.*
- class stream

  *base media stream abstract class*

### Typedefs

- using rtsp_source_ptr = **std::shared_ptr**< rtsp_source >

### 9.14.1 Typedef Documentation

#### 9.14.1.1 rtsp_source_ptr

```
using vxg::media::rtsp_source_ptr = typedef  std::shared_ptr<rtsp_source>
```

Definition at line 187 of file rtsp_source.h.

## 9.15 vxg::media::ffmpeg Namespace Reference

### Data Structures

- class Sink

  *Base ffmpeg sink class.*
- class Source

  *Base ffmpeg source class.*

## 9.16 vxg::media::stream_error Namespace Reference

Media stream error namespace.

### Data Structures

- struct report

  *Media stream error report simple object.*

## Enumerations

- enum origin : int { origin::O_SOURCE, origin::O_SINK, origin::O_UNKNOWN }

  *Origin of the error.*
- enum error : int { error::E_CONNECT, error::E_PROCESS, error::E_UNKNOWN }

  *Error code.*

### 9.16.1 Detailed Description

Media stream error namespace.

### 9.16.2 Enumeration Type Documentation

#### 9.16.2.1 error

`enum vxg::media::stream_error::error : int [strong]`

Error code.

**Enumerator**

| | |
|---|---|
| E_CONNECT | Connection failed. |
| E_PROCESS | Processing failed, may be caused by peer connection problems. |
| E_UNKNOWN | Unknown error. |

Definition at line 30 of file streamer/stream.h.

#### 9.16.2.2 origin

`enum vxg::media::stream_error::origin : int [strong]`

Origin of the error.

**Enumerator**

| | |
|---|---|
| O_SOURCE | Source element of the media stream pipeline (ex. rtsp_source or custom source) |
| O_SINK | Sink element of the media stream pipeline (ex. rtmp_sink or custom sink) |
| O_UNKNOWN | Unknown origin. |

Definition at line 18 of file streamer/stream.h.

# 9.17 vxg::media::Streamer Namespace Reference

## Data Structures

- class ISink
- class ISource

  *ISource interface class.*
- struct MediaFrame

  *Media frame container.*
- struct StreamInfo

  *Stream info descriotion.*

## Typedefs

- using on_error_cb = **std::function**< void(Streamer::StreamError e)>

  *On error callback, used for both ISink and ISource if was provided by user.*

## Enumerations

- enum DropDirection { DROP_FRONT, DROP_BACK }
- enum StreamError { E_NONE, E_FATAL, E_EOS }

  *Stream error.*
- enum MediaType {
  UKNOWN, VIDEO, VIDEO_AVC_SPS, VIDEO_AVC_PPS,
  VIDEO_SEQ_HDR, AUDIO, AUDIO_SEQ_HDR, FLV,
  DATA, MAX }

  *Media frame type.*

## Variables

- constexpr int SINK_THREAD_PRIO
- constexpr int SRC_THREAD_PRIO

## 9.17.1 Typedef Documentation

### 9.17.1.1 on_error_cb

```
using vxg::media::Streamer::on_error_cb = typedef  std::function<void(Streamer::StreamError
e)>
```

On error callback, used for both ISink and ISource if was provided by user.

Definition at line 53 of file base_streamer.h.

## 9.17.2 Enumeration Type Documentation

### 9.17.2.1 DropDirection

```
enum vxg::media::Streamer::DropDirection
```

**Enumerator**

| | |
|---|---|
| DROP_FRONT | |
| DROP_BACK | |

Definition at line 38 of file base_streamer.h.

#### 9.17.2.2 MediaType

`enum vxg::media::Streamer::MediaType`

Media frame type.

Used to indicate when type of frame was passed from source to sink.

**Enumerator**

| | |
|---|---|
| UKNOWN | |
| VIDEO | |
| VIDEO_AVC_SPS | |
| VIDEO_AVC_PPS | |
| VIDEO_SEQ_HDR | |
| AUDIO | |
| AUDIO_SEQ_HDR | |
| FLV | |
| DATA | |
| MAX | |

Definition at line 404 of file base_streamer.h.

#### 9.17.2.3 StreamError

`enum vxg::media::Streamer::StreamError`

Stream error.

**Enumerator**

| | |
|---|---|
| E_NONE | |
| E_FATAL | |
| E_EOS | |

Definition at line 44 of file base_streamer.h.

### 9.17.3 Variable Documentation

#### 9.17.3.1 SINK_THREAD_PRIO

```
constexpr int vxg::media::Streamer::SINK_THREAD_PRIO  [constexpr]
```

Definition at line 36 of file base_streamer.h.

#### 9.17.3.2 SRC_THREAD_PRIO

```
constexpr int vxg::media::Streamer::SRC_THREAD_PRIO  [constexpr]
```

Definition at line 37 of file base_streamer.h.

# Chapter 10

# Data Structure Documentation

## 10.1 vxg::cloud::agent::access_token Struct Reference

VXG Cloud access token.

`#include <agent-proto/objects/config.h>`

### Data Structures

- struct proxy_config

  *Socks proxy settings.*

### Public Types

- typedef **std::shared_ptr**< access_token > ptr

### Public Member Functions

- **std::string** api_uri (bool secure=true)
- **std::string** cam_base_uri (bool secure=true, const **std::string** &input_host="")
- **std::string** pack ()

### Static Public Member Functions

- static access_token parse ( **std::string** packed_token)

### 10.1.1 Detailed Description

VXG Cloud access token.

Definition at line 1189 of file config.h.

### 10.1.2 Member Typedef Documentation

#### 10.1.2.1 ptr

```
typedef  std::shared_ptr<access_token> vxg::cloud::agent::access_token::ptr
```

Definition at line 1190 of file config.h.

### 10.1.3 Member Function Documentation

#### 10.1.3.1 api_uri()

```
std::string vxg::cloud::agent::access_token::api_uri (
            bool secure = true )  [inline]
```

Definition at line 1258 of file config.h.

#### 10.1.3.2 cam_base_uri()

```
std::string vxg::cloud::agent::access_token::cam_base_uri (
            bool secure = true,
            const  std::string & input_host = "" )  [inline]
```

Definition at line 1266 of file config.h.

#### 10.1.3.3 pack()

```
std::string vxg::cloud::agent::access_token::pack ( )  [inline]
```

Definition at line 1276 of file config.h.

#### 10.1.3.4 parse()

```
static access_token vxg::cloud::agent::access_token::parse (
             std::string packed_token )  [inline], [static]
```

Definition at line 1278 of file config.h.

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

- config.h

## 10.2 alter_bool Struct Reference

alternative bool class Standard bool type has two states, this class adds 3rd state - undefined.

`#include <agent-proto/command/unset-helper.h>`

### Public Types

- enum n_alter_bool { B_FALSE, B_TRUE, B_INVALID }

  *Internal boolean values.*

### Public Member Functions

- alter_bool (const n_alter_bool &v)
- alter_bool (const bool &v)
- alter_bool operator= (const bool &b)
- operator bool () const

### Data Fields

- n_alter_bool val

### Friends

- void from_json (const nlohmann::json &j, alter_bool &c)
- void to_json (nlohmann::json &j, const alter_bool &c)

### 10.2.1 Detailed Description

alternative bool class Standard bool type has two states, this class adds 3rd state - undefined.

This class used for json boolean => C++ bool type reflection. The B_INVALID value of the C++ data indicates that source json has no such field.

Definition at line 168 of file unset-helper.h.

### 10.2.2 Member Enumeration Documentation

#### 10.2.2.1 n_alter_bool

`enum alter_bool::n_alter_bool`

Internal boolean values.

**Enumerator**

| | |
|---|---|
| B_FALSE | false |
| B_TRUE | true |
| B_INVALID | Undefined, i.e. if the object was constructed from the json object this value means that original json had no such field. |

Definition at line 170 of file unset-helper.h.

### 10.2.3 Constructor & Destructor Documentation

#### 10.2.3.1 alter_bool() [1/2]

```
alter_bool::alter_bool (
            const n_alter_bool & v )  [inline]
```

Definition at line 180 of file unset-helper.h.

#### 10.2.3.2 alter_bool() [2/2]

```
alter_bool::alter_bool (
            const bool & v )  [inline]
```

Definition at line 182 of file unset-helper.h.

### 10.2.4 Member Function Documentation

#### 10.2.4.1 operator bool()

```
alter_bool::operator bool ( ) const  [inline]
```

Definition at line 196 of file unset-helper.h.

#### 10.2.4.2 operator=()

```
alter_bool alter_bool::operator= (
            const bool & b )  [inline]
```

Definition at line 189 of file unset-helper.h.

### 10.2.5 Friends And Related Function Documentation

#### 10.2.5.1 from_json

```
void from_json (
            const nlohmann::json & j,
            alter_bool & c )  [friend]
```

Definition at line 202 of file unset-helper.h.

#### 10.2.5.2 to_json

```
void to_json (
            nlohmann::json & j,
            const alter_bool & c )  [friend]
```

Definition at line 209 of file unset-helper.h.

### 10.2.6 Field Documentation

#### 10.2.6.1 val

```
n_alter_bool alter_bool::val
```

Definition at line 216 of file unset-helper.h.

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

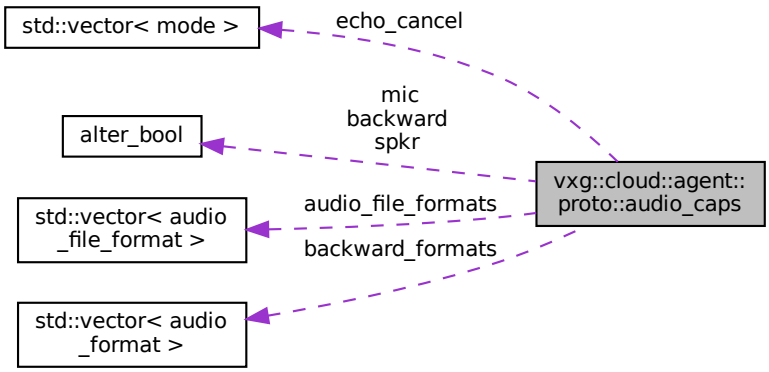
- unset-helper.h

## 10.3 vxg::cloud::agent::proto::audio_caps Struct Reference

Audio capabilities.

`#include <agent-proto/objects/caps.h>`

Collaboration diagram for vxg::cloud::agent::proto::audio_caps:




### Data Fields

- alter_bool mic

  *mic: bool, microphone is supported*
- alter_bool spkr

  *spkr: bool, speaker is supported*
- **std::vector**< mode > echo_cancel

  *echo_cancel: list of string, echo cancellation modes, empty or absent means not supported*
- alter_bool backward

  *backward: bool, backward audio supported.*
- **std::vector**< audio_format > backward_formats

  *backward_formats: list of audio_format, list of supported backward formats.*
- **std::vector**< audio_file_format > audio_file_formats

  *audio_file_formats: list of string, list of supported formats of audio files.*

### 10.3.1 Detailed Description

Audio capabilities.

Definition at line 490 of file caps.h.

### 10.3.2 Field Documentation

#### 10.3.2.1 audio_file_formats

```
std::vector<audio_file_format> vxg::cloud::agent::proto::audio_caps::audio_file_formats
```

audio_file_formats: list of string, list of supported formats of audio files.

Definition at line 513 of file caps.h.

#### 10.3.2.2 backward

```
alter_bool vxg::cloud::agent::proto::audio_caps::backward
```

backward: bool, backward audio supported.

Obsolete. Server will ignore it when backward_formats exists. If true and backward_formats is missed, server will interpret supported formats list as ["UNKNOWN"]

Definition at line 503 of file caps.h.

#### 10.3.2.3 backward_formats

```
std::vector<audio_format> vxg::cloud::agent::proto::audio_caps::backward_formats
```

backward_formats: list of audio_format, list of supported backward formats.

Supported values: ["RAW", "ADPCM", "MP3", "NELLY8", "NELLY16", "NELLY", "G711A", "G711U", "AAC", "SPEEX", "UNKNOWN"]. Empty list or missing parameter – camera doesn't support back audio channel.

Definition at line 509 of file caps.h.

#### 10.3.2.4 echo_cancel

```
std::vector<mode> vxg::cloud::agent::proto::audio_caps::echo_cancel
```

echo_cancel: list of string, echo cancellation modes, empty or absent means not supported

Definition at line 498 of file caps.h.

#### 10.3.2.5 mic

```
alter_bool vxg::cloud::agent::proto::audio_caps::mic
```

mic: bool, microphone is supported

Definition at line 492 of file caps.h.

#### 10.3.2.6 spkr

```
alter_bool vxg::cloud::agent::proto::audio_caps::spkr
```

spkr: bool, speaker is supported

Definition at line 495 of file caps.h.

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

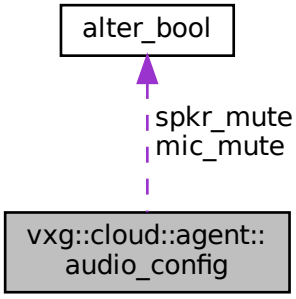
- caps.h

## 10.4 vxg::cloud::agent::audio_config Struct Reference

Audio config.

```
#include <agent-proto/objects/config.h>
```

Collaboration diagram for vxg::cloud::agent::audio_config:




### Data Fields

- int mic_gain

  *mic_gain: optional int range 0-100, microphone gain*
- alter_bool mic_mute

  *mic_mute: optional bool, microphone mute*
- int spkr_vol

  *spkr_vol: optional int range 0-100, speaker volume*
- alter_bool spkr_mute

  *spkr_mute: optional bool, speaker mute*
- mode echo_cancel

  *echo_cancel: optional string, echo cancellation mode, "" means off*
- audio_caps caps

  *caps*

### 10.4.1 Detailed Description

Audio config.

Definition at line 1033 of file config.h.

### 10.4.2 Field Documentation

#### 10.4.2.1 caps

```
audio_caps vxg::cloud::agent::audio_config::caps
```

caps

Definition at line 1046 of file config.h.

#### 10.4.2.2 echo_cancel

```
mode vxg::cloud::agent::audio_config::echo_cancel
```

echo_cancel: optional string, echo cancellation mode, “” means off

Definition at line 1043 of file config.h.

#### 10.4.2.3 mic_gain

```
int vxg::cloud::agent::audio_config::mic_gain
```

mic_gain: optional int range 0-100, microphone gain

Definition at line 1035 of file config.h.

#### 10.4.2.4 mic_mute

```
alter_bool vxg::cloud::agent::audio_config::mic_mute
```

mic_mute: optional bool, microphone mute

Definition at line 1037 of file config.h.

#### 10.4.2.5 spkr_mute

```
alter_bool vxg::cloud::agent::audio_config::spkr_mute
```

spkr_mute: optional bool, speaker mute

Definition at line 1041 of file config.h.

#### 10.4.2.6 spkr_vol

```
int vxg::cloud::agent::audio_config::spkr_vol
```

spkr_vol: optional int range 0-100, speaker volume

Definition at line 1039 of file config.h.

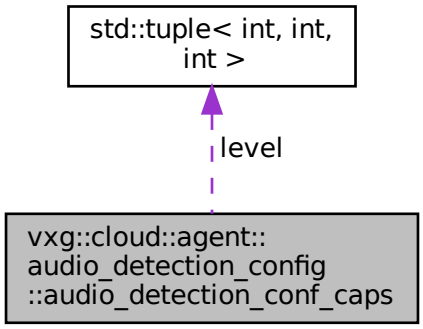
The documentation for this struct was generated from the following file:

- config.h

## 10.5 vxg::cloud::agent::audio_detection_config::audio_detection_conf_caps Struct Reference

```
#include <agent-proto/objects/config.h>
```

Collaboration diagram for vxg::cloud::agent::audio_detection_config::audio_detection_conf_caps:




### Public Member Functions

- JSON_DEFINE_TYPE_INTRUSIVE (audio_detection_conf_caps, level)

## Data Fields

- **std::tuple**< int, int, int > level

  *level: (min:int, max:int, step:int), volume range and step in -dB*

### 10.5.1 Detailed Description

Definition at line 1428 of file config.h.

### 10.5.2 Member Function Documentation

#### 10.5.2.1 JSON_DEFINE_TYPE_INTRUSIVE()

```
vxg::cloud::agent::audio_detection_config::audio_detection_conf_caps::JSON_DEFINE_TYPE_INTRU↩
SIVE (
            audio_detection_conf_caps ,
            level  )
```

### 10.5.3 Field Documentation

#### 10.5.3.1 level

```
 std::tuple<int, int, int> vxg::cloud::agent::audio_detection_config::audio_detection_conf_↩
caps::level
```

level: (min:int, max:int, step:int), volume range and step in -dB

Definition at line 1430 of file config.h.

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

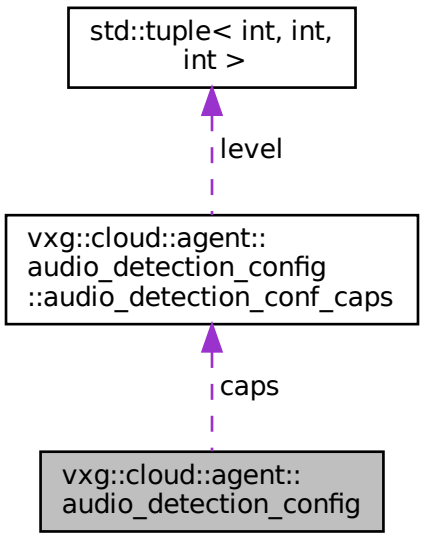
- config.h

## 10.6 vxg::cloud::agent::audio_detection_config Struct Reference

5.6 audio_detection_config (CM) Current audio detection settings.

`#include <agent-proto/objects/config.h>`

Collaboration diagram for vxg::cloud::agent::audio_detection_config:




### Data Structures

- struct audio_detection_conf_caps

### Public Member Functions

- JSON_DEFINE_TYPE_INTRUSIVE (audio_detection_config, level, length, caps)

### Data Fields

- int level

  *level: int, audio volume in -dB*
- int length

  *length: int, duration before event trigger, msec*
- audio_detection_conf_caps caps

  *caps:*

### 10.6.1 Detailed Description

5.6 audio_detection_config (CM) Current audio detection settings.

Reply 5.4 get_audio_detection (SRV).

Definition at line 1422 of file config.h.

### 10.6.2 Member Function Documentation

#### 10.6.2.1 JSON_DEFINE_TYPE_INTRUSIVE()

```
vxg::cloud::agent::audio_detection_config::JSON_DEFINE_TYPE_INTRUSIVE (
            audio_detection_config ,
            level ,
            length ,
            caps  )
```

### 10.6.3 Field Documentation

#### 10.6.3.1 caps

```
audio_detection_conf_caps vxg::cloud::agent::audio_detection_config::caps
```

caps:

Definition at line 1435 of file config.h.

#### 10.6.3.2 length

```
int vxg::cloud::agent::audio_detection_config::length
```

length: int, duration before event trigger, msec

Definition at line 1426 of file config.h.

#### 10.6.3.3 level

```
int vxg::cloud::agent::audio_detection_config::level
```

level: int, audio volume in -dB

Definition at line 1424 of file config.h.

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

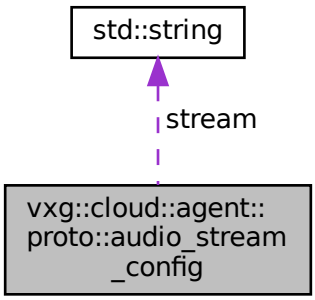
- config.h

## 10.7 vxg::cloud::agent::proto::audio_stream_config Struct Reference

Audio media stream config.

```
#include <agent-proto/objects/config.h>
```

Collaboration diagram for vxg::cloud::agent::proto::audio_stream_config:




### Data Fields

- **std::string** stream

  *Mandatory: audio ES to use.*
- audio_format format

  *Mandatory: audio encoding format.*
- int brt

  *Mandatory: bitrate, kbps.*
- double srt

  *Mandatory: samplerate, KHz.*

### 10.7.1 Detailed Description

Audio media stream config.

Definition at line 179 of file config.h.

### 10.7.2 Field Documentation

#### 10.7.2.1 brt

```
int vxg::cloud::agent::proto::audio_stream_config::brt
```

Mandatory: bitrate, kbps.

Definition at line 190 of file config.h.

#### 10.7.2.2 format

```
audio_format vxg::cloud::agent::proto::audio_stream_config::format
```

Mandatory: audio encoding format.

Definition at line 186 of file config.h.

#### 10.7.2.3 srt

```
double vxg::cloud::agent::proto::audio_stream_config::srt
```

Mandatory: samplerate, KHz.

Definition at line 194 of file config.h.

#### 10.7.2.4 stream

```
std::string vxg::cloud::agent::proto::audio_stream_config::stream
```

Mandatory: audio ES to use.

Definition at line 182 of file config.h.

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

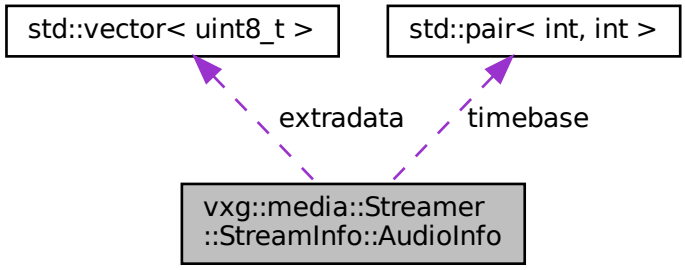
- config.h

## 10.8 vxg::media::Streamer::StreamInfo::AudioInfo Struct Reference

Audio stream info.

`#include <streamer/base_streamer.h>`

Collaboration diagram for vxg::media::Streamer::StreamInfo::AudioInfo:




### Data Fields

- AudioCodec codec
  *Audio codec.*
- int channels
  *Audio channels.*
- int samplerate
  *Audio samplerate.*
- int bitrate
  *Audio bitrate.*
- **std::pair**< int, int > timebase
  *Audio timestamps timescale.*
- **std::vector**< uint8_t > extradata
  *Audio extradata. AAC requires one.*

### 10.8.1 Detailed Description

Audio stream info.

Definition at line 364 of file base_streamer.h.

### 10.8.2 Field Documentation

#### 10.8.2.1 bitrate

```
int vxg::media::Streamer::StreamInfo::AudioInfo::bitrate
```

Audio bitrate.

Definition at line 372 of file base_streamer.h.

#### 10.8.2.2 channels

```
int vxg::media::Streamer::StreamInfo::AudioInfo::channels
```

Audio channels.

Definition at line 368 of file base_streamer.h.

#### 10.8.2.3 codec

```
AudioCodec vxg::media::Streamer::StreamInfo::AudioInfo::codec
```

Audio codec.

Definition at line 366 of file base_streamer.h.

#### 10.8.2.4 extradata

```
std::vector<uint8_t> vxg::media::Streamer::StreamInfo::AudioInfo::extradata
```

Audio extradata. AAC requires one.

Definition at line 376 of file base_streamer.h.

#### 10.8.2.5 samplerate

```
int vxg::media::Streamer::StreamInfo::AudioInfo::samplerate
```

Audio samplerate.

Definition at line 370 of file base_streamer.h.

#### 10.8.2.6 timebase

```
std::pair<int, int> vxg::media::Streamer::StreamInfo::AudioInfo::timebase
```

Audio timestamps timescale.

Definition at line 374 of file base_streamer.h.

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

- base_streamer.h

## 10.9 vxg::cloud::agent::callback Class Reference

VXG Cloud manager common callbacks class.

```
#include <agent/callback.h>
```

### Public Types

- typedef **std::unique_ptr**< callback > ptr
  ***std::unique_ptr*** *to callback*

### Public Member Functions

- virtual void on_bye (proto::command::bye_reason reason)=0
  *VXG Cloud Bye command callback.*
- virtual void on_registered (const **std::string** &sid)
  *Registration on the Cloud has passed callback.*
- virtual bool on_raw_msg ( **std::string** client_id, **std::string** &data)
  *raw message callback*
- virtual bool on_get_log ( **std::string** &log_data)
  *Get logging data callback.*
- virtual bool on_start_backward_audio ( **std::string** url)
  *Start backward audio stream.*
- virtual bool on_stop_backward_audio ( **std::string** url)
  *Stop backward audio.*
- virtual bool on_get_cam_video_config (proto::video_config &config)
  *Get video image config.*
- virtual bool on_set_cam_video_config (const proto::video_config &config)
  *Set video input config.*
- virtual bool on_get_cam_audio_config (proto::audio_config &config)
  *Get audio input configuration.*
- virtual bool on_set_cam_audio_config (const proto::audio_config &config)
  *Set audio input/output config.*
- virtual bool on_get_ptz_config (proto::ptz_config &config)
  *Get PTZ config.*
- virtual bool on_cam_ptz (proto::ptz_command &command)

*PTZ command.*

- virtual bool on_cam_ptz_preset (proto::ptz_preset &preset_op)

  *PTZ preset command.*
- virtual bool on_get_osd_config (proto::osd_config &config)

  *Get OSD config.*
- virtual bool on_set_osd_config (const proto::osd_config &config)

  *Set OSD config.*
- virtual bool on_get_wifi_config (proto::wifi_config &config)

  *Get WiFi config.*
- virtual bool on_set_wifi_config (const proto::wifi_network &config)

  *Set WiFi config.*
- virtual bool on_get_motion_detection_config (proto::motion_detection_config &config)

  *Get motion detection configuration.*
- virtual bool on_set_motion_detection_config (const proto::motion_detection_config &config)

  *Set motion detection config.*
- virtual bool on_get_timezone ( **std::string** &timezone)

  *Get device timezone in IANA format.*
- virtual bool on_set_timezone ( **std::string** timezone)

  *Set device timezone in IANA format.*
- virtual bool on_get_memorycard_info (proto::event_object::memorycard_info_object &info)

  *Get memory card information, If this callback returned false or if `info` status not equal to proto::MCS_NORMAL, the recording will not be started, i.e.*
- virtual bool on_cam_upgrade_firmware (const **std::string** &firmware)

  *Firmware upgrade.*
- virtual bool on_audio_file_play (const **std::string** audio_file_data, const **std::string** filename)

  *Audio file play.*
- virtual bool on_trigger_event (proto::event_object &event)
- virtual bool on_set_audio_detection (const proto::audio_detection_config &conf)
- virtual bool on_get_audio_detection (proto::audio_detection_config &conf)

## 10.9.1 Detailed Description

VXG Cloud manager common callbacks class.

Definition at line 17 of file callback.h.

## 10.9.2 Member Typedef Documentation

### 10.9.2.1 ptr

```
typedef std::unique_ptr<callback> vxg::cloud::agent::callback::ptr
```

**std::unique_ptr** to callback

Definition at line 20 of file callback.h.

### 10.9.3 Member Function Documentation

#### 10.9.3.1 on_audio_file_play()

```
virtual bool vxg::cloud::agent::callback::on_audio_file_play (
            const  std::string audio_file_data,
            const  std::string filename )  [inline], [virtual]
```

Audio file play.

**Parameters**

| | | |
|---|---|---|
| in | *audio_file* | Audio file binary data. |
| in | *audio_file_format* | Audio file data format. |

**Returns**

true if firmware upgrade was successful.

false if firmware upgrade failed.

Definition at line 309 of file callback.h.

#### 10.9.3.2 on_bye()

```
virtual void vxg::cloud::agent::callback::on_bye (
            proto::command::bye_reason reason )  [pure virtual]
```

VXG Cloud Bye command callback.

**Parameters**

| | |
|---|---|
| *reason* | bye reason |

#### 10.9.3.3 on_cam_ptz()

```
virtual bool vxg::cloud::agent::callback::on_cam_ptz (
            proto::ptz_command & command )  [inline], [virtual]
```

PTZ command.

**Parameters**

| | | |
|---|---|---|
| in | *command* | ptz command |

**Returns**

true success

false PTZ command failure

Definition at line 163 of file callback.h.

#### 10.9.3.4 on_cam_ptz_preset()

```
virtual bool vxg::cloud::agent::callback::on_cam_ptz_preset (
            proto::ptz_preset & preset_op )  [inline], [virtual]
```

PTZ preset command.

**Parameters**

| | | |
|---|---|---|
| in,out | *preset_op* | ptz preset operation, if operation is proto::PA_CREATE the callee should fill the token. |

**Returns**

true PTZ preset operation success

false PTZ preset operation failure

Definition at line 175 of file callback.h.

#### 10.9.3.5 on_cam_upgrade_firmware()

```
virtual bool vxg::cloud::agent::callback::on_cam_upgrade_firmware (
            const  std::string & firmware )  [inline], [virtual]
```

Firmware upgrade.

**Parameters**

| | | |
|---|---|---|
| in | *firmware* | Firmware binary data. |

**Returns**

true if firmware upgrade was successful.

false if firmware upgrade failed.

Definition at line 299 of file callback.h.

#### 10.9.3.6 on_get_audio_detection()

```
virtual bool vxg::cloud::agent::callback::on_get_audio_detection (
            proto::audio_detection_config & conf )  [inline], [virtual]
```

Definition at line 326 of file callback.h.

#### 10.9.3.7 on_get_cam_audio_config()

```
virtual bool vxg::cloud::agent::callback::on_get_cam_audio_config (
            proto::audio_config & config )  [inline], [virtual]
```

Get audio input configuration.

**Parameters**

| | | |
|---|---|---|
| out | *config* | audio input config |

**Returns**

true get audio input configuration success

false get audio input configuration failed

Definition at line 127 of file callback.h.

#### 10.9.3.8 on_get_cam_video_config()

```
virtual bool vxg::cloud::agent::callback::on_get_cam_video_config (
            proto::video_config & config )  [inline], [virtual]
```

Get video image config.

**Parameters**

| | | |
|---|---|---|
| out | *config* | video image config |

**Returns**

true if get image config success

false get image config failed

Definition at line 103 of file callback.h.

#### 10.9.3.9 on_get_log()

```
virtual bool vxg::cloud::agent::callback::on_get_log (
              std::string & log_data )  [inline], [virtual]
```

Get logging data callback.

Cloud API provides the way to request log data using Cloud API

**Parameters**

| | |
|---|---|
| *log_data* | log data |

**Returns**

true on success

false on failure

Definition at line 65 of file callback.h.

#### 10.9.3.10 on_get_memorycard_info()

```
virtual bool vxg::cloud::agent::callback::on_get_memorycard_info (
            proto::event_object::memorycard_info_object & info )  [inline], [virtual]
```

Get memory card information, If this callback returned false or if `info` status not equal to proto::MCS_NORMAL, the recording will not be started, i.e.

no agent::media::stream::record_start() will be called.

**Parameters**

| | | |
|---|---|---|
| `out` | *info* | memorycard info |

**Returns**

true if `info` is valid

false if `info` is not valid

Definition at line 289 of file callback.h.

#### 10.9.3.11 on_get_motion_detection_config()

```
virtual bool vxg::cloud::agent::callback::on_get_motion_detection_config (
            proto::motion_detection_config & config )  [inline], [virtual]
```

Get motion detection configuration.

**Parameters**

| | | |
|---|---|---|
| out | *config* | Motion detection config if return value is true |

**Returns**

true if `config` is valid

false if failed to get motion detection config

Definition at line 236 of file callback.h.

#### 10.9.3.12 on_get_osd_config()

```
virtual bool vxg::cloud::agent::callback::on_get_osd_config (
            proto::osd_config & config )  [inline], [virtual]
```

Get OSD config.

**Parameters**

| | | |
|---|---|---|
| out | *config* | OSD config |

**Returns**

true OSD config get success, `config` is valid

false OSD config get failure, `config` should not be used

Definition at line 187 of file callback.h.

#### 10.9.3.13 on_get_ptz_config()

```
virtual bool vxg::cloud::agent::callback::on_get_ptz_config (
            proto::ptz_config & config )  [inline], [virtual]
```

Get PTZ config.

**Parameters**

| | | |
|---|---|---|
| out | *config* | ptz config |

**Returns**

true success

false Get PTZ config failed

Definition at line 151 of file callback.h.

#### 10.9.3.14 on_get_timezone()

```
virtual bool vxg::cloud::agent::callback::on_get_timezone (
              std::string & timezone )  [inline], [virtual]
```

Get device timezone in IANA format.

**Parameters**

| | | |
|---|---|---|
| out | *timezone* | name in IANA format |

**Returns**

true if `timezone` is valid

false if `timezone` is not valid

Definition at line 262 of file callback.h.

#### 10.9.3.15 on_get_wifi_config()

```
virtual bool vxg::cloud::agent::callback::on_get_wifi_config (
             proto::wifi_config & config )  [inline], [virtual]
```

Get WiFi config.

**Parameters**

| | | |
|---|---|---|
| out | *config* | WiFi config |

**Returns**

true success

false failed

Definition at line 211 of file callback.h.

#### 10.9.3.16 on_raw_msg()

```
virtual bool vxg::cloud::agent::callback::on_raw_msg (
              std::string client_id,
              std::string & data )  [inline], [virtual]
```

raw message callback

**Parameters**

| | | |
|---|---|---|
| in | *client_id* | unique id of the client, every raw messages session uses the same unique client_id |
| in,out | *data* | raw message payload from client, output value will be sent to the client if return value is true |

**Returns**

true raw message handled and reply in the output `data` argument should be sent to the client as reply

false raw message handling failure, `data` output argument should not be sent to client

Definition at line 53 of file callback.h.

#### 10.9.3.17 on_registered()

```
virtual void vxg::cloud::agent::callback::on_registered (
             const  std::string & sid )  [inline], [virtual]
```

Registration on the Cloud has passed callback.

**Parameters**

| | |
|---|---|
| *sid* | Cloud connection session id. Must be saved and provided via the agent::config.cm_register_sid before the next vxg::cloud::agent::manager::start(), otherwise the Cloud will block connection with CONN_CONFLICT for some period of time. |

Definition at line 37 of file callback.h.

#### 10.9.3.18 on_set_audio_detection()

```
virtual bool vxg::cloud::agent::callback::on_set_audio_detection (
             const proto::audio_detection_config & conf )  [inline], [virtual]
```

Definition at line 320 of file callback.h.

#### 10.9.3.19 on_set_cam_audio_config()

```
virtual bool vxg::cloud::agent::callback::on_set_cam_audio_config (
            const proto::audio_config & config )  [inline], [virtual]
```

Set audio input/output config.

**Parameters**

| | |
|---|---|
| *config* | audio input/output config |

**Returns**

true applied

false failed to set config

Definition at line 139 of file callback.h.

#### 10.9.3.20 on_set_cam_video_config()

```
virtual bool vxg::cloud::agent::callback::on_set_cam_video_config (
            const proto::video_config & config )  [inline], [virtual]
```

Set video input config.

**Parameters**

| | |
|---|---|
| *config* | video input config |

**Returns**

true Video image input config was successfully set

false Failed to set video input image config

Definition at line 115 of file callback.h.

#### 10.9.3.21 on_set_motion_detection_config()

```
virtual bool vxg::cloud::agent::callback::on_set_motion_detection_config (
            const proto::motion_detection_config & config )  [inline], [virtual]
```

Set motion detection config.

**Parameters**

| | | |
|---|---|---|
| in | *config* | motion detection config |

**Returns**

true if `config` was successfully set

false if failed to set `config`

Definition at line 249 of file callback.h.

#### 10.9.3.22 on_set_osd_config()

```
virtual bool vxg::cloud::agent::callback::on_set_osd_config (
            const proto::osd_config & config )  [inline], [virtual]
```

Set OSD config.

**Parameters**

| | | |
|---|---|---|
| in | *config* | OSD config |

**Returns**

true OSD config was successfully set

false failed to set OSD config

Definition at line 199 of file callback.h.

#### 10.9.3.23 on_set_timezone()

```
virtual bool vxg::cloud::agent::callback::on_set_timezone (
             std::string timezone )  [inline], [virtual]
```

Set device timezone in IANA format.

**Parameters**

| | | |
|---|---|---|
| in | *timezone* | timezone in IANA format |

**Returns**

true if timezone was successfully set

false if timezone was not set

Definition at line 274 of file callback.h.

#### 10.9.3.24 on_set_wifi_config()

```
virtual bool vxg::cloud::agent::callback::on_set_wifi_config (
            const proto::wifi_network & config )  [inline], [virtual]
```

Set WiFi config.

**Parameters**

| | | |
|---|---|---|
| in | *config* | WiFi configuration |

**Returns**

true if `config` is valid

false if `config` is invalid

Definition at line 223 of file callback.h.

#### 10.9.3.25 on_start_backward_audio()

```
virtual bool vxg::cloud::agent::callback::on_start_backward_audio (
             std::string url )  [inline], [virtual]
```

Start backward audio stream.

**Parameters**

| | |
|---|---|
| *url* | rtmp url for backward channel, device supports backward audio if on_get_cam_audio_config() set proto::audio_config.caps spkr to true |

Implementation should start rtmp client by its own, final implementation is also responsible for the demuxing, decoding and rendering of the audio stream.

**Returns**

true on success

false on failure

Definition at line 81 of file callback.h.

#### 10.9.3.26 on_stop_backward_audio()

```
virtual bool vxg::cloud::agent::callback::on_stop_backward_audio (
              std::string url )  [inline], [virtual]
```

Stop backward audio.

**Parameters**

| | |
|---|---|
| *url* | backward audio url which was used to start the backward channel |

Definition at line 92 of file callback.h.

#### 10.9.3.27 on_trigger_event()

```
virtual bool vxg::cloud::agent::callback::on_trigger_event (
             proto::event_object & event )  [inline], [virtual]
```

Definition at line 315 of file callback.h.

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

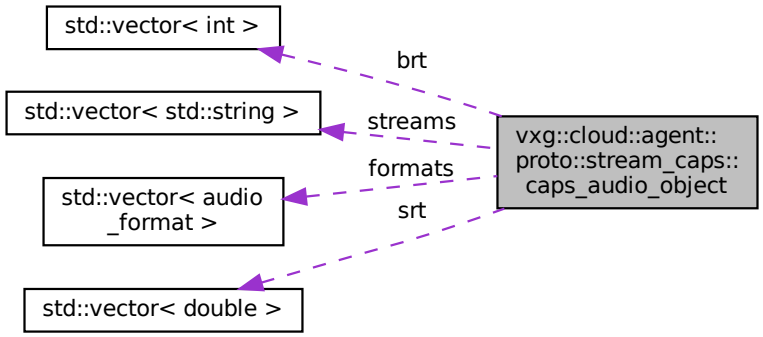
- callback.h

## 10.10 vxg::cloud::agent::proto::stream_caps::caps_audio_object Struct Reference

Audio streams capabilities.

```
#include <agent-proto/objects/caps.h>
```

Collaboration diagram for vxg::cloud::agent::proto::stream_caps::caps_audio_object:



## Data Fields

- **std::vector**< **std::string** > streams

  *Mandatory: list of strings, audio ES that are covered by this capability config.*
- **std::vector**< audio_format > formats

  *Mandatory: list of string, supported audio formats; currently only “AAC” and "G711U" is supported.*
- **std::vector**< int > brt

  *Mandatory: [min:int, max:int, step:int], range of bitrates, kbps.*
- **std::vector**< double > srt

  *Mandatory: list of float, supported samplerates.*

### 10.10.1 Detailed Description

Audio streams capabilities.

Definition at line 247 of file caps.h.

### 10.10.2 Field Documentation

#### 10.10.2.1 brt

**std::vector**<int> vxg::cloud::agent::proto::stream_caps::caps_audio_object::brt

Mandatory: [min:int, max:int, step:int], range of bitrates, kbps.

Definition at line 259 of file caps.h.

#### 10.10.2.2 formats

**std::vector**<audio_format> vxg::cloud::agent::proto::stream_caps::caps_audio_object::formats

Mandatory: list of string, supported audio formats; currently only “AAC” and "G711U" is supported.

Definition at line 255 of file caps.h.

#### 10.10.2.3 srt

**std::vector**<double> vxg::cloud::agent::proto::stream_caps::caps_audio_object::srt

Mandatory: list of float, supported samplerates.

Definition at line 263 of file caps.h.

#### 10.10.2.4 streams

```
std::vector< std::string> vxg::cloud::agent::proto::stream_caps::caps_audio_object::streams
```

Mandatory: list of strings, audio ES that are covered by this capability config.

Definition at line 250 of file caps.h.

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

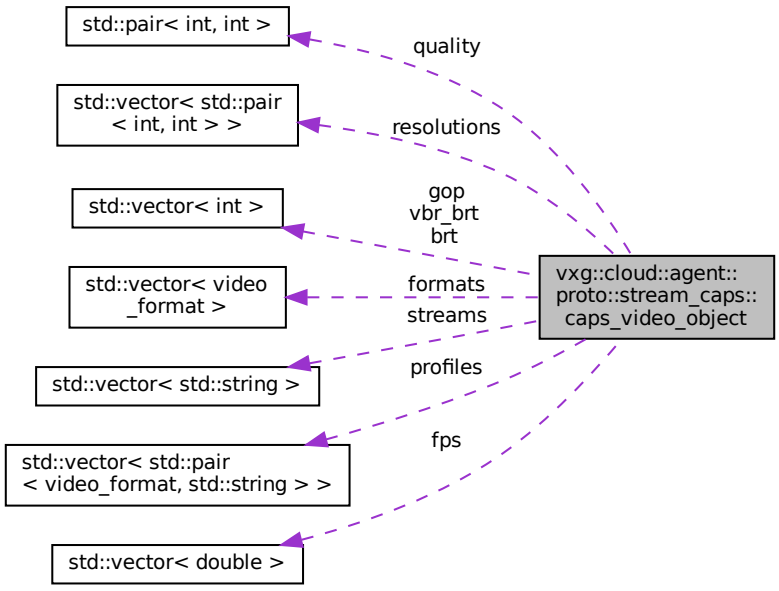
- caps.h

## 10.11 vxg::cloud::agent::proto::stream_caps::caps_video_object Struct Reference

Video streams capabilities.

```
#include <agent-proto/objects/caps.h>
```

Collaboration diagram for vxg::cloud::agent::proto::stream_caps::caps_video_object:



## Data Fields

- **std::vector**< **std::string** > streams

  *Mandatory: list of strings, video ES that are covered by this capability config.*
- **std::vector**< video_format > formats

  *Mandatory: list of string, supported video formats; currently only "H.264" is supported.*
- **std::vector**< **std::pair**< video_format, **std::string** > > profiles

  *Optional: list of pairs [string (format), string (profile)], list of profiles for formats (when they have).*
- **std::vector**< **std::pair**< int, int > > resolutions

  *Mandatory: list of pairs [int (horz), int (vert)], - supported video resolutions.*
- **std::vector**< double > fps

  *Mandatory: list of float, supported framerates.*
- bool vbr

  *Mandatory: VBR is supported.*
- **std::pair**< int, int > quality

  *Optional: [min:int, max:int], range of quality for VBR.*
- **std::vector**< int > gop

  *Mandatory: gop: [min:int, max:int, step:int], range of gop sizes.*
- **std::vector**< int > brt

  *Mandatory: [min:int, max:int, step:int], range of bitrates, kbps.*
- **std::vector**< int > vbr_brt

  *Optional: [min:int, max:int, step:int], range of bitrates, kbps.*
- bool smoothing

  *Optional: True when stream smoothing can be controlled.*

### 10.11.1 Detailed Description

Video streams capabilities.

Definition at line 177 of file caps.h.

### 10.11.2 Field Documentation

#### 10.11.2.1 brt

`std::vector<int> vxg::cloud::agent::proto::stream_caps::caps_video_object::brt`

Mandatory: [min:int, max:int, step:int], range of bitrates, kbps.

Definition at line 219 of file caps.h.

#### 10.11.2.2 formats

```
std::vector<video_format> vxg::cloud::agent::proto::stream_caps::caps_video_object::formats
```

Mandatory: list of string, supported video formats; currently only “H.264” is supported.

Definition at line 185 of file caps.h.

#### 10.11.2.3 fps

```
std::vector<double> vxg::cloud::agent::proto::stream_caps::caps_video_object::fps
```

Mandatory: list of float, supported framerates.

Definition at line 203 of file caps.h.

#### 10.11.2.4 gop

```
std::vector<int> vxg::cloud::agent::proto::stream_caps::caps_video_object::gop
```

Mandatory: gop: [min:int, max:int, step:int], range of gop sizes.

Definition at line 215 of file caps.h.

#### 10.11.2.5 profiles

```
std::vector< std::pair<video_format, std::string> > vxg::cloud::agent::proto::stream_caps↩
::caps_video_object::profiles
```

Optional: list of pairs [string (format), string (profile)], list of profiles for formats (when they have).

Empty list means – color selection is not supported. “format” - one of listed in "formats" names. “profile”

- name of profile. Example: [["H.264", "Baseline"], ["H.264", "Main"], ["H.264", "High"]]

Definition at line 194 of file caps.h.

#### 10.11.2.6 quality

```
std::pair<int, int> vxg::cloud::agent::proto::stream_caps::caps_video_object::quality
```

Optional: [min:int, max:int], range of quality for VBR.

Definition at line 211 of file caps.h.

#### 10.11.2.7 resolutions

```
std::vector< std::pair<int, int> > vxg::cloud::agent::proto::stream_caps::caps_video_↩
object::resolutions
```

Mandatory: list of pairs [int (horz), int (vert)], - supported video resolutions.

Definition at line 199 of file caps.h.

#### 10.11.2.8 smoothing

```
bool vxg::cloud::agent::proto::stream_caps::caps_video_object::smoothing
```

Optional: True when stream smoothing can be controlled.

Definition at line 227 of file caps.h.

#### 10.11.2.9 streams

```
std::vector< std::string> vxg::cloud::agent::proto::stream_caps::caps_video_object::streams
```

Mandatory: list of strings, video ES that are covered by this capability config.

Definition at line 180 of file caps.h.

#### 10.11.2.10 vbr

```
bool vxg::cloud::agent::proto::stream_caps::caps_video_object::vbr
```

Mandatory: VBR is supported.

Definition at line 207 of file caps.h.

#### 10.11.2.11 vbr_brt

```
std::vector<int> vxg::cloud::agent::proto::stream_caps::caps_video_object::vbr_brt
```

Optional: [min:int, max:int, step:int], range of bitrates, kbps.

Definition at line 223 of file caps.h.

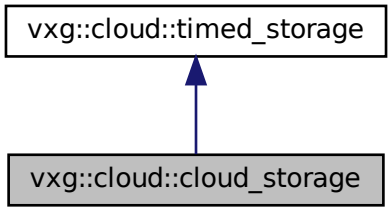
The documentation for this struct was generated from the following file:

- caps.h

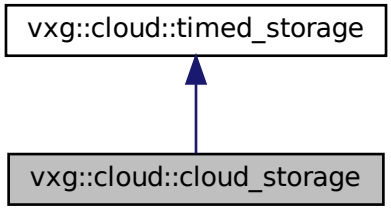
## 10.12 vxg::cloud::cloud_storage Class Reference

`#include <agent/timeline.h>`

Inheritance diagram for vxg::cloud::cloud_storage:




Collaboration diagram for vxg::cloud::cloud_storage:




### Public Member Functions

- cloud_storage (const agent::proto::access_token &token, transport::libwebsockets::http::ptr http=nullptr)
- virtual ~cloud_storage ()
- virtual **std::vector**< item_ptr > list (cloud::time start, cloud::time stop) override
- virtual bool load (item_ptr item) override
- bool store (item_ptr item)
- virtual void erase (item_ptr)

### Additional Inherited Members

### 10.12.1 Detailed Description

Definition at line 284 of file timeline.h.

## 10.12.2 Constructor & Destructor Documentation

### 10.12.2.1 cloud_storage()

```
vxg::cloud::cloud_storage::cloud_storage (
            const agent::proto::access_token & token,
            transport::libwebsockets::http::ptr http = nullptr )  [inline]
```

Definition at line 291 of file timeline.h.

### 10.12.2.2 ~cloud_storage()

```
virtual vxg::cloud::cloud_storage::~cloud_storage ( )  [inline], [virtual]
```

Definition at line 308 of file timeline.h.

## 10.12.3 Member Function Documentation

### 10.12.3.1 erase()

```
virtual void vxg::cloud::cloud_storage::erase (
            item_ptr  )  [inline], [virtual]
```

Implements vxg::cloud::timed_storage.

Definition at line 453 of file timeline.h.

### 10.12.3.2 list()

```
virtual  std::vector<item_ptr> vxg::cloud::cloud_storage::list (
            cloud::time start,
            cloud::time stop )  [inline], [override], [virtual]
```

Implements vxg::cloud::timed_storage.

Definition at line 310 of file timeline.h.

#### 10.12.3.3 load()

```
virtual bool vxg::cloud::cloud_storage::load (
            item_ptr item )  [inline], [override], [virtual]
```

Implements vxg::cloud::timed_storage.

Definition at line 344 of file timeline.h.

#### 10.12.3.4 store()

```
bool vxg::cloud::cloud_storage::store (
            item_ptr item )  [inline], [virtual]
```

Implements vxg::cloud::timed_storage.

Definition at line 382 of file timeline.h.

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

- timeline.h

## 10.13 vxg::cloud::agent::event_manager::config Struct Reference

```
#include <agent/event-manager.h>
```

### Data Fields

- bool attach_qos_report_to_motion
  *Attach qos report as motion event's meta.*
- bool send_qos_report_as_separate_event
  *Periodically send qos-report event instead of attaching qos to motion event.*
- size_t send_qos_report_period_sec
  *Period between the qos-report events in seconds.*
- bool stateful_event_continuation_kick_snapshot
  *Attach snapshot to event's state emulation dummy event.*

### 10.13.1 Detailed Description

Definition at line 15 of file event-manager.h.

### 10.13.2 Field Documentation

#### 10.13.2.1 attach_qos_report_to_motion

```
bool vxg::cloud::agent::event_manager::config::attach_qos_report_to_motion
```

Attach qos report as motion event's meta.

Definition at line 17 of file event-manager.h.

#### 10.13.2.2 send_qos_report_as_separate_event

```
bool vxg::cloud::agent::event_manager::config::send_qos_report_as_separate_event
```

Periodically send qos-report event instead of attaching qos to motion event.

Definition at line 20 of file event-manager.h.

#### 10.13.2.3 send_qos_report_period_sec

```
size_t vxg::cloud::agent::event_manager::config::send_qos_report_period_sec
```

Period between the qos-report events in seconds.

Definition at line 22 of file event-manager.h.

#### 10.13.2.4 stateful_event_continuation_kick_snapshot

```
bool vxg::cloud::agent::event_manager::config::stateful_event_continuation_kick_snapshot
```

Attach snapshot to event's state emulation dummy event.

Stateful events emulation kicks Cloud with event of same type every 10 seconds during stateful event state is active. This flag enables snapshots for such events. Snapshot will be attached only if original event has snapshot flag enabled in its caps and settings.

Definition at line 29 of file event-manager.h.

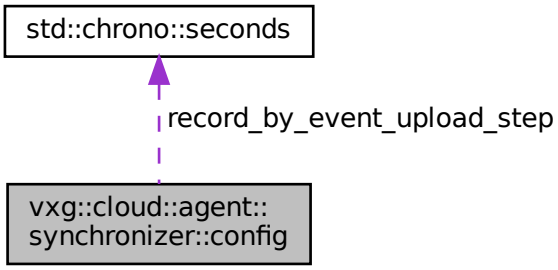
The documentation for this struct was generated from the following file:

- event-manager.h

## 10.14 vxg::cloud::agent::synchronizer::config Struct Reference

`#include <agent/timeline-synchronizer.h>`

Collaboration diagram for vxg::cloud::agent::synchronizer::config:




### Data Fields

- **std::chrono::seconds** record_by_event_upload_step
  *by event recording segment duration*

### 10.14.1 Detailed Description

Definition at line 20 of file timeline-synchronizer.h.

### 10.14.2 Field Documentation

#### 10.14.2.1 record_by_event_upload_step

**std::chrono::seconds** vxg::cloud::agent::synchronizer::config::record_by_event_upload_step

by event recording segment duration

Definition at line 22 of file timeline-synchronizer.h.

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

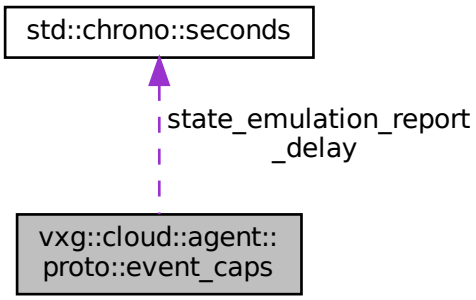
- timeline-synchronizer.h

# 10.15 vxg::cloud::agent::proto::event_caps Struct Reference

Events capabilies.

`#include <agent-proto/objects/caps.h>`

Collaboration diagram for vxg::cloud::agent::proto::event_caps:




## Data Fields

- bool stream

  *stream: bool, event can generate stream start*
- bool snapshot

  *snapshot: bool, event is sent with snapshot*
- bool periodic

  *periodic: optional bool, the event is a periodic event (camera generates and processes it using specified time interval)*
- bool trigger

  *trigger: optional bool, the event can be triggered externally, using 6.7*
- bool stateful
- bool state_emulation
- **std::chrono::seconds** state_emulation_report_delay
- bool internal_hidden

  *Library internal hidden event, not reported to the Cloud.*

### 10.15.1 Detailed Description

Events capabilies.

Definition at line 438 of file caps.h.

### 10.15.2 Field Documentation

#### 10.15.2.1 internal_hidden

```
bool vxg::cloud::agent::proto::event_caps::internal_hidden
```

Library internal hidden event, not reported to the Cloud.

Definition at line 475 of file caps.h.

#### 10.15.2.2 periodic

```
bool vxg::cloud::agent::proto::event_caps::periodic
```

periodic: optional bool, the event is a periodic event (camera generates and processes it using specified time interval)

Definition at line 447 of file caps.h.

#### 10.15.2.3 snapshot

```
bool vxg::cloud::agent::proto::event_caps::snapshot
```

snapshot: bool, event is sent with snapshot

Definition at line 443 of file caps.h.

#### 10.15.2.4 state_emulation

```
bool vxg::cloud::agent::proto::event_caps::state_emulation
```

Definition at line 471 of file caps.h.

#### 10.15.2.5 state_emulation_report_delay

```
std::chrono::seconds vxg::cloud::agent::proto::event_caps::state_emulation_report_delay
```

Definition at line 472 of file caps.h.

#### 10.15.2.6 stateful

```
bool vxg::cloud::agent::proto::event_caps::stateful
```

Definition at line 469 of file caps.h.

#### 10.15.2.7 stream

```
bool vxg::cloud::agent::proto::event_caps::stream
```

stream: bool, event can generate stream start

Definition at line 440 of file caps.h.

#### 10.15.2.8 trigger

```
bool vxg::cloud::agent::proto::event_caps::trigger
```

trigger: optional bool, the event can be triggered externally, using 6.7

Definition at line 450 of file caps.h.

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

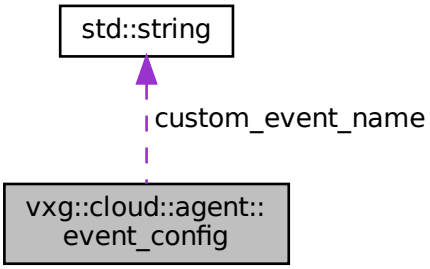
- caps.h

## 10.16 vxg::cloud::agent::event_config Struct Reference

Event config.

```
#include <agent-proto/objects/config.h>
```

Collaboration diagram for vxg::cloud::agent::event_config:



## Public Member Functions

- bool name_eq (const event_config &r) const

  *Is-equal predicate based on event's name only.*
- bool caps_eq (const event_config &r) const

  *Is-equal predicate based on event's caps.*
- **std::string** name () const

## Data Fields

- event_type event

  *event: string, event name, see 6.1 Events naming for details*
- **std::string** custom_event_name

  *Custom event name, used if event set to event_type::ET_CUSTOM.*
- bool active

  *active: bool, event is active; if not set, corresponding events will not be sent*
- bool stream

  *stream: bool, start stream when event happens*
- bool snapshot

  *snapshot: bool, generate snapshot when event happens*
- int period

  *period: optional int, an interval between periodic events, seconds*
- event_caps caps

  *Event capabilities.*

### 10.16.1 Detailed Description

Event config.

Definition at line 894 of file config.h.

### 10.16.2 Member Function Documentation

#### 10.16.2.1 caps_eq()

```
bool vxg::cloud::agent::event_config::caps_eq (
            const event_config & r ) const  [inline]
```

Is-equal predicate based on event's caps.

**Parameters**

| | |
|---|---|
| *r* | |

**Returns**

true Compared configs have equal caps.

false Compared configs have non-equal caps.

Definition at line 934 of file config.h.

#### 10.16.2.2 name()

```
std::string vxg::cloud::agent::event_config::name ( ) const  [inline]
```

Definition at line 938 of file config.h.

#### 10.16.2.3 name_eq()

```
bool vxg::cloud::agent::event_config::name_eq (
            const event_config & r ) const  [inline]
```

Is-equal predicate based on event's name only.

**Parameters**

| | |
|---|---|
| *r* | |

**Returns**

true Compared configs are for the event with equal names.

false Compared configs are for events with non-equal names.

Definition at line 925 of file config.h.

### 10.16.3 Field Documentation

#### 10.16.3.1 active

```
bool vxg::cloud::agent::event_config::active
```

active: bool, event is active; if not set, corresponding events will not be sent

Definition at line 903 of file config.h.

#### 10.16.3.2 caps

```
event_caps vxg::cloud::agent::event_config::caps
```

Event capabilities.

Definition at line 918 of file config.h.

#### 10.16.3.3 custom_event_name

```
std::string vxg::cloud::agent::event_config::custom_event_name
```

Custom event name, used if event set to event_type::ET_CUSTOM.

Definition at line 899 of file config.h.

#### 10.16.3.4 event

```
event_type vxg::cloud::agent::event_config::event
```

event: string, event name, see 6.1 Events naming for details

Definition at line 896 of file config.h.

#### 10.16.3.5 period

```
int vxg::cloud::agent::event_config::period
```

period: optional int, an interval between periodic events, seconds

Definition at line 912 of file config.h.

#### 10.16.3.6 snapshot

```
bool vxg::cloud::agent::event_config::snapshot
```

snapshot: bool, generate snapshot when event happens

Definition at line 909 of file config.h.

#### 10.16.3.7 stream

```
bool vxg::cloud::agent::event_config::stream
```

stream: bool, start stream when event happens

Definition at line 906 of file config.h.

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

- config.h

## 10.17 vxg::cloud::agent::event_manager Class Reference

```
#include <agent/event-manager.h>
```

### Data Structures

- struct config
- struct event_state_report_cb

### Public Types

- using event_state_report_cb_ptr = **std::shared_ptr**< event_manager::event_state_report_cb >
- using handle_event_payload_cb = **std::function**< bool(agent::proto::event_object &, bool)>

### Public Member Functions

- event_manager (const event_manager::config &config, **std::vector**< agent::event_stream::ptr > event_streams, event_state_report_cb_ptr sync_cb_ptr, handle_event_payload_cb)
- ~event_manager ()
- void start ()
- void stop ()
- bool set_events (const agent::proto::events_config &config)
- bool get_events (agent::proto::events_config &config)
- bool notify_event (const agent::proto::event_object &event)
- bool trigger_event (const **std::string** &event, const json &meta, cloud::time time)

### 10.17.1 Detailed Description

Definition at line 11 of file event-manager.h.

### 10.17.2 Member Typedef Documentation

#### 10.17.2.1 event_state_report_cb_ptr

```
using vxg::cloud::agent::event_manager::event_state_report_cb_ptr =  std::shared_ptr<event_manager::event_stat
```

Definition at line 65 of file event-manager.h.

#### 10.17.2.2 handle_event_payload_cb

```
using vxg::cloud::agent::event_manager::handle_event_payload_cb =  std::function<bool(agent↩
::proto::event_object&, bool)>
```

Definition at line 67 of file event-manager.h.

### 10.17.3 Constructor & Destructor Documentation

#### 10.17.3.1 event_manager()

```
vxg::cloud::agent::event_manager::event_manager (
            const event_manager::config & config,
             std::vector< agent::event_stream::ptr > event_streams,
            event_state_report_cb_ptr sync_cb_ptr,
            handle_event_payload_cb  )
```

#### 10.17.3.2 ~event_manager()

```
vxg::cloud::agent::event_manager::~event_manager ( )
```

### 10.17.4 Member Function Documentation

#### 10.17.4.1 get_events()

```
bool vxg::cloud::agent::event_manager::get_events (
            agent::proto::events_config & config )
```

#### 10.17.4.2 notify_event()

```
bool vxg::cloud::agent::event_manager::notify_event (
            const agent::proto::event_object & event )
```

#### 10.17.4.3 set_events()

```
bool vxg::cloud::agent::event_manager::set_events (
            const agent::proto::events_config & config )
```

#### 10.17.4.4 start()

```
void vxg::cloud::agent::event_manager::start ( )
```

#### 10.17.4.5 stop()

```
void vxg::cloud::agent::event_manager::stop ( )
```

#### 10.17.4.6 trigger_event()

```
bool vxg::cloud::agent::event_manager::trigger_event (
            const  std::string & event,
            const json & meta,
            cloud::time time )
```

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

- event-manager.h

## 10.18 vxg::cloud::agent::event_state Class Reference

```
#include <agent/event-state.h>
```

### Data Structures

- struct event_state_changed_cb

## Public Types

- enum stream_delivery_mode { SDM_NONE, SDM_UPLOAD, SDM_STREAM }
- using event_state_changed_cb_ptr = **std::shared_ptr**< event_state_changed_cb >

## Public Member Functions

- event_state ()
  *!*
- event_state (const agent::proto::event_config &event_conf, event_state_changed_cb_ptr state_changed_cb, transport::timed_callback_ptr timed_cb)
- ~event_state ()
- event_state (const event_state &r)
- event_state & operator= (event_state r) noexcept
- void start (cloud::time start, cloud::time stop=utils::time::null())
- void stop (cloud::time time)
- bool active () const
- bool stateful () const
- bool need_record () const
- cloud::time start () const
- cloud::time stop () const
- const agent::proto::event_config & config () const

## Friends

- void swap (event_state &l, event_state &r)

### 10.18.1 Detailed Description

Definition at line 11 of file event-state.h.

### 10.18.2 Member Typedef Documentation

#### 10.18.2.1 event_state_changed_cb_ptr

```
using vxg::cloud::agent::event_state::event_state_changed_cb_ptr = std::shared_ptr<event_state_changed_cb>
```

Definition at line 42 of file event-state.h.

### 10.18.3 Member Enumeration Documentation

#### 10.18.3.1 stream_delivery_mode

```
enum vxg::cloud::agent::event_state::stream_delivery_mode
```

**Enumerator**

| | |
|---|---|
| SDM_NONE | |
| SDM_UPLOAD | |
| SDM_STREAM | |

Definition at line 29 of file event-state.h.

### 10.18.4 Constructor & Destructor Documentation

#### 10.18.4.1 event_state() [1/3]

```
vxg::cloud::agent::event_state::event_state ( )  [inline]
```

!

Definition at line 98 of file event-state.h.

#### 10.18.4.2 event_state() [2/3]

```
vxg::cloud::agent::event_state::event_state (
            const agent::proto::event_config & event_conf,
            event_state_changed_cb_ptr state_changed_cb,
            transport::timed_callback_ptr timed_cb )  [inline]
```

Definition at line 99 of file event-state.h.

#### 10.18.4.3 ~event_state()

```
vxg::cloud::agent::event_state::~event_state ( )  [inline]
```

Definition at line 107 of file event-state.h.

#### 10.18.4.4 event_state() [3/3]

```
vxg::cloud::agent::event_state::event_state (
            const event_state & r )  [inline]
```

Definition at line 129 of file event-state.h.

### 10.18.5 Member Function Documentation

#### 10.18.5.1 active()

```
bool vxg::cloud::agent::event_state::active ( ) const  [inline]
```

Definition at line 193 of file event-state.h.

#### 10.18.5.2 config()

```
const agent::proto::event_config& vxg::cloud::agent::event_state::config ( ) const  [inline]
```

Definition at line 198 of file event-state.h.

#### 10.18.5.3 need_record()

```
bool vxg::cloud::agent::event_state::need_record ( ) const  [inline]
```

Definition at line 195 of file event-state.h.

#### 10.18.5.4 operator=()

```
event_state& vxg::cloud::agent::event_state::operator= (
            event_state r )  [inline], [noexcept]
```

Definition at line 146 of file event-state.h.

#### 10.18.5.5 start() [1/2]

```
cloud::time vxg::cloud::agent::event_state::start ( ) const  [inline]
```

Definition at line 196 of file event-state.h.

#### 10.18.5.6 start() [2/2]

```
void vxg::cloud::agent::event_state::start (
            cloud::time start,
            cloud::time stop = utils::time::null() )  [inline]
```

Definition at line 152 of file event-state.h.

#### 10.18.5.7 stateful()

```
bool vxg::cloud::agent::event_state::stateful ( ) const  [inline]
```

Definition at line 194 of file event-state.h.

#### 10.18.5.8 stop() [1/2]

```
cloud::time vxg::cloud::agent::event_state::stop ( ) const  [inline]
```

Definition at line 197 of file event-state.h.

#### 10.18.5.9 stop() [2/2]

```
void vxg::cloud::agent::event_state::stop (
            cloud::time time )  [inline]
```

Definition at line 182 of file event-state.h.

### 10.18.6 Friends And Related Function Documentation

#### 10.18.6.1 swap

```
void swap (
            event_state & l,
            event_state & r )  [friend]
```

Definition at line 136 of file event-state.h.

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

- event-state.h

# 10.19 vxg::cloud::agent::event_state::event_state_changed_cb Struct Reference

`#include <agent/event-state.h>`

## Public Member Functions

- event_state_changed_cb ()
- virtual ~event_state_changed_cb ()
- virtual void on_started (const event_state &state, const cloud::time &)
- virtual void on_stopped (const event_state &state, const cloud::time &)
- virtual void on_ongoing (const event_state &state, const cloud::time &)
- virtual void on_triggered (const event_state &state, const cloud::time &)

## 10.19.1 Detailed Description

Definition at line 30 of file event-state.h.

## 10.19.2 Constructor & Destructor Documentation

### 10.19.2.1 event_state_changed_cb()

`vxg::cloud::agent::event_state::event_state_changed_cb::event_state_changed_cb ( ) [inline]`

Definition at line 31 of file event-state.h.

### 10.19.2.2 ~event_state_changed_cb()

`virtual vxg::cloud::agent::event_state::event_state_changed_cb::~event_state_changed_cb ( ) [inline], [virtual]`

Definition at line 32 of file event-state.h.

## 10.19.3 Member Function Documentation

#### 10.19.3.1 on_ongoing()

```
virtual void vxg::cloud::agent::event_state::event_state_changed_cb::on_ongoing (
            const event_state & state,
            const cloud::time &  )  [inline], [virtual]
```

Definition at line 37 of file event-state.h.

#### 10.19.3.2 on_started()

```
virtual void vxg::cloud::agent::event_state::event_state_changed_cb::on_started (
            const event_state & state,
            const cloud::time &  )  [inline], [virtual]
```

Definition at line 35 of file event-state.h.

#### 10.19.3.3 on_stopped()

```
virtual void vxg::cloud::agent::event_state::event_state_changed_cb::on_stopped (
            const event_state & state,
            const cloud::time &  )  [inline], [virtual]
```

Definition at line 36 of file event-state.h.

#### 10.19.3.4 on_triggered()

```
virtual void vxg::cloud::agent::event_state::event_state_changed_cb::on_triggered (
            const event_state & state,
            const cloud::time &  )  [inline], [virtual]
```

Definition at line 39 of file event-state.h.

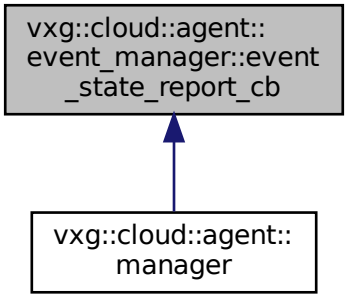
The documentation for this struct was generated from the following file:

- event-state.h

# 10.20 vxg::cloud::agent::event_manager::event_state_report_cb Struct Reference

`#include <agent/event-manager.h>`

Inheritance diagram for vxg::cloud::agent::event_manager::event_state_report_cb:




## Public Member Functions

- event_state_report_cb ()
- virtual ~event_state_report_cb ()
- virtual void on_event_start (const event_state &state, const cloud::time &start)
- virtual void on_event_stop (const event_state &state, const cloud::time &stop)
- virtual void on_event_trigger (const event_state &state, const cloud::time &t)
- virtual void on_event_continue (const event_state &state, const cloud::time &t)
- virtual **std::shared_ptr**< void > on_need_stream_sync_start (const event_state &state, const cloud::time &start)
- virtual void on_need_stream_sync_stop (const event_state &state, const cloud::time &stop, **std::shared_ptr**< void > userdata)
- virtual **std::shared_ptr**< void > on_need_stream_sync_continue (const event_state &state, const cloud::time &t, **std::shared_ptr**< void > userdata)

### 10.20.1 Detailed Description

Definition at line 32 of file event-manager.h.

### 10.20.2 Constructor & Destructor Documentation

#### 10.20.2.1 event_state_report_cb()

```
vxg::cloud::agent::event_manager::event_state_report_cb::event_state_report_cb ( )  [inline]
```

Definition at line 33 of file event-manager.h.

#### 10.20.2.2 ~event_state_report_cb()

```
virtual vxg::cloud::agent::event_manager::event_state_report_cb::~event_state_report_cb ( )
[inline], [virtual]
```

Definition at line 34 of file event-manager.h.

### 10.20.3 Member Function Documentation

#### 10.20.3.1 on_event_continue()

```
virtual void vxg::cloud::agent::event_manager::event_state_report_cb::on_event_continue (
            const event_state & state,
            const cloud::time & t )  [inline], [virtual]
```

Definition at line 45 of file event-manager.h.

#### 10.20.3.2 on_event_start()

```
virtual void vxg::cloud::agent::event_manager::event_state_report_cb::on_event_start (
            const event_state & state,
            const cloud::time & start )  [inline], [virtual]
```

Definition at line 36 of file event-manager.h.

#### 10.20.3.3 on_event_stop()

```
virtual void vxg::cloud::agent::event_manager::event_state_report_cb::on_event_stop (
            const event_state & state,
            const cloud::time & stop )  [inline], [virtual]
```

Definition at line 39 of file event-manager.h.

#### 10.20.3.4 on_event_trigger()

```
virtual void vxg::cloud::agent::event_manager::event_state_report_cb::on_event_trigger (
            const event_state & state,
            const cloud::time & t )  [inline], [virtual]
```

Definition at line 42 of file event-manager.h.

#### 10.20.3.5 on_need_stream_sync_continue()

```
virtual  std::shared_ptr<void> vxg::cloud::agent::event_manager::event_state_report_cb::on_↩
need_stream_sync_continue (
            const event_state & state,
            const cloud::time & t,
             std::shared_ptr< void > userdata )  [inline], [virtual]
```

Definition at line 57 of file event-manager.h.

#### 10.20.3.6 on_need_stream_sync_start()

```
virtual  std::shared_ptr<void> vxg::cloud::agent::event_manager::event_state_report_cb::on_↩
need_stream_sync_start (
            const event_state & state,
            const cloud::time & start )  [inline], [virtual]
```

Definition at line 48 of file event-manager.h.

#### 10.20.3.7 on_need_stream_sync_stop()

```
virtual void vxg::cloud::agent::event_manager::event_state_report_cb::on_need_stream_sync_stop
(
            const event_state & state,
            const cloud::time & stop,
             std::shared_ptr< void > userdata )  [inline], [virtual]
```

Definition at line 54 of file event-manager.h.

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

- event-manager.h

## 10.21 vxg::cloud::agent::event_stream Class Reference

Event stream, abstract class for event generation.

`#include <agent/event-stream.h>`

## Public Types

- typedef **std::shared_ptr**< event_stream > ptr

  ***std::shared_ptr*** *to event_stream*

## Public Member Functions

- event_stream ( **std::string** name)

  *Construct a new event stream object.*
- virtual ~event_stream ()
- bool notify (proto::event_object event)

  *Callback should be called to notify event.*
- virtual bool start ()=0

  *Start events generation, called by internal code when the events generation requested by the VXG Cloud.*
- virtual void stop ()=0

  *Stop events generation.*
- virtual bool get_events ( **std::vector**< proto::event_config > &configs)=0

  *Get the events configs list This method should update `config` object and add all configurations for the events provided by this event stream.*
- virtual bool set_events (const **std::vector**< proto::event_config > &config)=0

  *Set the events configuration.*
- virtual bool trigger_event (proto::event_object &event)

  *Trigger event provided by event_stream If get_events() returned event config with proto::event_config.caps.trigger == true and this event was triggered via the Cloud API this method will be called.*
- virtual bool set_trigger_recording (bool enabled, int pre, int post)=0

  *Turn on/off the event_stream triggered recording and pre/post recording time.*
- virtual bool init ()=0
- virtual void finit ()=0

### 10.21.1 Detailed Description

Event stream, abstract class for event generation.

Definition at line 13 of file event-stream.h.

### 10.21.2 Member Typedef Documentation

#### 10.21.2.1 ptr

```
typedef  std::shared_ptr<event_stream> vxg::cloud::agent::event_stream::ptr
```

**std::shared_ptr** to event_stream

Definition at line 24 of file event-stream.h.

### 10.21.3 Constructor & Destructor Documentation

#### 10.21.3.1 event_stream()

```
vxg::cloud::agent::event_stream::event_stream (
              std::string name )  [inline]
```

Construct a new event stream object.

**Parameters**

| | | |
|---|---|---|
| in | *name* | Event stream name, unique name for event stream |

Definition at line 30 of file event-stream.h.

#### 10.21.3.2 ~event_stream()

```
virtual vxg::cloud::agent::event_stream::~event_stream ( )  [inline], [virtual]
```

Definition at line 32 of file event-stream.h.

### 10.21.4 Member Function Documentation

#### 10.21.4.1 finit()

```
virtual void vxg::cloud::agent::event_stream::finit ( )  [pure virtual]
```

#### 10.21.4.2 get_events()

```
virtual bool vxg::cloud::agent::event_stream::get_events (
            std::vector< proto::event_config > & configs )  [pure virtual]
```

Get the events configs list This method should update `config` object and add all configurations for the events provided by this event stream.

`config` may already include event configs reported by this get_event(), hence the implementation should consider this and do not include its event configs more than one time.

**Parameters**

| | | |
|---|---|---|
| out | *configs* | Events configurations. |

**Returns**

true `configs` is valid.

false `configs` is invalid, should not be applied.

**Note**

This method MUST always return the configs with the same caps, otherwise the new config will not be applied by the library.

#### 10.21.4.3 init()

```
virtual bool vxg::cloud::agent::event_stream::init ( )  [pure virtual]
```

#### 10.21.4.4 notify()

```
bool vxg::cloud::agent::event_stream::notify (
            proto::event_object event )  [inline]
```

Callback should be called to notify event.

**Parameters**

| | | |
|---|---|---|
| in | *event* | Event object |

**Returns**

true Event successfully notified

false Notification failed

Definition at line 45 of file event-stream.h.

#### 10.21.4.5 set_events()

```
virtual bool vxg::cloud::agent::event_stream::set_events (
            const  std::vector< proto::event_config > & config )  [pure virtual]
```

Set the events configuration.

**Parameters**

| | |
|---|---|
| *config* | Events configurations list which includes all events reported by the system and other event streams, implementation should find own event configurations and apply them. |

**Returns**

true `config` applied.

false `config` not applied.

#### 10.21.4.6 set_trigger_recording()

```
virtual bool vxg::cloud::agent::event_stream::set_trigger_recording (
            bool enabled,
            int pre,
            int post )  [pure virtual]
```

Turn on/off the event_stream triggered recording and pre/post recording time.

Triggered recording means that event generated by this event_stream should start recording. Final recorded file should have duration of pre time + duration of the even + post time.

**Note**

Trigger driven recording can be used if platform supports such type of recording, implementation of such type of recording should include specific agent::media::stream records exporting mechanism which handles two consecutive events pre/post time intersections.

**Parameters**

| | | |
|---|---|---|
| in | *enabled* | true if event stream should trigger the recording. Implementation may ignore this if not trigger driven record method is used. |
| in | *pre* | Pre recording time in milliseconds. |
| in | *post* | Post recording time in milliseconds. |

**Returns**

true

false

#### 10.21.4.7 start()

```
virtual bool vxg::cloud::agent::event_stream::start ( )  [pure virtual]
```

Start events generation, called by internal code when the events generation requested by the VXG Cloud.

Event stream MUST immediately notify states of all stateful events after the start() was invoked.

**Returns**

true Events generation started

false Failed to start events generation

#### 10.21.4.8 stop()

```
virtual void vxg::cloud::agent::event_stream::stop ( )  [pure virtual]
```

Stop events generation.

#### 10.21.4.9 trigger_event()

```
virtual bool vxg::cloud::agent::event_stream::trigger_event (
            proto::event_object & event )  [inline], [virtual]
```

Trigger event provided by event_stream If get_events() returned event config with proto::event_config.caps.trigger == true and this event was triggered via the Cloud API this method will be called.

The logic of this method should be the same as for vxg::cloud::agent::callback::on_trigger_event().

**See also**

vxg::cloud::agent::callback::on_trigger_event()

**Parameters**

| | |
|---|---|
| *event* | |

**Returns**

true

false

Definition at line 102 of file event-stream.h.

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

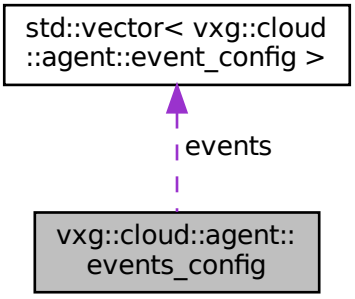
- event-stream.h

## 10.22 vxg::cloud::agent::events_config Struct Reference

Events config, list of event_config objects.

```
#include <agent-proto/objects/config.h>
```

Collaboration diagram for vxg::cloud::agent::events_config:




## Public Member Functions

- bool get_event_config (const event_object &event, event_config &result)

  *Finds event which corresponds to event_config arg in the events_config structure.*

## Data Fields

- bool enabled

  *enabled: bool, indicates global events and event-driven streaming enabling flag*
- **std::vector**< event_config > events

  *events: list of event_config struct*

### 10.22.1 Detailed Description

Events config, list of event_config objects.

Definition at line 983 of file config.h.

### 10.22.2 Member Function Documentation

#### 10.22.2.1 get_event_config()

```
bool vxg::cloud::agent::events_config::get_event_config (
            const event_object & event,
            event_config & result )  [inline]
```

Finds event which corresponds to event_config arg in the events_config structure.

**Parameters**

| | | |
|---|---|---|
| in | *event* | - event_object, event_object.event used to find the event_config |
| out | *result* | - if event_config found it will be storred here |

**Returns**

true event found

false event not found

Definition at line 1000 of file config.h.

## 10.22.3 Field Documentation

### 10.22.3.1 enabled

```
bool vxg::cloud::agent::events_config::enabled
```

enabled: bool, indicates global events and event-driven streaming enabling flag

Definition at line 986 of file config.h.

### 10.22.3.2 events

```
std::vector<event_config> vxg::cloud::agent::events_config::events
```

events: list of event_config struct

Definition at line 989 of file config.h.

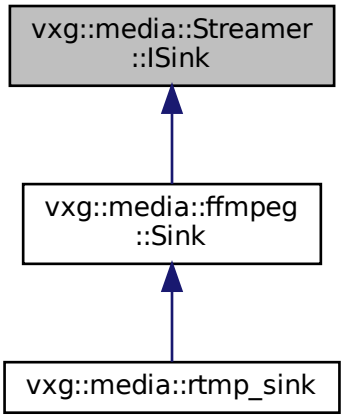
The documentation for this struct was generated from the following file:

- config.h

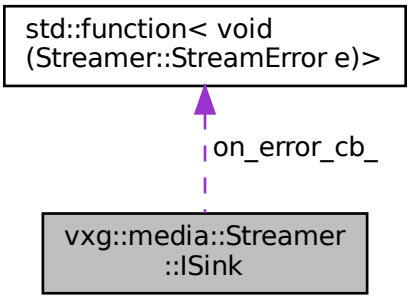
## 10.23 vxg::media::Streamer::ISink Class Reference

`#include <streamer/base_streamer.h>`

Inheritance diagram for vxg::media::Streamer::ISink:




Collaboration diagram for vxg::media::Streamer::ISink:




### Public Types

- typedef **std::shared_ptr**< ISink > ptr

  ***std::shared_ptr*** *alias*
- typedef **std::unique_ptr**< ISink > PtrU

  ***std::unique_ptr*** *alias*

## Public Member Functions

- ISink (uint8_t prio=SINK_THREAD_PRIO)

  *Construct a new ISink object.*
- virtual ~ISink ()
- virtual bool init ( **std::string** url="")=0

  *Init sink.*
- virtual bool finit ()=0

  *Deinit sink.*
- virtual bool process ( **std::shared_ptr**< MediaFrame > frame)=0

  *Process next media frame.*
- virtual bool droppable ()=0

  *If sink of with dropping its media frames.*
- virtual bool negotiate ( **std::vector**< Streamer::StreamInfo > info)

  *Negotiation callback, this method called with collected from the ISource::negotiate media stream description.*
- virtual void error (StreamError error)

  *Media processing error callback, called when ISink::process returned false or linked source's ISource::pullFrame returned false, or when ISource::error was called.*
- virtual **std::string** name ()=0

  *Sink name.*
- virtual cloud::duration duration ()

  *Processed stream duration.*
- void set_eos_cb ( **std::function**< void(cloud::duration)> eos_cb)
- void set_eos (bool eos)
- void set_error_cb (on_error_cb cb)

## Protected Attributes

- on_error_cb on_error_cb_

### 10.23.1 Detailed Description

Definition at line 507 of file base_streamer.h.

### 10.23.2 Member Typedef Documentation

#### 10.23.2.1 ptr

```
typedef  std::shared_ptr<ISink> vxg::media::Streamer::ISink::ptr
```

**std::shared_ptr** alias

Definition at line 512 of file base_streamer.h.

#### 10.23.2.2 PtrU

```
typedef  std::unique_ptr<ISink> vxg::media::Streamer::ISink::PtrU
```

**std::unique_ptr** alias

Definition at line 514 of file base_streamer.h.

### 10.23.3 Constructor & Destructor Documentation

#### 10.23.3.1 ISink()

```
vxg::media::Streamer::ISink::ISink (
            uint8_t prio = SINK_THREAD_PRIO )  [inline]
```

Construct a new ISink object.

**Parameters**

| | |
|---|---|
| *prio* | internall thread priority, used on RTOS. |

Definition at line 519 of file base_streamer.h.

#### 10.23.3.2 ~ISink()

```
virtual vxg::media::Streamer::ISink::~ISink ( )  [inline], [virtual]
```

Definition at line 525 of file base_streamer.h.

### 10.23.4 Member Function Documentation

#### 10.23.4.1 droppable()

```
virtual bool vxg::media::Streamer::ISink::droppable ( )  [pure virtual]
```

If sink of with dropping its media frames.

**Returns**

true Internal media thread allowed to drop frames if internal media queue is full.

false No media frames dropping allowed.

Implemented in vxg::media::rtmp_sink, and vxg::media::ffmpeg::Sink.

#### 10.23.4.2 duration()

```
virtual cloud::duration vxg::media::Streamer::ISink::duration ( )  [inline], [virtual]
```

Processed stream duration.

**Returns**

duration

Reimplemented in vxg::media::ffmpeg::Sink.

Definition at line 617 of file base_streamer.h.

#### 10.23.4.3 error()

```
virtual void vxg::media::Streamer::ISink::error (
            StreamError error )  [inline], [virtual]
```

Media processing error callback, called when ISink::process returned false or linked source's ISource::pullFrame returned false, or when ISource::error was called.

Method may be overriden, default implementation calls on_error_cb that was provided by user with set_error_cb().

**Parameters**

| | |
|---|---|
| *error* | Error type. |

Reimplemented in vxg::media::ffmpeg::Sink.

Definition at line 574 of file base_streamer.h.

#### 10.23.4.4 finit()

```
virtual bool vxg::media::Streamer::ISink::finit ( )  [pure virtual]
```

Deinit sink.

**Returns**

true finit success.

false finit failed.

Implemented in vxg::media::ffmpeg::Sink.

#### 10.23.4.5 init()

```
virtual bool vxg::media::Streamer::ISink::init (
              std::string url = "" )  [pure virtual]
```

Init sink.

**Parameters**

| | | |
|---|---|---|
| in | *url* | Url if needed. |

**Returns**

true init success.

false init failed.

Implemented in vxg::media::ffmpeg::Sink, and vxg::media::rtmp_sink.

#### 10.23.4.6 name()

```
virtual  std::string vxg::media::Streamer::ISink::name ( )  [pure virtual]
```

Sink name.

**Returns**

**std::string**

Implemented in vxg::media::rtmp_sink, and vxg::media::ffmpeg::Sink.

#### 10.23.4.7 negotiate()

```
virtual bool vxg::media::Streamer::ISink::negotiate (
              std::vector< Streamer::StreamInfo > info )  [inline], [virtual]
```

Negotiation callback, this method called with collected from the ISource::negotiate media stream description.

**Parameters**

| | |
|---|---|
| *info* | List of elementary streams descriptions. |

**Returns**

true If streams descriptions accepted.

false Streams not accepted, will cause media thread stopping.

Reimplemented in vxg::media::ffmpeg::Sink, and vxg::media::rtmp_sink.

Definition at line 564 of file base_streamer.h.

#### 10.23.4.8 process()

```
virtual bool vxg::media::Streamer::ISink::process (
              std::shared_ptr< MediaFrame > frame )  [pure virtual]
```

Process next media frame.

Internal function called by media thread, the last function of media frame travel. Final class process frame in this function: sends to server, writes on disk etc.

**Parameters**

| | | |
|---|---|---|
| in | *frame* | Media frame. |

**Returns**

true Media frame successfully processed.

false Media frame processing failed.

#### 10.23.4.9 set_eos()

```
void vxg::media::Streamer::ISink::set_eos (
             bool eos )  [inline]
```

Definition at line 680 of file base_streamer.h.

#### 10.23.4.10 set_eos_cb()

```
void vxg::media::Streamer::ISink::set_eos_cb (
              std::function< void(cloud::duration)> eos_cb )  [inline]
```

Definition at line 676 of file base_streamer.h.

#### 10.23.4.11 set_error_cb()

```
void vxg::media::Streamer::ISink::set_error_cb (
             on_error_cb cb )  [inline]
```

Definition at line 682 of file base_streamer.h.

### 10.23.5 Field Documentation

#### 10.23.5.1 on_error_cb_

```
on_error_cb vxg::media::Streamer::ISink::on_error_cb_  [protected]
```

Definition at line 685 of file base_streamer.h.

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

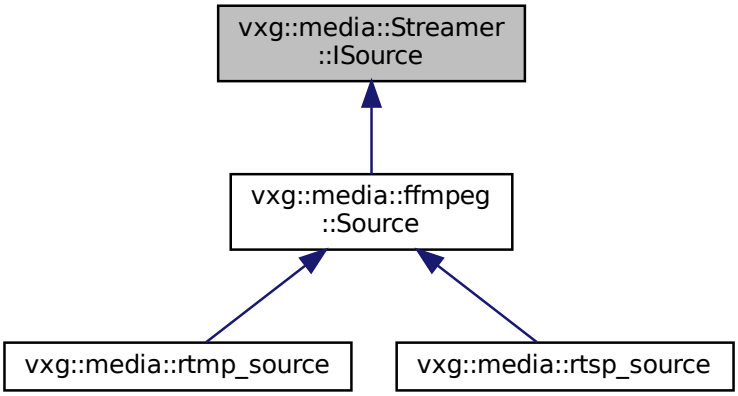
- base_streamer.h

## 10.24 vxg::media::Streamer::ISource Class Reference

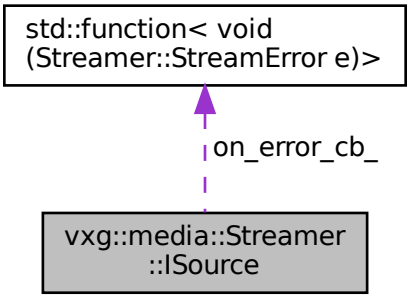
ISource interface class.

```
#include <streamer/base_streamer.h>
```

Inheritance diagram for vxg::media::Streamer::ISource:




Collaboration diagram for vxg::media::Streamer::ISource:



## Public Types

- enum Mode { PULL, PUSH }
  *Source operation mode.*
- typedef **std::shared_ptr**< ISource > ptr

## Public Member Functions

- ISource (uint8_t _prio=SRC_THREAD_PRIO, Mode _mode=PULL, bool drop=true)
  *Construct a new ISource object.*
- virtual bool init ( **std::string** url="")=0
  *Init source.*
- virtual void finit ()=0
  *Finit souce.*
- virtual void error (StreamError stream_error)
  *Error notification.*
- virtual **std::vector**< Streamer::StreamInfo > negotiate ()=0
  *Negotiation callback.*
- virtual **std::shared_ptr**< MediaFrame > pullFrame ()=0
  *Main method of the Mode::PULL mode data producing.*
- virtual **std::string** name ()=0
  *Source class name.*
- void pushFrame ( **std::shared_ptr**< MediaFrame > frame)
  *Implementation should call this method to provide media frames in the Mode::PUSH source operation mode.*
- void set_error_cb (on_error_cb cb)

## Protected Attributes

- Mode mode_
- on_error_cb on_error_cb_

### 10.24.1 Detailed Description

ISource interface class.

Definition at line 708 of file base_streamer.h.

### 10.24.2 Member Typedef Documentation

#### 10.24.2.1 ptr

```
typedef  std::shared_ptr<ISource> vxg::media::Streamer::ISource::ptr
```

Definition at line 713 of file base_streamer.h.

### 10.24.3 Member Enumeration Documentation

#### 10.24.3.1 Mode

enum vxg::media::Streamer::ISource::Mode

Source operation mode.

**Enumerator**

| | |
|---|---|
| PULL | Pull mode. The ISource::pullFrame() will be called from the separate thread. User should implement it and return std::shared_ptr<MediaFrame>. |
| PUSH | Push mode. Inherited class should feed media data on its own by calling the ISource::pushFrame() method with MediaFrame object passed as argument. |

Definition at line 715 of file base_streamer.h.

## 10.24.4 Constructor & Destructor Documentation

### 10.24.4.1 ISource()

```
vxg::media::Streamer::ISource::ISource (
            uint8_t _prio = SRC_THREAD_PRIO,
            Mode _mode = PULL,
            bool drop = true )  [inline]
```

Construct a new ISource object.

**Parameters**

| | | |
|---|---|---|
| in | *_prio* | Push thread priority. Used if _mode is Mode::PUSH. |
| in | *_mode* | Source operating mode. |
| in | *drop* | If true he media frames may be dropped if queue is full. |

Definition at line 731 of file base_streamer.h.

## 10.24.5 Member Function Documentation

### 10.24.5.1 error()

```
virtual void vxg::media::Streamer::ISource::error (
            StreamError stream_error )  [inline], [virtual]
```

Error notification.

Calling this method will inform media thread and all sinks about error happened in the source.

**Parameters**

| | | |
|---|---|---|
| in | *stream_error* | |

Definition at line 767 of file base_streamer.h.

#### 10.24.5.2 finit()

```
virtual void vxg::media::Streamer::ISource::finit ( )  [pure virtual]
```

Finit souce.

Implemented in vxg::media::ffmpeg::Source.

#### 10.24.5.3 init()

```
virtual bool vxg::media::Streamer::ISource::init (
              std::string url = "" )  [pure virtual]
```

Init source.

**Parameters**

| | |
|---|---|
| *url* | Url if needed. |

**Returns**

true Init success.

false Init failed.

Implemented in vxg::media::ffmpeg::Source, vxg::media::rtsp_source, and vxg::media::rtmp_source.

#### 10.24.5.4 name()

```
virtual  std::string vxg::media::Streamer::ISource::name ( )  [pure virtual]
```

Source class name.

**Returns**

**std::string**

Implemented in vxg::media::rtsp_source, and vxg::media::ffmpeg::Source.

#### 10.24.5.5 negotiate()

```
virtual std::vector<Streamer::StreamInfo> vxg::media::Streamer::ISource::negotiate ( ) [pure virtual]
```

Negotiation callback.

Called by internals. Class implementation should return the list of the streams info source will be producing for the sinks, this list will be then passed to the ISink::negotiate method.

**Returns**

std::vector<Streamer::StreamInfo>

Implemented in vxg::media::ffmpeg::Source.

#### 10.24.5.6 pullFrame()

```
virtual std::shared_ptr<MediaFrame> vxg::media::Streamer::ISource::pullFrame ( ) [pure virtual]
```

Main method of the Mode::PULL mode data producing.

Called by internals if the source operation mode is Mode::PULL. Implementation should return media frame object with correctly filled fields.

**Returns**

std::shared_ptr<MediaFrame>

Implemented in vxg::media::ffmpeg::Source.

#### 10.24.5.7 pushFrame()

```
void vxg::media::Streamer::ISource::pushFrame (
            std::shared_ptr< MediaFrame > frame ) [inline]
```

Implementation should call this method to provide media frames in the Mode::PUSH source operation mode.

**Parameters**

| | |
|---|---|
| *frame* | smart pointer to MediaFrame. |

Definition at line 870 of file base_streamer.h.

#### 10.24.5.8 set_error_cb()

```
void vxg::media::Streamer::ISource::set_error_cb (
            on_error_cb cb )  [inline]
```

Definition at line 971 of file base_streamer.h.

### 10.24.6 Field Documentation

#### 10.24.6.1 mode_

```
Mode vxg::media::Streamer::ISource::mode_  [protected]
```

Definition at line 1009 of file base_streamer.h.

#### 10.24.6.2 on_error_cb_

```
on_error_cb vxg::media::Streamer::ISource::on_error_cb_  [protected]
```

Definition at line 1010 of file base_streamer.h.

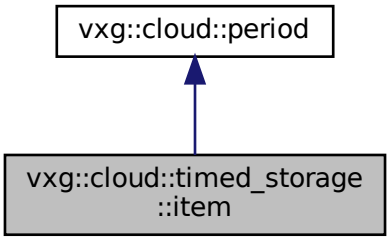
The documentation for this class was generated from the following file:

- base_streamer.h

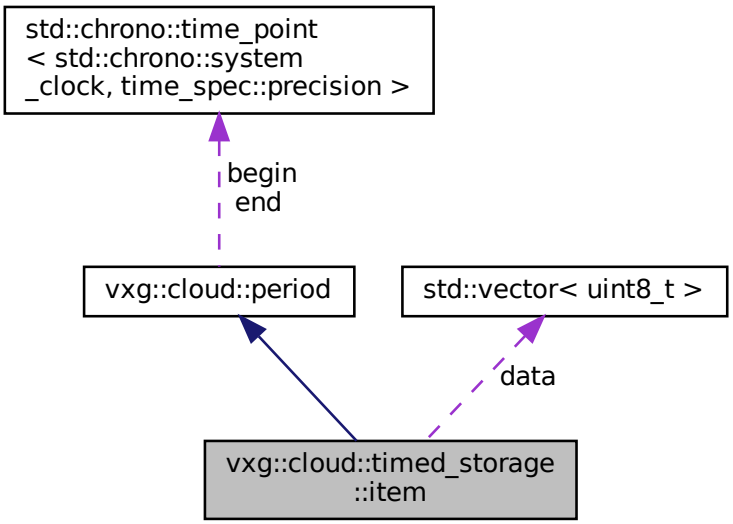
## 10.25 vxg::cloud::timed_storage::item Struct Reference

```
#include <agent/timeline.h>
```

Inheritance diagram for vxg::cloud::timed_storage::item:



Collaboration diagram for vxg::cloud::timed_storage::item:




## Public Types

- enum data_state { data_state::empty, data_state::loaded, data_state::async_ready }

## Public Member Functions

- item (cloud::time begin=utils::time::null(), cloud::time end=utils::time::null(), **std::vector**< uint8_t > data= **std::vector**< uint8_t >())
- item (period p, **std::vector**< uint8_t > data= **std::vector**< uint8_t >())
- item ( **std::vector**< uint8_t > &&data)
- void clear ()
- bool empty ()
- bool operator< (const item &r)

## Data Fields

- **std::vector**< uint8_t > data
- data_state state
- agent::proto::command::upload_category category
- agent::proto::command::media_type media_type

### 10.25.1 Detailed Description

Definition at line 72 of file timeline.h.

## 10.25.2 Member Enumeration Documentation

### 10.25.2.1 data_state

```
enum vxg::cloud::timed_storage::item::data_state  [strong]
```

**Enumerator**

| | |
|---|---|
| empty | |
| loaded | |
| async_ready | |

Definition at line 73 of file timeline.h.

## 10.25.3 Constructor & Destructor Documentation

### 10.25.3.1 item() [1/3]

```
vxg::cloud::timed_storage::item::item (
            cloud::time begin = utils::time::null(),
            cloud::time end = utils::time::null(),
             std::vector< uint8_t > data =  std::vector<uint8_t>() )  [inline]
```

Definition at line 79 of file timeline.h.

### 10.25.3.2 item() [2/3]

```
vxg::cloud::timed_storage::item::item (
            period p,
             std::vector< uint8_t > data =  std::vector<uint8_t>() )  [inline]
```

Definition at line 86 of file timeline.h.

### 10.25.3.3 item() [3/3]

```
vxg::cloud::timed_storage::item::item (
             std::vector< uint8_t > && data )  [inline]
```

Definition at line 91 of file timeline.h.

## 10.25.4 Member Function Documentation

### 10.25.4.1 clear()

```
void vxg::cloud::timed_storage::item::clear ( )  [inline]
```

Definition at line 95 of file timeline.h.

### 10.25.4.2 empty()

```
bool vxg::cloud::timed_storage::item::empty ( )  [inline]
```

Definition at line 101 of file timeline.h.

### 10.25.4.3 operator<()

```
bool vxg::cloud::timed_storage::item::operator< (
            const item & r )  [inline]
```

Definition at line 106 of file timeline.h.

## 10.25.5 Field Documentation

### 10.25.5.1 category

```
agent::proto::command::upload_category vxg::cloud::timed_storage::item::category
```

Definition at line 76 of file timeline.h.

### 10.25.5.2 data

```
std::vector<uint8_t> vxg::cloud::timed_storage::item::data
```

Definition at line 74 of file timeline.h.

#### 10.25.5.3 media_type

agent::proto::command::media_type vxg::cloud::timed_storage::item::media_type

Definition at line 77 of file timeline.h.

#### 10.25.5.4 state

data_state vxg::cloud::timed_storage::item::state

Definition at line 75 of file timeline.h.

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

- timeline.h

## 10.26 vxg::logger Class Reference

Logger class, current implementation based on spdlog.

#include <utils/logging.h>

### Data Structures

- struct options

### Public Types

- enum loglevel {
  lvl_crit, lvl_off, lvl_error, lvl_warn,
  lvl_info, lvl_debug, lvl_trace }
- typedef **std::shared_ptr**< spdlog::logger > logger_ptr

## Static Public Member Functions

- static **std::shared_ptr**< spdlog::logger > instance ( **std::string** name)

  *Get pointer to the instance of the named spdlog::logger object.*
- static void reset (int argc, char **argv, loglevel l, **std::string** syslog_ident="VXGCloudAgentDefault", std::string crash_logfile_path="", **std::string** logfile_path="", size_t logfile_max_size=(1024 *1024), size_t logfile_max_files=3)

  *Reset default logger parameters.*
- static void reset (const options &opts)
- static void set_level (logger_ptr log_ptr, loglevel lvl)

  *Change the logger object loglevel.*
- template<typename FormatString , typename... Args>
  static void info (const FormatString &fmt, const Args &... args)

  *Static info log.*
- template<typename FormatString , typename... Args>
  static void error (const FormatString &fmt, const Args &... args)
- template<typename FormatString , typename... Args>
  static void warn (const FormatString &fmt, const Args &... args)
- template<typename FormatString , typename... Args>
  static void debug (const FormatString &fmt, const Args &... args)
- template<typename FormatString , typename... Args>
  static void trace (const FormatString &fmt, const Args &... args)
- template<typename T >
  static void trace (const T &msg)
- template<typename T >
  static void debug (const T &msg)
- template<typename T >
  static void info (const T &msg)
- template<typename T >
  static void warn (const T &msg)
- template<typename T >
  static void error (const T &msg)
- template<typename T >
  static void critical (const T &msg)

### 10.26.1 Detailed Description

Logger class, current implementation based on spdlog.

Definition at line 22 of file logging.h.

### 10.26.2 Member Typedef Documentation

#### 10.26.2.1 logger_ptr

```
typedef std::shared_ptr<spdlog::logger> vxg::logger::logger_ptr
```

Definition at line 24 of file logging.h.

## 10.26.3 Member Enumeration Documentation

### 10.26.3.1 loglevel

```
enum vxg::logger::loglevel
```

**Enumerator**

| | |
|---|---|
| lvl_crit | |
| lvl_off | |
| lvl_error | |
| lvl_warn | |
| lvl_info | |
| lvl_debug | |
| lvl_trace | |

Definition at line 25 of file logging.h.

## 10.26.4 Member Function Documentation

### 10.26.4.1 critical()

```
template<typename T >
static void vxg::logger::critical (
            const T & msg )  [inline], [static]
```

Definition at line 315 of file logging.h.

### 10.26.4.2 debug() [1/2]

```
template<typename FormatString , typename...  Args>
static void vxg::logger::debug (
            const FormatString & fmt,
            const Args &...  args )  [inline], [static]
```

Definition at line 282 of file logging.h.

#### 10.26.4.3 debug() [2/2]

```
template<typename T >
static void vxg::logger::debug (
            const T & msg )  [inline], [static]
```

Definition at line 295 of file logging.h.

#### 10.26.4.4 error() [1/2]

```
template<typename FormatString , typename...  Args>
static void vxg::logger::error (
            const FormatString & fmt,
            const Args &...  args )  [inline], [static]
```

Definition at line 274 of file logging.h.

#### 10.26.4.5 error() [2/2]

```
template<typename T >
static void vxg::logger::error (
            const T & msg )  [inline], [static]
```

Definition at line 310 of file logging.h.

#### 10.26.4.6 info() [1/2]

```
template<typename FormatString , typename...  Args>
static void vxg::logger::info (
            const FormatString & fmt,
            const Args &...  args )  [inline], [static]
```

Static info log.

**Template Parameters**

| | |
|---|---|
| *FormatString* | |
| *Args* | |

**Parameters**

| | |
|---|---|
| *fmt* | |
| *args* | |

Definition at line 270 of file logging.h.

#### 10.26.4.7 info() [2/2]

```
template<typename T >
static void vxg::logger::info (
            const T & msg )  [inline], [static]
```

Definition at line 300 of file logging.h.

#### 10.26.4.8 instance()

```
static  std::shared_ptr<spdlog::logger> vxg::logger::instance (
             std::string name )  [inline], [static]
```

Get pointer to the instance of the named spdlog::logger object.

On the very first call creates default logger named 'default'. Contructs new logger if logger with such name was never requested

**Parameters**

| | | |
|---|---|---|
| in | *name* | Logger name. If logger with such name was already created, then it will be reused, otherwise a new one will be constructed. |

**Returns**

std::shared_ptr<spdlog::logger>

Definition at line 192 of file logging.h.

#### 10.26.4.9 reset() [1/2]

```
static void vxg::logger::reset (
            const options & opts )  [inline], [static]
```

Definition at line 239 of file logging.h.

#### 10.26.4.10 reset() [2/2]

```
static void vxg::logger::reset (
            int argc,
            char ** argv,
            loglevel l,
             std::string syslog_ident = "VXGCloudAgentDefault",
             std::string crash_logfile_path = "",
             std::string logfile_path = "",
            size_t logfile_max_size = (1024 * 1024),
            size_t logfile_max_files = 3 )  [inline], [static]
```

Reset default logger parameters.

Used to change all loggers parameters such as syslog/file sinks usage. Should be called before very first logger::instance() call to take effect. If wasn't called the default console logging sink only will be used for all loggers.

**Deprecated** Use reset(const options& opts)

**Parameters**

| | |
|---|---|
| *argc* | Process argc |
| *argv* | Process argv |
| *l* | default loglevel, all loggers will be created with this loglevel, can be overriden with SPDLOG_LEVEL env variable |
| *syslog_ident* | Syslog identification string, if empty syslog logging will be disabled. |
| *logfile_path* | Rotating plain log file path, if empty no plain log file will be used. |
| *logfile_max_size* | Max log file size before invoking logrotate. |
| *logfile_max_files* | Max number if rotating logfiles. |

Definition at line 220 of file logging.h.

#### 10.26.4.11 set_level()

```
static void vxg::logger::set_level (
            logger_ptr log_ptr,
            loglevel lvl )  [inline], [static]
```

Change the logger object loglevel.

**Parameters**

| | |
|---|---|
| *log_ptr* | Logger object pointer. |
| *lvl* | New loglevel. |

Definition at line 259 of file logging.h.

#### 10.26.4.12 trace() [1/2]

```
template<typename FormatString , typename...  Args>
static void vxg::logger::trace (
            const FormatString & fmt,
            const Args &...  args )  [inline], [static]
```

Definition at line 286 of file logging.h.

#### 10.26.4.13 trace() [2/2]

```
template<typename T >
static void vxg::logger::trace (
            const T & msg )  [inline], [static]
```

Definition at line 290 of file logging.h.

#### 10.26.4.14 warn() [1/2]

```
template<typename FormatString , typename...  Args>
static void vxg::logger::warn (
            const FormatString & fmt,
            const Args &...  args )  [inline], [static]
```

Definition at line 278 of file logging.h.

#### 10.26.4.15 warn() [2/2]

```
template<typename T >
static void vxg::logger::warn (
            const T & msg )  [inline], [static]
```

Definition at line 305 of file logging.h.

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

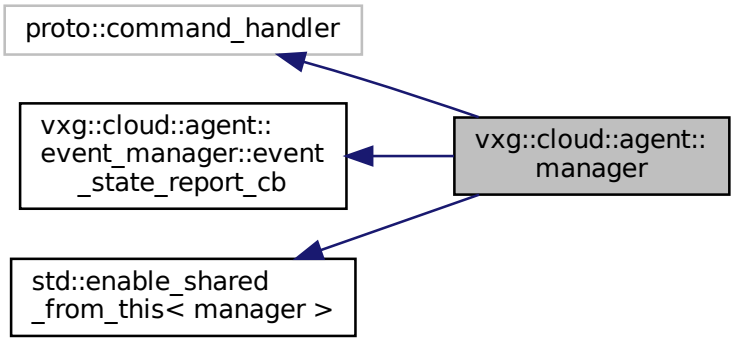
- logging.h

# 10.27 vxg::cloud::agent::manager Class Reference

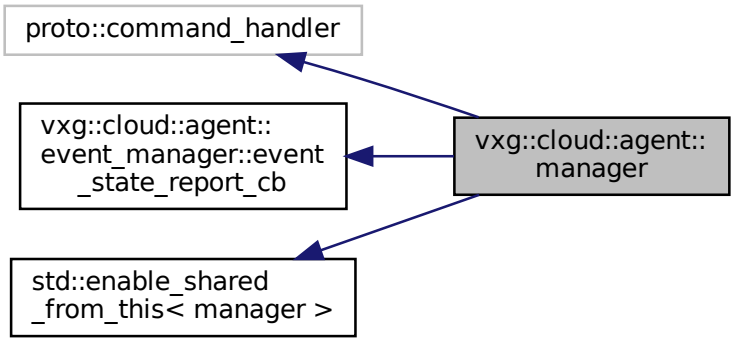
VXG Cloud agent manager class.

`#include <agent/manager.h>`

Inheritance diagram for vxg::cloud::agent::manager:




Collaboration diagram for vxg::cloud::agent::manager:




## Public Types

- using direct_upload_payload_map = **std::map**< proto::upload_category, **std::shared_ptr**< void > >
- using direct_upload_payload_map_ptr = **std::shared_ptr**< direct_upload_payload_map >
- typedef **std::shared_ptr**< manager > ptr

  *shared_ptr to manager object*

## Public Member Functions

- bool start ()

  *Start internal workflow, this is the main function which starts all internal threads and connections.*
- void stop ()

  *Stop manager, disconnect from the VXG Cloud.*

## Static Public Member Functions

- static manager::ptr create (const agent::config &config, callback::ptr callback, const proto::access_token &access_token, **std::vector**< agent::media::stream::ptr > media_streams, **std::vector**< event_stream::ptr > event_streams= **std::vector**< event_stream::ptr >(0))

  *Create manager object.*

## Protected Member Functions

- bool handle_event (proto::event_object &event, bool need_snapshot)
- bool _update_storage_status ()
- bool handle_event_snapshot (proto::event_object &event)
- bool handle_event_meta_file (proto::event_object &event)
- bool __notify_record_event ( **std::string** stream_id, bool on)
- virtual bool on_get_stream_config (proto::stream_config &config)
- virtual bool on_set_stream_config (const proto::stream_config &config)
- virtual bool on_get_motion_detection_config (proto::motion_detection_config &config)
- virtual bool on_set_motion_detection_config (const proto::motion_detection_config &config)
- virtual bool on_get_cam_video_config (proto::video_config &config)
- virtual bool on_set_cam_video_config (const proto::video_config &config)
- virtual bool on_get_cam_events_config (proto::events_config &config)
- virtual bool on_set_cam_events_config (const proto::events_config &config)
- virtual bool on_get_cam_audio_config (proto::audio_config &config)
- virtual bool on_set_cam_audio_config (const proto::audio_config &config)
- virtual bool on_get_ptz_config (proto::ptz_config &config)
- virtual bool on_cam_ptz (proto::ptz_command command)
- virtual bool on_cam_ptz_preset (proto::ptz_preset &preset_op)
- virtual bool on_get_osd_config (proto::osd_config &config)
- virtual bool on_set_osd_config (const proto::osd_config &config)
- virtual bool on_get_wifi_config (proto::wifi_config &config)
- virtual bool on_set_wifi_config (const proto::wifi_network &config)
- virtual bool on_stream_start (const **std::string** &streamId, int publishSessionID, proto::stream_reason reason)
- virtual bool on_stream_stop (const **std::string** &streamId, proto::stream_reason reason)
- virtual bool on_get_stream_caps (proto::stream_caps &caps)
- virtual bool on_get_supported_streams (proto::supported_streams_config &supportedStreamsConfig)
- virtual bool on_cam_upgrade_firmware ( **std::string** url)
- virtual bool on_raw_message ( **std::string** client_id, **std::string** &data)
- virtual bool on_set_stream_by_event (proto::stream_by_event_config conf)
- virtual bool on_get_stream_by_event (proto::stream_by_event_config &conf)
- virtual bool on_update_preview ( **std::string** url)
- virtual bool on_direct_upload_url (const proto::command::direct_upload_url_base &direct_upload, int event_id, int ref_id)
- virtual bool on_get_log ()
- virtual void on_prepared ()

- virtual void on_closed (int error, proto::command::bye_reason reason)
- virtual bool on_get_timezone ( **std::string** &timezone)
- virtual bool on_set_timezone ( **std::string** timezone)
- void on_set_periodic_events (const char *name, int period, bool active)
- virtual bool on_audio_file_play ( **std::string** url)
- virtual bool on_start_backward ( **std::string** &url)
- virtual bool on_stop_backward ( **std::string** &url)
- virtual bool on_get_cam_memorycard_timeline (proto::command::cam_memorycard_timeline &timeline)
- virtual bool on_cam_memorycard_synchronize (proto::command::cam_memorycard_synchronize_status &synchronize_status, vxg::cloud::time start, vxg::cloud::time end)
- virtual bool on_cam_memorycard_synchronize_cancel (const **std::string** &request_id)
- virtual bool on_cam_memorycard_recording (const **std::string** &stream_id, bool enabled)
- virtual bool on_trigger_event ( **std::string** event, json meta, cloud::time time)
- virtual bool on_set_audio_detection (const proto::audio_detection_config &conf)
- virtual bool on_get_audio_detection (proto::audio_detection_config &conf)
- virtual bool on_set_log_enable (bool bEnable)
- virtual bool on_set_activity (bool bEnable)
- virtual void on_registered (const **std::string** &sid)

## 10.27.1 Detailed Description

VXG Cloud agent manager class.

Definition at line 44 of file manager.h.

## 10.27.2 Member Typedef Documentation

### 10.27.2.1 direct_upload_payload_map

```
using vxg::cloud::agent::manager::direct_upload_payload_map = std::map<proto::upload_category,
std::shared_ptr<void> >
```

Definition at line 105 of file manager.h.

### 10.27.2.2 direct_upload_payload_map_ptr

```
using vxg::cloud::agent::manager::direct_upload_payload_map_ptr = std::shared_ptr<direct_upload_payload_map>
```

Definition at line 107 of file manager.h.

#### 10.27.2.3 ptr

```
typedef  std::shared_ptr<manager> vxg::cloud::agent::manager::ptr
```

shared_ptr to manager object

Definition at line 123 of file manager.h.

### 10.27.3 Member Function Documentation

#### 10.27.3.1 __notify_record_event()

```
bool vxg::cloud::agent::manager::__notify_record_event (
              std::string stream_id,
             bool on )  [protected]
```

#### 10.27.3.2 _update_storage_status()

```
bool vxg::cloud::agent::manager::_update_storage_status ( )  [protected]
```

#### 10.27.3.3 create()

```
static manager::ptr vxg::cloud::agent::manager::create (
             const agent::config & config,
             callback::ptr callback,
             const proto::access_token & access_token,
              std::vector< agent::media::stream::ptr > media_streams,
              std::vector< event_stream::ptr > event_streams =  std::vector< event_stream::ptr >(0)
)  [static]
```

Create manager object.

**Parameters**

| | | |
|---|---|---|
| in | *config* | |
| in | *callback* | cm::callback object, should not be null |
| in | *access_token* | VXG Cloud access token |
| in | *media_streams* | List of **std::shared_ptr** to base_stream derived objects. Should have at least one element. base_stream is abstract class so you need to declare you own class derived from the base_stream or use one of the provided classes (rtsp_stream,...), basically each stream is for example one rtsp stream provided by the device. Each media stream device has should be represented as a separate base_stream derived object, currently only two streams per device are supported by the VXG Cloud. |
| in | *event_streams* | List of event_stream::ptr, can be empty. event_stream is abstract class so final |
| | | implementation should use own class derived from the event_stream. |

**Returns**

manager::ptr

#### 10.27.3.4 handle_event()

```
bool vxg::cloud::agent::manager::handle_event (
            proto::event_object & event,
            bool need_snapshot )  [protected]
```

#### 10.27.3.5 handle_event_meta_file()

```
bool vxg::cloud::agent::manager::handle_event_meta_file (
            proto::event_object & event )  [protected]
```

#### 10.27.3.6 handle_event_snapshot()

```
bool vxg::cloud::agent::manager::handle_event_snapshot (
            proto::event_object & event )  [protected]
```

#### 10.27.3.7 on_audio_file_play()

```
virtual bool vxg::cloud::agent::manager::on_audio_file_play (
             std::string url )  [protected], [virtual]
```

#### 10.27.3.8 on_cam_memorycard_recording()

```
virtual bool vxg::cloud::agent::manager::on_cam_memorycard_recording (
            const  std::string & stream_id,
            bool enabled )  [protected], [virtual]
```

#### 10.27.3.9 on_cam_memorycard_synchronize()

```
virtual bool vxg::cloud::agent::manager::on_cam_memorycard_synchronize (
            proto::command::cam_memorycard_synchronize_status & synchronize_status,
            vxg::cloud::time start,
            vxg::cloud::time end )  [protected], [virtual]
```

#### 10.27.3.10 on_cam_memorycard_synchronize_cancel()

```
virtual bool vxg::cloud::agent::manager::on_cam_memorycard_synchronize_cancel (
            const  std::string & request_id )  [protected], [virtual]
```

#### 10.27.3.11 on_cam_ptz()

```
virtual bool vxg::cloud::agent::manager::on_cam_ptz (
            proto::ptz_command command )  [protected], [virtual]
```

#### 10.27.3.12 on_cam_ptz_preset()

```
virtual bool vxg::cloud::agent::manager::on_cam_ptz_preset (
            proto::ptz_preset & preset_op )  [protected], [virtual]
```

#### 10.27.3.13 on_cam_upgrade_firmware()

```
virtual bool vxg::cloud::agent::manager::on_cam_upgrade_firmware (
             std::string url )  [protected], [virtual]
```

#### 10.27.3.14 on_closed()

```
virtual void vxg::cloud::agent::manager::on_closed (
            int error,
            proto::command::bye_reason reason )  [protected], [virtual]
```

#### 10.27.3.15 on_direct_upload_url()

```
virtual bool vxg::cloud::agent::manager::on_direct_upload_url (
            const proto::command::direct_upload_url_base & direct_upload,
            int event_id,
            int ref_id )  [protected], [virtual]
```

#### 10.27.3.16 on_get_audio_detection()

```
virtual bool vxg::cloud::agent::manager::on_get_audio_detection (
            proto::audio_detection_config & conf )  [protected], [virtual]
```

#### 10.27.3.17 on_get_cam_audio_config()

```
virtual bool vxg::cloud::agent::manager::on_get_cam_audio_config (
            proto::audio_config & config )  [protected], [virtual]
```

#### 10.27.3.18 on_get_cam_events_config()

```
virtual bool vxg::cloud::agent::manager::on_get_cam_events_config (
            proto::events_config & config )  [protected], [virtual]
```

#### 10.27.3.19 on_get_cam_memorycard_timeline()

```
virtual bool vxg::cloud::agent::manager::on_get_cam_memorycard_timeline (
            proto::command::cam_memorycard_timeline & timeline )  [protected], [virtual]
```

#### 10.27.3.20 on_get_cam_video_config()

```
virtual bool vxg::cloud::agent::manager::on_get_cam_video_config (
            proto::video_config & config )  [protected], [virtual]
```

#### 10.27.3.21 on_get_log()

```
virtual bool vxg::cloud::agent::manager::on_get_log ( )  [protected], [virtual]
```

#### 10.27.3.22 on_get_motion_detection_config()

```
virtual bool vxg::cloud::agent::manager::on_get_motion_detection_config (
            proto::motion_detection_config & config )  [protected], [virtual]
```

#### 10.27.3.23 on_get_osd_config()

```
virtual bool vxg::cloud::agent::manager::on_get_osd_config (
            proto::osd_config & config )  [protected], [virtual]
```

#### 10.27.3.24 on_get_ptz_config()

```
virtual bool vxg::cloud::agent::manager::on_get_ptz_config (
            proto::ptz_config & config )  [protected], [virtual]
```

#### 10.27.3.25 on_get_stream_by_event()

```
virtual bool vxg::cloud::agent::manager::on_get_stream_by_event (
            proto::stream_by_event_config & conf )  [protected], [virtual]
```

#### 10.27.3.26 on_get_stream_caps()

```
virtual bool vxg::cloud::agent::manager::on_get_stream_caps (
            proto::stream_caps & caps )  [protected], [virtual]
```

#### 10.27.3.27 on_get_stream_config()

```
virtual bool vxg::cloud::agent::manager::on_get_stream_config (
            proto::stream_config & config )  [protected], [virtual]
```

#### 10.27.3.28 on_get_supported_streams()

```
virtual bool vxg::cloud::agent::manager::on_get_supported_streams (
            proto::supported_streams_config & supportedStreamsConfig )  [protected], [virtual]
```

#### 10.27.3.29 on_get_timezone()

```
virtual bool vxg::cloud::agent::manager::on_get_timezone (
             std::string & timezone )  [protected], [virtual]
```

#### 10.27.3.30 on_get_wifi_config()

```
virtual bool vxg::cloud::agent::manager::on_get_wifi_config (
            proto::wifi_config & config )  [protected], [virtual]
```

#### 10.27.3.31 on_prepared()

```
virtual void vxg::cloud::agent::manager::on_prepared ( )  [protected], [virtual]
```

#### 10.27.3.32 on_raw_message()

```
virtual bool vxg::cloud::agent::manager::on_raw_message (
             std::string client_id,
             std::string & data )  [protected], [virtual]
```

#### 10.27.3.33 on_registered()

```
virtual void vxg::cloud::agent::manager::on_registered (
            const  std::string & sid )  [protected], [virtual]
```

#### 10.27.3.34 on_set_activity()

```
virtual bool vxg::cloud::agent::manager::on_set_activity (
            bool bEnable )  [protected], [virtual]
```

#### 10.27.3.35 on_set_audio_detection()

```
virtual bool vxg::cloud::agent::manager::on_set_audio_detection (
            const proto::audio_detection_config & conf )  [protected], [virtual]
```

#### 10.27.3.36 on_set_cam_audio_config()

```
virtual bool vxg::cloud::agent::manager::on_set_cam_audio_config (
            const proto::audio_config & config )  [protected], [virtual]
```

#### 10.27.3.37 on_set_cam_events_config()

```
virtual bool vxg::cloud::agent::manager::on_set_cam_events_config (
            const proto::events_config & config )  [protected], [virtual]
```

#### 10.27.3.38 on_set_cam_video_config()

```
virtual bool vxg::cloud::agent::manager::on_set_cam_video_config (
            const proto::video_config & config )  [protected], [virtual]
```

#### 10.27.3.39 on_set_log_enable()

```
virtual bool vxg::cloud::agent::manager::on_set_log_enable (
            bool bEnable )  [protected], [virtual]
```

#### 10.27.3.40 on_set_motion_detection_config()

```
virtual bool vxg::cloud::agent::manager::on_set_motion_detection_config (
            const proto::motion_detection_config & config )  [protected], [virtual]
```

#### 10.27.3.41 on_set_osd_config()

```
virtual bool vxg::cloud::agent::manager::on_set_osd_config (
            const proto::osd_config & config )  [protected], [virtual]
```

#### 10.27.3.42 on_set_periodic_events()

```
void vxg::cloud::agent::manager::on_set_periodic_events (
            const char * name,
            int period,
            bool active )  [protected]
```

#### 10.27.3.43 on_set_stream_by_event()

```
virtual bool vxg::cloud::agent::manager::on_set_stream_by_event (
            proto::stream_by_event_config conf )  [protected], [virtual]
```

#### 10.27.3.44 on_set_stream_config()

```
virtual bool vxg::cloud::agent::manager::on_set_stream_config (
            const proto::stream_config & config )  [protected], [virtual]
```

#### 10.27.3.45 on_set_timezone()

```
virtual bool vxg::cloud::agent::manager::on_set_timezone (
             std::string timezone )  [protected], [virtual]
```

#### 10.27.3.46 on_set_wifi_config()

```
virtual bool vxg::cloud::agent::manager::on_set_wifi_config (
            const proto::wifi_network & config )  [protected], [virtual]
```

#### 10.27.3.47 on_start_backward()

```
virtual bool vxg::cloud::agent::manager::on_start_backward (
             std::string & url )  [protected], [virtual]
```

#### 10.27.3.48 on_stop_backward()

```
virtual bool vxg::cloud::agent::manager::on_stop_backward (
             std::string & url )  [protected], [virtual]
```

#### 10.27.3.49 on_stream_start()

```
virtual bool vxg::cloud::agent::manager::on_stream_start (
            const  std::string & streamId,
            int publishSessionID,
            proto::stream_reason reason )  [protected], [virtual]
```

#### 10.27.3.50 on_stream_stop()

```
virtual bool vxg::cloud::agent::manager::on_stream_stop (
            const  std::string & streamId,
            proto::stream_reason reason )  [protected], [virtual]
```

#### 10.27.3.51 on_trigger_event()

```
virtual bool vxg::cloud::agent::manager::on_trigger_event (
             std::string event,
            json meta,
            cloud::time time )  [protected], [virtual]
```

#### 10.27.3.52 on_update_preview()

```
virtual bool vxg::cloud::agent::manager::on_update_preview (
             std::string url )  [protected], [virtual]
```

#### 10.27.3.53 start()

```
bool vxg::cloud::agent::manager::start ( )
```

Start internal workflow, this is the main function which starts all internal threads and connections.

**Returns**

true started

false start failed

#### 10.27.3.54 stop()

```
void vxg::cloud::agent::manager::stop ( )
```

Stop manager, disconnect from the VXG Cloud.

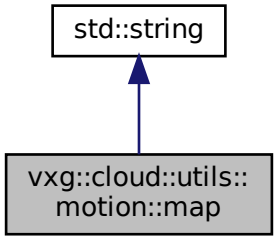
The documentation for this class was generated from the following file:

- manager.h

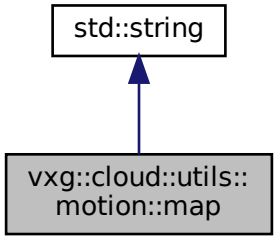
# 10.28 vxg::cloud::utils::motion::map Struct Reference

`#include <utils/utils.h>`

Inheritance diagram for vxg::cloud::utils::motion::map:




Collaboration diagram for vxg::cloud::utils::motion::map:




## Public Member Functions

- map ()
- map (const map &motionMap)
- map & operator= (const **std::string** &motionMap)

## Static Public Member Functions

- static **std::string** pack (const **std::string** &unpackedGrid)
- static **std::string** unpack (const **std::string** &packedMap, size_t outputLen)

### 10.28.1 Detailed Description

Definition at line 124 of file utils.h.

## 10.28.2 Constructor & Destructor Documentation

### 10.28.2.1 map() [1/2]

```
vxg::cloud::utils::motion::map::map ( )  [inline], [explicit]
```

Definition at line 125 of file utils.h.

### 10.28.2.2 map() [2/2]

```
vxg::cloud::utils::motion::map::map (
            const map & motionMap )  [inline]
```

Definition at line 127 of file utils.h.

## 10.28.3 Member Function Documentation

### 10.28.3.1 operator=()

```
map& vxg::cloud::utils::motion::map::operator= (
            const  std::string & motionMap )  [inline]
```

Definition at line 129 of file utils.h.

### 10.28.3.2 pack()

```
static  std::string vxg::cloud::utils::motion::map::pack (
            const  std::string & unpackedGrid )  [static]
```

### 10.28.3.3 unpack()

```
static  std::string vxg::cloud::utils::motion::map::unpack (
            const  std::string & packedMap,
            size_t outputLen )  [static]
```

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

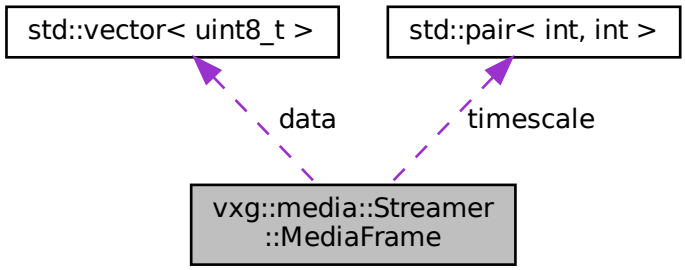
- utils.h

# 10.29 vxg::media::Streamer::MediaFrame Struct Reference

Media frame container.

`#include <streamer/base_streamer.h>`

Collaboration diagram for vxg::media::Streamer::MediaFrame:




## Public Member Functions

- bool operator< (const MediaFrame &rv)

  *Two frames comparation using timestamps.*

## Data Fields

- **std::vector**< uint8_t > data

  *Media frame data.*
- size_t len

  *Media frame data length.*
- int64_t pts

  *Media frame timestamp in timescale that corresponds to timescale.*
- int64_t dts

  *Media frame decoding timestamp in timescale that corresponds to timescale.*
- int64_t duration

  *Media frame duration if needed.*
- bool is_key

  *Is key frame flag.*
- MediaType type

  *Media frame type.*
- **std::pair**< int, int > timescale

  *Timescale of pts and duration. ex. : 1/90000, 1/1000 etc.*
- int64_t time_realtime

  *Real time if available from source, for ex.*

## Static Public Attributes

- static constexpr int64_t NO_PTS

### 10.29.1 Detailed Description

Media frame container.

Definition at line 418 of file base_streamer.h.

### 10.29.2 Member Function Documentation

#### 10.29.2.1 operator<()

```
bool vxg::media::Streamer::MediaFrame::operator< (
            const MediaFrame & rv )  [inline]
```

Two frames comparation using timestamps.

**Parameters**

| | |
|---|---|
| *rv* | Right value |

**Returns**

true

false

Definition at line 436 of file base_streamer.h.

### 10.29.3 Field Documentation

#### 10.29.3.1 data

```
std::vector<uint8_t> vxg::media::Streamer::MediaFrame::data
```

Media frame data.

Definition at line 441 of file base_streamer.h.

#### 10.29.3.2 dts

```
int64_t vxg::media::Streamer::MediaFrame::dts
```

Media frame decoding timestamp in timescale that corresponds to timescale.

Definition at line 448 of file base_streamer.h.

#### 10.29.3.3 duration

```
int64_t vxg::media::Streamer::MediaFrame::duration
```

Media frame duration if needed.

Definition at line 450 of file base_streamer.h.

#### 10.29.3.4 is_key

```
bool vxg::media::Streamer::MediaFrame::is_key
```

Is key frame flag.

Definition at line 452 of file base_streamer.h.

#### 10.29.3.5 len

```
size_t vxg::media::Streamer::MediaFrame::len
```

Media frame data length.

Definition at line 443 of file base_streamer.h.

#### 10.29.3.6 NO_PTS

```
constexpr int64_t vxg::media::Streamer::MediaFrame::NO_PTS  [static], [constexpr]
```

Definition at line 438 of file base_streamer.h.

#### 10.29.3.7 pts

```
int64_t vxg::media::Streamer::MediaFrame::pts
```

Media frame timestamp in timescale that corresponds to timescale.

Definition at line 445 of file base_streamer.h.

#### 10.29.3.8 time_realtime

```
int64_t vxg::media::Streamer::MediaFrame::time_realtime
```

Real time if available from source, for ex.

pts based on NTP time from RTCP SR

Definition at line 459 of file base_streamer.h.

#### 10.29.3.9 timescale

```
std::pair<int, int> vxg::media::Streamer::MediaFrame::timescale
```

Timescale of pts and duration. ex. : 1/90000, 1/1000 etc.

Definition at line 456 of file base_streamer.h.

#### 10.29.3.10 type

```
MediaType vxg::media::Streamer::MediaFrame::type
```

Media frame type.

Definition at line 454 of file base_streamer.h.

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

- base_streamer.h

## 10.30 vxg::cloud::agent::proto::motion_detection_caps Struct Reference

Motion detection capabilities camera capabilities that limit possible motion detection configuration.

```
#include <agent-proto/objects/caps.h>
```

## Data Fields

- size_t max_regions

  *Mandatory: supported number of motion regions.*
- motion_sensitivity sensitivity

  *Mandatory: (“region”, “frame”), default “region”; indicates if sensitivity can be set for region or for whole frame only.*
- motion_region_shape region_shape

  *Mandatory: (“rect”, “any”), default “any”; specifies limitation of region shape.*

### 10.30.1 Detailed Description

Motion detection capabilities camera capabilities that limit possible motion detection configuration.

Definition at line 336 of file caps.h.

### 10.30.2 Field Documentation

#### 10.30.2.1 max_regions

```
size_t vxg::cloud::agent::proto::motion_detection_caps::max_regions
```

Mandatory: supported number of motion regions.

Definition at line 339 of file caps.h.

#### 10.30.2.2 region_shape

```
motion_region_shape vxg::cloud::agent::proto::motion_detection_caps::region_shape
```

Mandatory: (“rect”, “any”), default “any”; specifies limitation of region shape.

Definition at line 348 of file caps.h.

#### 10.30.2.3 sensitivity

```
motion_sensitivity vxg::cloud::agent::proto::motion_detection_caps::sensitivity
```

Mandatory: (“region”, “frame”), default “region”; indicates if sensitivity can be set for region or for whole frame only.

Definition at line 344 of file caps.h.

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

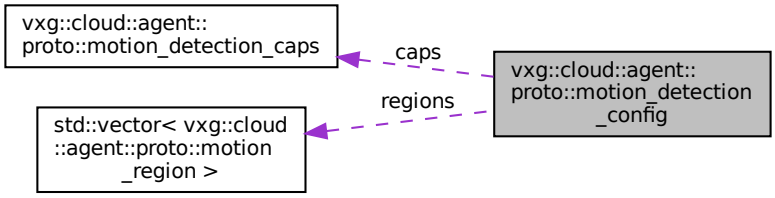
- caps.h

# 10.31 vxg::cloud::agent::proto::motion_detection_config Struct Reference

Motion detection config.

`#include <agent-proto/objects/config.h>`

Collaboration diagram for vxg::cloud::agent::proto::motion_detection_config:




## Data Fields

- int columns

  *Mandatory.*
- int rows

  *Mandatory.*
- motion_detection_caps caps

  *Mandatory for CM => SRV (reply to 'get_motion_detection') camera capabilities that limit possible motion detection configuration.*
- **std::vector**< motion_region > regions

  *Mandatory List of motion regions.*

## 10.31.1 Detailed Description

Motion detection config.

Definition at line 277 of file config.h.

## 10.31.2 Field Documentation

### 10.31.2.1 caps

`motion_detection_caps vxg::cloud::agent::proto::motion_detection_config::caps`

Mandatory for CM => SRV (reply to 'get_motion_detection') camera capabilities that limit possible motion detection configuration.

Definition at line 286 of file config.h.

#### 10.31.2.2 columns

```
int vxg::cloud::agent::proto::motion_detection_config::columns
```

Mandatory.

Definition at line 280 of file config.h.

#### 10.31.2.3 regions

```
std::vector<motion_region> vxg::cloud::agent::proto::motion_detection_config::regions
```

Mandatory List of motion regions.

Definition at line 289 of file config.h.

#### 10.31.2.4 rows

```
int vxg::cloud::agent::proto::motion_detection_config::rows
```

Mandatory.

Definition at line 283 of file config.h.

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

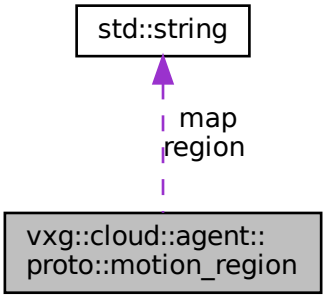
- config.h

## 10.32 vxg::cloud::agent::proto::motion_region Struct Reference

Motion detection related structs.

```
#include <agent-proto/objects/config.h>
```

Collaboration diagram for vxg::cloud::agent::proto::motion_region:



## Data Fields

- **std::string** region

  *Mandatory: name of region if supported by camera.*
- **std::string** map

  *Mandatory: String is packed with Apple Packbit algorithm and after that encoded with Base64.*
- size_t sensitivity

  *Mandatory: range 0-100; 0 - minimal sensitivity.*
- bool enabled

  *Mandatory: indicates that motion detection is enabled for the region.*

### 10.32.1 Detailed Description

Motion detection related structs.

Motion region

Definition at line 240 of file config.h.

### 10.32.2 Field Documentation

#### 10.32.2.1 enabled

```
bool vxg::cloud::agent::proto::motion_region::enabled
```

Mandatory: indicates that motion detection is enabled for the region.

Definition at line 262 of file config.h.

#### 10.32.2.2 map

```
std::string vxg::cloud::agent::proto::motion_region::map
```

Mandatory: String is packed with Apple Packbit algorithm and after that encoded with Base64.

Bitstring where “1” denotes an active cell and a “0” an inactive cell. The first cell is in the upper left corner. Then the cell order goes first from left to right and then from up to down. If the number of cells is not a multiple of 8 the last byte is padded with zeros.

Definition at line 252 of file config.h.

#### 10.32.2.3 region

```
std::string vxg::cloud::agent::proto::motion_region::region
```

Mandatory: name of region if supported by camera.

Definition at line 243 of file config.h.

#### 10.32.2.4 sensitivity

```
size_t vxg::cloud::agent::proto::motion_region::sensitivity
```

Mandatory: range 0-100; 0 - minimal sensitivity.

If sensitivity is supported only for whole frame, the same value should be used for all regions.

Definition at line 258 of file config.h.

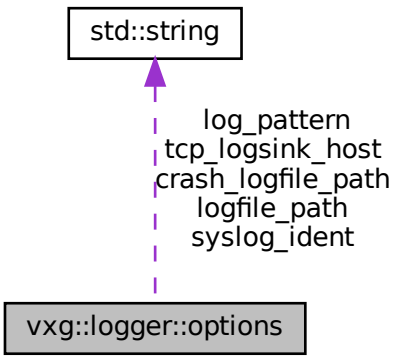
The documentation for this struct was generated from the following file:

- config.h

## 10.33 vxg::logger::options Struct Reference

```
#include <utils/logging.h>
```

Collaboration diagram for vxg::logger::options:



## Data Fields

- **std::string** log_pattern
- **std::string** logfile_path
- size_t logfile_max_size
- size_t logfile_max_files
- **std::string** crash_logfile_path
- **std::string** syslog_ident
- loglevel default_loglevel
- bool tcp_logsink_enabled
- **std::string** tcp_logsink_host
- uint16_t tcp_logsink_port

### 10.33.1 Detailed Description

Definition at line 35 of file logging.h.

### 10.33.2 Field Documentation

#### 10.33.2.1 crash_logfile_path

```
std::string vxg::logger::options::crash_logfile_path
```

Definition at line 41 of file logging.h.

#### 10.33.2.2 default_loglevel

```
loglevel vxg::logger::options::default_loglevel
```

Definition at line 43 of file logging.h.

#### 10.33.2.3 log_pattern

```
std::string vxg::logger::options::log_pattern
```

Definition at line 36 of file logging.h.

#### 10.33.2.4 logfile_max_files

```
size_t vxg::logger::options::logfile_max_files
```

Definition at line 40 of file logging.h.

#### 10.33.2.5 logfile_max_size

```
size_t vxg::logger::options::logfile_max_size
```

Definition at line 39 of file logging.h.

#### 10.33.2.6 logfile_path

```
std::string vxg::logger::options::logfile_path
```

Definition at line 38 of file logging.h.

#### 10.33.2.7 syslog_ident

```
std::string vxg::logger::options::syslog_ident
```

Definition at line 42 of file logging.h.

#### 10.33.2.8 tcp_logsink_enabled

```
bool vxg::logger::options::tcp_logsink_enabled
```

Definition at line 44 of file logging.h.

#### 10.33.2.9 tcp_logsink_host

```
std::string vxg::logger::options::tcp_logsink_host
```

Definition at line 45 of file logging.h.

#### 10.33.2.10 tcp_logsink_port

```
uint16_t vxg::logger::options::tcp_logsink_port
```

Definition at line 46 of file logging.h.

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

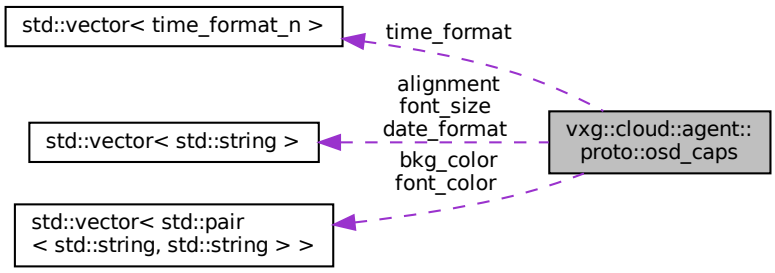
- logging.h

## 10.34 vxg::cloud::agent::proto::osd_caps Struct Reference

OSD capabilities.

```
#include <agent-proto/objects/caps.h>
```

Collaboration diagram for vxg::cloud::agent::proto::osd_caps:




### Data Fields

- bool system_id

  *system_id: bool, True when OSD supports separate system_id enabling/disabling*
- bool system_id_text

  *system_id_text: bool, True when OSD supports separate system_id customization*
- bool time

  *time: bool, True when OSD supports separate time enabling/disabling*
- **std::vector**< time_format_n > time_format

  *time_format: list of string, supported time formats.*
- bool date

  *date: bool, True when OSD supports separate date enabling/disabling*
- **std::vector**< **std::string** > date_format

  *date_format: list of string, supported date formats.*
- **std::vector**< **std::string** > font_size

  *font_size: list of string, describes supported font sizes.*
- **std::vector**< **std::pair**< **std::string**, **std::string** > > font_color

  *font_color: list of pairs [string (name), optional string (value)], predefined set of possible font colors.*
- **std::vector**< **std::pair**< **std::string**, **std::string** > > bkg_color

  *bkg_color: list of pairs [string (name), optional string (value)], predefined set of possible background colors.*
- bool bkg_transp

  *bkg_transp: bool, True when OSD supports background transparency*
- **std::vector**< **std::string** > alignment

  *alignment: list of strings, supported OSD positions.*

### 10.34.1 Detailed Description

OSD capabilities.

Definition at line 621 of file caps.h.

### 10.34.2 Field Documentation

#### 10.34.2.1 alignment

```
std::vector< std::string> vxg::cloud::agent::proto::osd_caps::alignment
```

alignment: list of strings, supported OSD positions.

Empty list means – position can't be changed. Example: ["UpperLeft", "UpperRight", "LowerLeft", "LowerRight"]

Definition at line 660 of file caps.h.

#### 10.34.2.2 bkg_color

```
std::vector< std::pair< std::string, std::string> > vxg::cloud::agent::proto::osd_caps↩
::bkg_color
```

bkg_color: list of pairs [string (name), optional string (value)], predefined set of possible background colors.

Empty list means – color selection is not supported. Optioanal value is a RGB color code in HEX. Example: [["↩
Black", "000000"]]

Definition at line 654 of file caps.h.

#### 10.34.2.3 bkg_transp

```
bool vxg::cloud::agent::proto::osd_caps::bkg_transp
```

bkg_transp: bool, True when OSD supports background transparency

Definition at line 656 of file caps.h.

#### 10.34.2.4 date

bool vxg::cloud::agent::proto::osd_caps::date

date: bool, True when OSD supports separate date enabling/disabling

Definition at line 635 of file caps.h.

#### 10.34.2.5 date_format

**std::vector**< **std::string**> vxg::cloud::agent::proto::osd_caps::date_format

date_format: list of string, supported date formats.

Empty list means – date format selection is not supported. Example: ["YYYY-MM-DD", "MM-DD-YYYY", "DD-MM-YYYY", "YYYY/MM/DD", "MM/DD/YYYY2, "DD/MM/YYYY"]

Definition at line 639 of file caps.h.

#### 10.34.2.6 font_color

**std::vector**< **std::pair**< **std::string**, **std::string**> > vxg::cloud::agent::proto::osd_caps↩
::font_color

font_color: list of pairs [string (name), optional string (value)], predefined set of possible font colors.

Empty list means – color selection is not supported. Optioanal value is a RGB color code in HEX. Example: [["↩
Orange", "FF9C00"]]

Definition at line 648 of file caps.h.

#### 10.34.2.7 font_size

**std::vector**< **std::string**> vxg::cloud::agent::proto::osd_caps::font_size

font_size: list of string, describes supported font sizes.

Empty list means – font size format selection is not supported. Examples: ["16", "32", "48", "64", "auto"] or ["Small", "Normal", "Big"]

Definition at line 643 of file caps.h.

#### 10.34.2.8 system_id

```
bool vxg::cloud::agent::proto::osd_caps::system_id
```

system_id: bool, True when OSD supports separate system_id enabling/disabling

Definition at line 624 of file caps.h.

#### 10.34.2.9 system_id_text

```
bool vxg::cloud::agent::proto::osd_caps::system_id_text
```

system_id_text: bool, True when OSD supports separate system_id customization

Definition at line 627 of file caps.h.

#### 10.34.2.10 time

```
bool vxg::cloud::agent::proto::osd_caps::time
```

time: bool, True when OSD supports separate time enabling/disabling

Definition at line 629 of file caps.h.

#### 10.34.2.11 time_format

```
std::vector<time_format_n> vxg::cloud::agent::proto::osd_caps::time_format
```

time_format: list of string, supported time formats.

Empty list means – time format selection is not supported. Example: ["12h", "24h"]

Definition at line 633 of file caps.h.

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

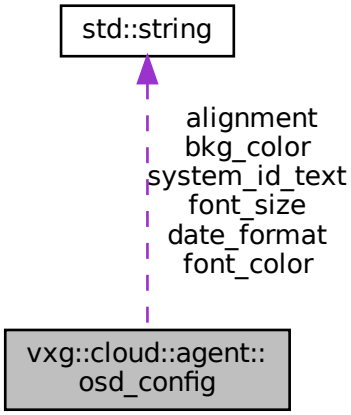
- caps.h

## 10.35 vxg::cloud::agent::osd_config Struct Reference

OSD config.

`#include <agent-proto/objects/config.h>`

Collaboration diagram for vxg::cloud::agent::osd_config:




### Data Fields

- bool system_id

  *system_id: optional bool, enable/disable static part of OSD*
- **std::string** system_id_text

  *system_id_text: optional string, a static content of OSD*
- bool time

  *time: optional bool, enable/disable time part of OSD*
- time_format_n time_format

  *time_format: optional string, one of predefined values from the time_format_n, should be included in caps.*
- bool date

  *date: optional bool, enable/disable date part of OSD*
- **std::string** date_format

  *date_format: optional string, one of predefined values from caps*
- **std::string** font_size

  *font_size: optional string, one of predefined font sizes from caps*
- **std::string** font_color

  *font_color: optional string, name of one of predefined font colors from caps*
- **std::string** bkg_color

  *bkg_color: optional string, name of one of predefined background colors from caps*
- bool bkg_transp

  *bkg_transp: optional bool, enable/disable OSD background transparency*
- **std::string** alignment

  *alignment: optional string, one of predefined positions from caps*
- osd_caps caps

  *OSD capabilities of the device.*

## 10.35.1 Detailed Description

OSD config.

On Screen Display configuration object.

Definition at line 1134 of file config.h.

## 10.35.2 Field Documentation

### 10.35.2.1 alignment

```
std::string vxg::cloud::agent::osd_config::alignment
```

alignment: optional string, one of predefined positions from caps

Definition at line 1165 of file config.h.

### 10.35.2.2 bkg_color

```
std::string vxg::cloud::agent::osd_config::bkg_color
```

bkg_color: optional string, name of one of predefined background colors from caps

Definition at line 1161 of file config.h.

### 10.35.2.3 bkg_transp

```
bool vxg::cloud::agent::osd_config::bkg_transp
```

bkg_transp: optional bool, enable/disable OSD background transparency

Definition at line 1163 of file config.h.

### 10.35.2.4 caps

```
osd_caps vxg::cloud::agent::osd_config::caps
```

OSD capabilities of the device.

Definition at line 1168 of file config.h.

#### 10.35.2.5 date

```
bool vxg::cloud::agent::osd_config::date
```

date: optional bool, enable/disable date part of OSD

Definition at line 1149 of file config.h.

#### 10.35.2.6 date_format

```
std::string vxg::cloud::agent::osd_config::date_format
```

date_format: optional string, one of predefined values from caps

Definition at line 1152 of file config.h.

#### 10.35.2.7 font_color

```
std::string vxg::cloud::agent::osd_config::font_color
```

font_color: optional string, name of one of predefined font colors from caps

Definition at line 1158 of file config.h.

#### 10.35.2.8 font_size

```
std::string vxg::cloud::agent::osd_config::font_size
```

font_size: optional string, one of predefined font sizes from caps

Definition at line 1155 of file config.h.

#### 10.35.2.9 system_id

```
bool vxg::cloud::agent::osd_config::system_id
```

system_id: optional bool, enable/disable static part of OSD

Definition at line 1137 of file config.h.

#### 10.35.2.10 system_id_text

```
std::string vxg::cloud::agent::osd_config::system_id_text
```

system_id_text: optional string, a static content of OSD

Definition at line 1140 of file config.h.

#### 10.35.2.11 time

```
bool vxg::cloud::agent::osd_config::time
```

time: optional bool, enable/disable time part of OSD

Definition at line 1143 of file config.h.

#### 10.35.2.12 time_format

```
time_format_n vxg::cloud::agent::osd_config::time_format
```

time_format: optional string, one of predefined values from the time_format_n, should be included in caps.

Definition at line 1146 of file config.h.

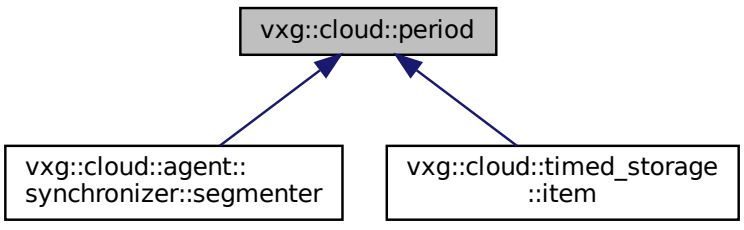
The documentation for this struct was generated from the following file:

- config.h

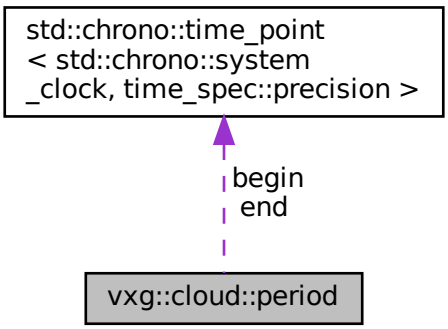
## 10.36 vxg::cloud::period Struct Reference

```
#include <agent/timeline.h>
```

Inheritance diagram for vxg::cloud::period:



Collaboration diagram for vxg::cloud::period:




## Public Member Functions

- period (cloud::time _begin=utils::time::null(), cloud::time _end=utils::time::null())
- period (agent::proto::command::get_direct_upload_url l)
- bool is_open ()
- bool is_null ()
- bool is_valid ()
- bool intersects (const period &r)
- void clear ()
- cloud::time::duration duration ()
- bool operator< (const period &r)

## Data Fields

- cloud::time begin
- cloud::time end

### 10.36.1 Detailed Description

Definition at line 23 of file timeline.h.

### 10.36.2 Constructor & Destructor Documentation

#### 10.36.2.1 period() [1/2]

```
vxg::cloud::period::period (
            cloud::time _begin = utils::time::null(),
            cloud::time _end = utils::time::null() )  [inline]
```

Definition at line 27 of file timeline.h.

#### 10.36.2.2 period() [2/2]

```
vxg::cloud::period::period (
            agent::proto::command::get_direct_upload_url l )  [inline]
```

Definition at line 32 of file timeline.h.

### 10.36.3 Member Function Documentation

#### 10.36.3.1 clear()

```
void vxg::cloud::period::clear ( )  [inline]
```

Definition at line 57 of file timeline.h.

#### 10.36.3.2 duration()

```
cloud::time::duration vxg::cloud::period::duration ( )  [inline]
```

Definition at line 62 of file timeline.h.

#### 10.36.3.3 intersects()

```
bool vxg::cloud::period::intersects (
            const period & r )  [inline]
```

Definition at line 46 of file timeline.h.

#### 10.36.3.4 is_null()

```
bool vxg::cloud::period::is_null ( )  [inline]
```

Definition at line 40 of file timeline.h.

#### 10.36.3.5 is_open()

```
bool vxg::cloud::period::is_open ( )  [inline]
```

Definition at line 39 of file timeline.h.

#### 10.36.3.6 is_valid()

```
bool vxg::cloud::period::is_valid ( )  [inline]
```

Definition at line 41 of file timeline.h.

#### 10.36.3.7 operator<()

```
bool vxg::cloud::period::operator< (
            const period & r )  [inline]
```

Definition at line 64 of file timeline.h.

### 10.36.4 Field Documentation

#### 10.36.4.1 begin

```
cloud::time vxg::cloud::period::begin
```

Definition at line 24 of file timeline.h.

#### 10.36.4.2 end

```
cloud::time vxg::cloud::period::end
```

Definition at line 25 of file timeline.h.

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

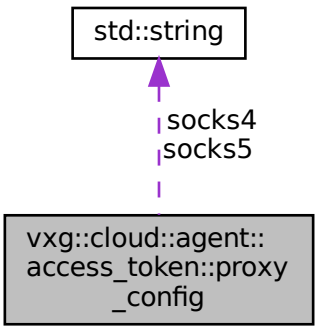
- timeline.h

## 10.37 vxg::cloud::agent::access_token::proxy_config Struct Reference

Socks proxy settings.

```
#include <agent-proto/objects/config.h>
```

Collaboration diagram for vxg::cloud::agent::access_token::proxy_config:




### Data Fields

- **std::string** socks4

  *SOCKS4 proxy uri.*
- **std::string** socks5

  *SOCKS5 proxy uri, ex. socks5://user:pwd@host:port.*

### 10.37.1 Detailed Description

Socks proxy settings.

Definition at line 1194 of file config.h.

### 10.37.2 Field Documentation

#### 10.37.2.1 socks4

```
std::string vxg::cloud::agent::access_token::proxy_config::socks4
```

SOCKS4 proxy uri.

Definition at line 1196 of file config.h.

#### 10.37.2.2 socks5

```
std::string vxg::cloud::agent::access_token::proxy_config::socks5
```

SOCKS5 proxy uri, ex. socks5://user:pwd@host:port.

Definition at line 1198 of file config.h.

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

- config.h

## 10.38 vxg::cloud::agent::ptz_command Struct Reference

PTZ command.

```
#include <agent-proto/objects/config.h>
```

### Data Fields

- ptz_action action

  *action: string, Camera informs server about list of supported actions with 3.30 cam_ptz_conf (CM) command*
- int tm

  *tm: optional int, operation time that allows to make PTZ with specified steps, msec*

### 10.38.1 Detailed Description

PTZ command.

Definition at line 1112 of file config.h.

### 10.38.2 Field Documentation

#### 10.38.2.1 action

```
ptz_action vxg::cloud::agent::ptz_command::action
```

action: string, Camera informs server about list of supported actions with 3.30 cam_ptz_conf (CM) command

Definition at line 1116 of file config.h.

#### 10.38.2.2 tm

```
int vxg::cloud::agent::ptz_command::tm
```

tm: optional int, operation time that allows to make PTZ with specified steps, msec

Definition at line 1120 of file config.h.

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

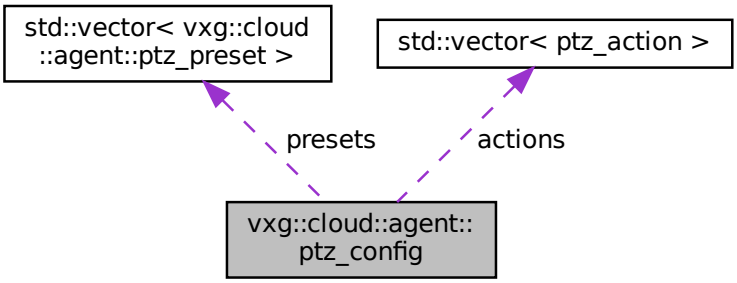
- config.h

## 10.39 vxg::cloud::agent::ptz_config Struct Reference

PTZ config.

```
#include <agent-proto/objects/config.h>
```

Collaboration diagram for vxg::cloud::agent::ptz_config:



## Data Fields

- **std::vector**< ptz_action > actions

  *actions: list of strings, list of supported PTZ actions.*
- int maximum_number_of_presets

  *maximum_number_of_presets: optional int, max number of supported presets when camera supports.*
- **std::vector**< ptz_preset > presets

  *presets: optional list of structures ptz_preset*

### 10.39.1 Detailed Description

PTZ config.

Definition at line 1087 of file config.h.

### 10.39.2 Field Documentation

#### 10.39.2.1 actions

```
std::vector<ptz_action> vxg::cloud::agent::ptz_config::actions
```

actions: list of strings, list of supported PTZ actions.

Possible values: “left”, “right”, “top”, “bottom”, “zoom_in”, “zoom_out”, “stop”. Server sends commands via 3.5 cam_ptz (SRV)

Definition at line 1091 of file config.h.

#### 10.39.2.2 maximum_number_of_presets

```
int vxg::cloud::agent::ptz_config::maximum_number_of_presets
```

maximum_number_of_presets: optional int, max number of supported presets when camera supports.

Zero value, the missed parameter or missed or empty presets list are interpreted by server as “camera doesn't support PTZ”

Definition at line 1097 of file config.h.

#### 10.39.2.3 presets

```
std::vector<ptz_preset> vxg::cloud::agent::ptz_config::presets
```

presets: optional list of structures ptz_preset

Definition at line 1100 of file config.h.

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

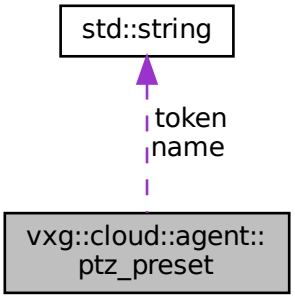
- config.h

## 10.40 vxg::cloud::agent::ptz_preset Struct Reference

PTZ preset.

```
#include <agent-proto/objects/config.h>
```

Collaboration diagram for vxg::cloud::agent::ptz_preset:




### Data Fields

- **std::string** token

  *token: string, an unique token of preset what is used for all operations with preset*
- **std::string** name

  *name: string, user friendly name of preset*
- ptz_preset_action action

  *actions: list of strings, required preset action.*

### 10.40.1 Detailed Description

PTZ preset.

Definition at line 1069 of file config.h.

### 10.40.2 Field Documentation

#### 10.40.2.1 action

`ptz_preset_action vxg::cloud::agent::ptz_preset::action`

actions: list of strings, required preset action.

Possible values: “create”, “delete”, “goto”, “update”

Definition at line 1078 of file config.h.

#### 10.40.2.2 name

**std::string** `vxg::cloud::agent::ptz_preset::name`

name: string, user friendly name of preset

Definition at line 1074 of file config.h.

#### 10.40.2.3 token

**std::string** `vxg::cloud::agent::ptz_preset::token`

token: string, an unique token of preset what is used for all operations with preset

Definition at line 1072 of file config.h.

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

- config.h

## 10.41 vxg::cloud::utils::queued_async_handler< T > Class Template Reference

`#include <utils/queued-handler.h>`

### Public Types

- using handler_func = **std::function**< void(const T &o)>

## Public Member Functions

- queued_async_handler (handler_func cb=nullptr)
- ~queued_async_handler ()
- void start ()
- void stop ()
- void push (T o)
- handler_func get_handler ()
- void set_handler (handler_func h)

### 10.41.1 Detailed Description

**template<class T>**
**class vxg::cloud::utils::queued_async_handler< T >**

Definition at line 11 of file queued-handler.h.

### 10.41.2 Member Typedef Documentation

#### 10.41.2.1 handler_func

```
template<class T >
using vxg::cloud::utils::queued_async_handler< T >::handler_func =  std::function<void(const
T& o)>
```

Definition at line 13 of file queued-handler.h.

### 10.41.3 Constructor & Destructor Documentation

#### 10.41.3.1 queued_async_handler()

```
template<class T >
vxg::cloud::utils::queued_async_handler< T >::queued_async_handler (
            handler_func cb = nullptr )  [inline]
```

Definition at line 23 of file queued-handler.h.

#### 10.41.3.2 ~queued_async_handler()

```
template<class T >
vxg::cloud::utils::queued_async_handler< T >::~queued_async_handler ( )  [inline]
```

Definition at line 24 of file queued-handler.h.

### 10.41.4 Member Function Documentation

#### 10.41.4.1 get_handler()

```
template<class T >
handler_func vxg::cloud::utils::queued_async_handler< T >::get_handler ( )  [inline]
```

Definition at line 54 of file queued-handler.h.

#### 10.41.4.2 push()

```
template<class T >
void vxg::cloud::utils::queued_async_handler< T >::push (
            T o )  [inline]
```

Definition at line 48 of file queued-handler.h.

#### 10.41.4.3 set_handler()

```
template<class T >
void vxg::cloud::utils::queued_async_handler< T >::set_handler (
            handler_func h )  [inline]
```

Definition at line 55 of file queued-handler.h.

#### 10.41.4.4 start()

```
template<class T >
void vxg::cloud::utils::queued_async_handler< T >::start ( )  [inline]
```

Definition at line 26 of file queued-handler.h.

#### 10.41.4.5 stop()

```
template<class T >
void vxg::cloud::utils::queued_async_handler< T >::stop ( )  [inline]
```

Definition at line 39 of file queued-handler.h.

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

- queued-handler.h

# 10.42 vxg::media::stream_error::report Struct Reference

Media stream error report simple object.

`#include <streamer/stream.h>`

## Data Fields

- origin from

  *Origin of the error.*
- error code

  *Error code.*

## 10.42.1 Detailed Description

Media stream error report simple object.

Definition at line 40 of file streamer/stream.h.

## 10.42.2 Field Documentation

### 10.42.2.1 code

`error vxg::media::stream_error::report::code`

Error code.

Definition at line 44 of file streamer/stream.h.

### 10.42.2.2 from

`origin vxg::media::stream_error::report::from`

Origin of the error.

Definition at line 42 of file streamer/stream.h.

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

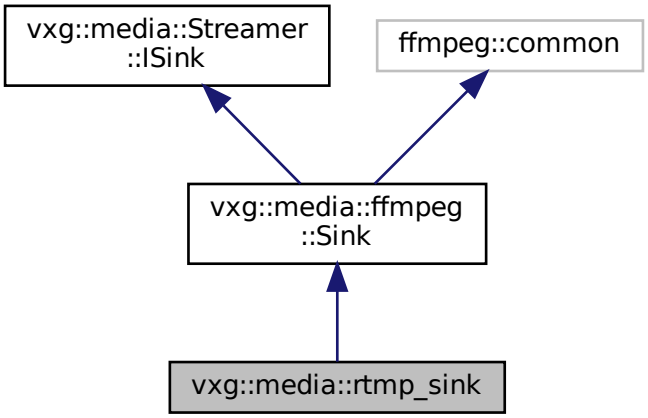
- streamer/stream.h

## 10.43 vxg::media::rtmp_sink Class Reference

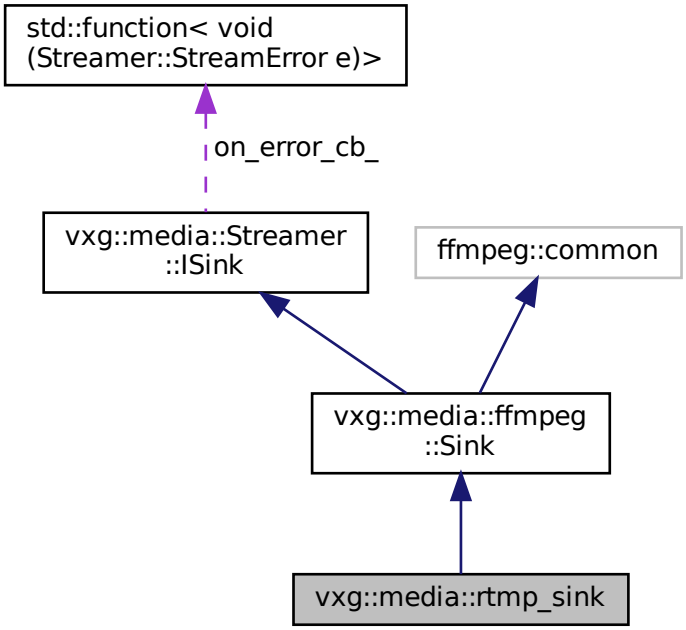
RTMP sink class.

`#include <streamer/rtmp_sink.h>`

Inheritance diagram for vxg::media::rtmp_sink:




Collaboration diagram for vxg::media::rtmp_sink:



## Public Member Functions

- rtmp_sink ()

  *Construct a new rtmp sink object.*
- virtual bool init ( **std::string** url) override

  *Overriden vxg::media::ffmpeg::Sink::init( **std::string**, **std::string**) "init" method with hidden output ffmpeg format.*
- virtual **std::string** name () override

  *Sink name.*
- virtual bool droppable () override

  *If sink of with dropping its media frames.*
- bool negotiate ( **std::vector**< Streamer::StreamInfo > streams_info)

  *Override negotiate() for removing all data streams.*

## Additional Inherited Members

### 10.43.1 Detailed Description

RTMP sink class.

Definition at line 13 of file rtmp_sink.h.

### 10.43.2 Constructor & Destructor Documentation

#### 10.43.2.1 rtmp_sink()

```
vxg::media::rtmp_sink::rtmp_sink ( )  [inline]
```

Construct a new rtmp sink object.

Definition at line 18 of file rtmp_sink.h.

### 10.43.3 Member Function Documentation

#### 10.43.3.1 droppable()

```
virtual bool vxg::media::rtmp_sink::droppable ( )  [inline], [override], [virtual]
```

If sink of with dropping its media frames.

**Returns**

true Internal media thread allowed to drop frames if internal media queue is full.

false No media frames dropping allowed.

Reimplemented from vxg::media::ffmpeg::Sink.

Definition at line 32 of file rtmp_sink.h.

#### 10.43.3.2 init()

```
virtual bool vxg::media::rtmp_sink::init (
              std::string url )  [inline], [override], [virtual]
```

Overriden vxg::media::ffmpeg::Sink::init( **std::string**, **std::string**) "init" method with hidden output ffmpeg format.

**Parameters**

| | |
|---|---|
| *url* | RTMP url |

**Returns**

true On success

false On failure

Reimplemented from vxg::media::ffmpeg::Sink.

Definition at line 26 of file rtmp_sink.h.

#### 10.43.3.3 name()

```
virtual std::string vxg::media::rtmp_sink::name ( ) [inline], [override], [virtual]
```

Sink name.

**Returns**

**std::string**

Reimplemented from vxg::media::ffmpeg::Sink.

Definition at line 30 of file rtmp_sink.h.

#### 10.43.3.4 negotiate()

```
bool vxg::media::rtmp_sink::negotiate (
            std::vector< Streamer::StreamInfo > streams_info ) [inline], [virtual]
```

Override negotiate() for removing all data streams.

This is required for preventing buffering inside the ffmpeg muxer, ffmpeg waits for at least one packet for each stream or 10 seconds by default before output next chunk, this leads to 10 seconds delay if data track was added to output muxing context but no actual data packets were received hence sparse streams like onvif metadata may significantly increase delay.

**Parameters**

| | | |
|---|---|---|
| in | *streams_info* | - list of streams descrtiptions. |

**Returns**

true

false

Reimplemented from vxg::media::ffmpeg::Sink.

Definition at line 45 of file rtmp_sink.h.

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

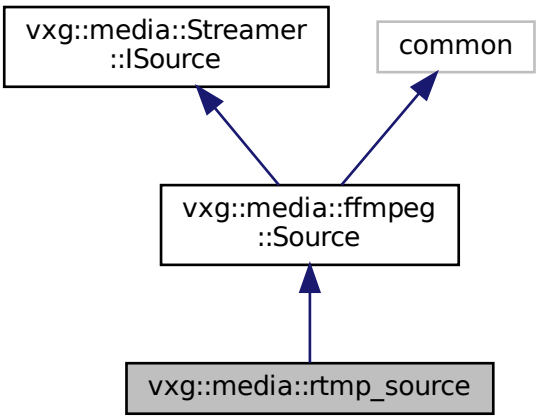
- rtmp_sink.h

## 10.44 vxg::media::rtmp_source Class Reference

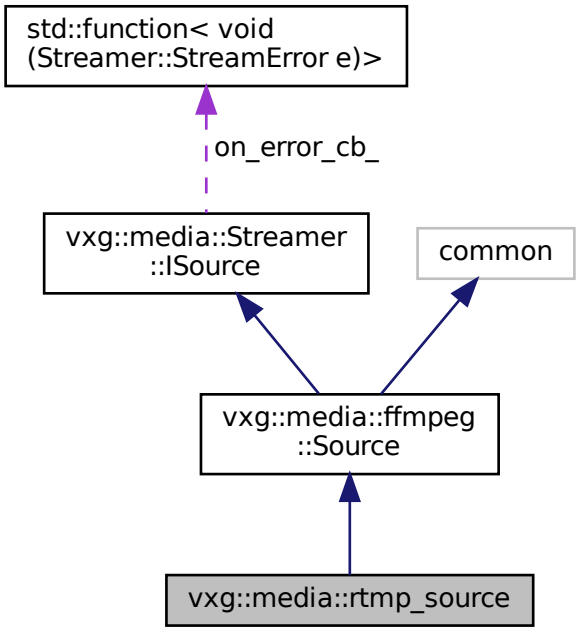
RTMP source class.

```
#include <streamer/rtmp_source.h>
```

Inheritance diagram for vxg::media::rtmp_source:



Collaboration diagram for vxg::media::rtmp_source:




## Public Member Functions

- virtual bool init ( **std::string** url)

  *Init source with url.*

## Additional Inherited Members

### 10.44.1 Detailed Description

RTMP source class.

Definition at line 13 of file rtmp_source.h.

### 10.44.2 Member Function Documentation

#### 10.44.2.1 init()

```
virtual bool vxg::media::rtmp_source::init (
              std::string url )  [inline], [virtual]
```

Init source with url.

**Parameters**

| | | |
|---|---|---|
| in | *url* | RTMP url |

**Returns**

true Success

false Failed

Reimplemented from vxg::media::ffmpeg::Source.

Definition at line 24 of file rtmp_source.h.

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

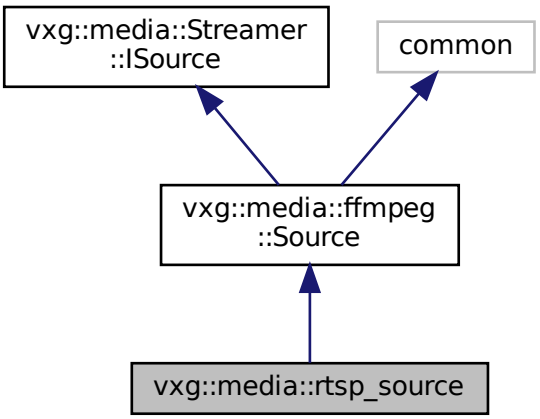
- rtmp_source.h

## 10.45 vxg::media::rtsp_source Class Reference

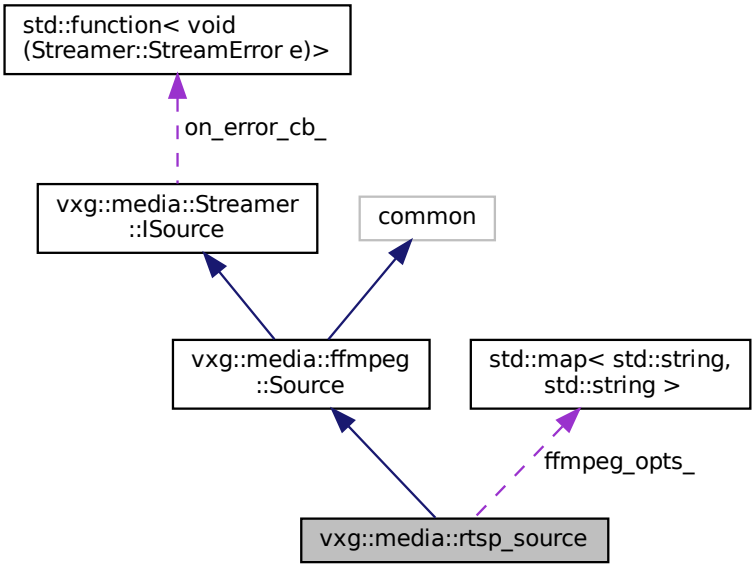
RTSP source class.

`#include <streamer/rtsp_source.h>`

Inheritance diagram for vxg::media::rtsp_source:



Collaboration diagram for vxg::media::rtsp_source:




## Public Types

- enum transport { UDP, TCP, UDP_MULTICAST, HTTP, HTTPS, ASYNC_TCP }

## Public Member Functions

- rtsp_source (transport rtp_transport=transport::ASYNC_TCP, **std::vector**< Streamer::MediaType > media_types={}, **std::map**< **std::string**, **std::string** > ffmpeg_opts={}, **std::chrono::seconds** timeout= **std::chrono::seconds**(0), **std::vector**< Streamer::StreamInfo > in_streams={})

  *Construct a new rtsp source object.*
- virtual bool init ( **std::string** url)

  *Overloaded init method.*
- virtual **std::string** name () override

  *Source class name.*

## Protected Member Functions

- const char * __transport_to_ff (transport t)

## Protected Attributes

- **std::map**< **std::string**, **std::string** > ffmpeg_opts_

### 10.45.1 Detailed Description

RTSP source class.

Definition at line 13 of file rtsp_source.h.

### 10.45.2 Member Enumeration Documentation

#### 10.45.2.1 transport

```
enum vxg::media::rtsp_source::transport
```

**Enumerator**

| | |
|---|---|
| UDP | |
| TCP | |
| UDP_MULTICAST | |
| HTTP | |
| HTTPS | |
| ASYNC_TCP | |

Definition at line 15 of file rtsp_source.h.

### 10.45.3 Constructor & Destructor Documentation

#### 10.45.3.1 rtsp_source()

```
vxg::media::rtsp_source::rtsp_source (
            transport rtp_transport = transport::ASYNC_TCP,
             std::vector< Streamer::MediaType > media_types = {},
             std::map< std::string, std::string > ffmpeg_opts = {},
             std::chrono::seconds timeout = std::chrono::seconds(0),
             std::vector< Streamer::StreamInfo > in_streams = {} ) [inline]
```

Construct a new rtsp source object.

**Parameters**

| | | |
|---|---|---|
| in | *rtp_transport* | RTSP transport. |
| in | *media_types* | List of media types to ask from RTSP server, can be used to filter out unnecessary tracks. If empty all types will be requested. |
| in | *ffmpeg_opts* | Map of ffmpeg options key values pairs. |

**Parameters**

| | | |
|---|---|---|
| in | *timeout* | RTSP client io timeout. Doesn't mean the connection will be closed after this timeout but specifies the amount of time ffmpeg spends in io loop spinning, infinite timeout causes spinning forever if connection wasn't closed but no data was received. |
| in | *in_streams* | Input streams. Media formats source should use instead of auto-detection, this may decrease source start time and memory usage. Empty array causes avformat_find_stream_info() usage. |

Definition at line 74 of file rtsp_source.h.

## 10.45.4 Member Function Documentation

### 10.45.4.1 __transport_to_ff()

```
const char* vxg::media::rtsp_source::__transport_to_ff (
            transport t )  [inline], [protected]
```

Definition at line 28 of file rtsp_source.h.

### 10.45.4.2 init()

```
virtual bool vxg::media::rtsp_source::init (
             std::string url )  [inline], [virtual]
```

Overloaded init method.

**Parameters**

| | | |
|---|---|---|
| in | *url* | RTSP URL link |

**Returns**

true

false

Reimplemented from vxg::media::ffmpeg::Source.

Definition at line 93 of file rtsp_source.h.

#### 10.45.4.3 name()

```
virtual std::string vxg::media::rtsp_source::name ( ) [inline], [override], [virtual]
```

Source class name.

**Returns**

**std::string**

Reimplemented from vxg::media::ffmpeg::Source.

Definition at line 185 of file rtsp_source.h.

### 10.45.5 Field Documentation

#### 10.45.5.1 ffmpeg_opts_

```
std::map< std::string, std::string> vxg::media::rtsp_source::ffmpeg_opts_ [protected]
```

Definition at line 26 of file rtsp_source.h.

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

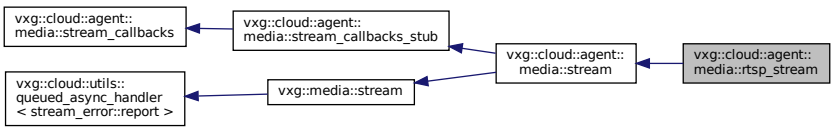
- rtsp_source.h

## 10.46 vxg::cloud::agent::media::rtsp_stream Class Reference

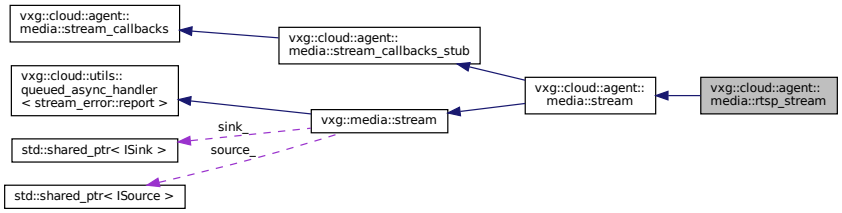
Implementation of the media::stream with RTSP source and NIY stubs.

```
#include <agent/rtsp-stream.h>
```

Inheritance diagram for vxg::cloud::agent::media::rtsp_stream:




Collaboration diagram for vxg::cloud::agent::media::rtsp_stream:



## Public Types

- typedef **std::shared_ptr**< rtsp_stream > ptr

## Public Member Functions

- rtsp_stream (const **std::string** &source_url, const **std::string** &name, vxg::media::rtsp_source_ptr rtsp_src= **std::make_shared**< vxg::media::rtsp_source >(rtsp_source::transport::ASYNC_TCP, **std::vector**< vxg::media::Streamer::MediaType > { vxg::media::Streamer::VIDEO, vxg::media::Streamer::AUDIO}), bool recorder_needs_source=false)

  *Construct a new rtsp stream object.*
- virtual ~rtsp_stream ()
- virtual bool start ( **std::string** not_used="") override

## Additional Inherited Members

### 10.46.1 Detailed Description

Implementation of the media::stream with RTSP source and NIY stubs.

Definition at line 17 of file rtsp-stream.h.

### 10.46.2 Member Typedef Documentation

#### 10.46.2.1 ptr

```
typedef std::shared_ptr<rtsp_stream> vxg::cloud::agent::media::rtsp_stream::ptr
```

Definition at line 29 of file rtsp-stream.h.

### 10.46.3 Constructor & Destructor Documentation

#### 10.46.3.1 rtsp_stream()

```
vxg::cloud::agent::media::rtsp_stream::rtsp_stream (
            const std::string & source_url,
            const std::string & name,
            vxg::media::rtsp_source_ptr rtsp_src = std::make_shared<vxg::media::rtsp_source>(
_source::transport::ASYNC_TCP,                          std::vector<vxg::media::Streamer::MediaType> {
            bool recorder_needs_source = false ) [inline]
```

Construct a new rtsp stream object.

**Parameters**

| | |
|---|---|
| *source_url* | RTSP url |
| *name* | Unique stream name |
| *rtsp_src* | external rtsp_source object pointer |
| *recorder_needs_source* | Indicates if stream needs source start before calling start_record() virtual method. |

Definition at line 37 of file rtsp-stream.h.

#### 10.46.3.2 ~rtsp_stream()

```
virtual vxg::cloud::agent::media::rtsp_stream::~rtsp_stream ( )  [inline], [virtual]
```

Definition at line 52 of file rtsp-stream.h.

### 10.46.4 Member Function Documentation

#### 10.46.4.1 start()

```
virtual bool vxg::cloud::agent::media::rtsp_stream::start (
              std::string not_used = "" )  [inline], [override], [virtual]
```

Reimplemented from vxg::media::stream.

Definition at line 54 of file rtsp-stream.h.

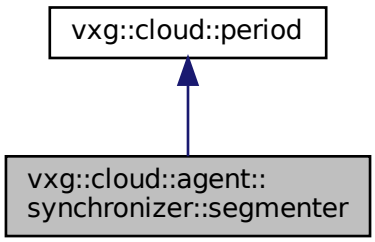
The documentation for this class was generated from the following file:

- rtsp-stream.h

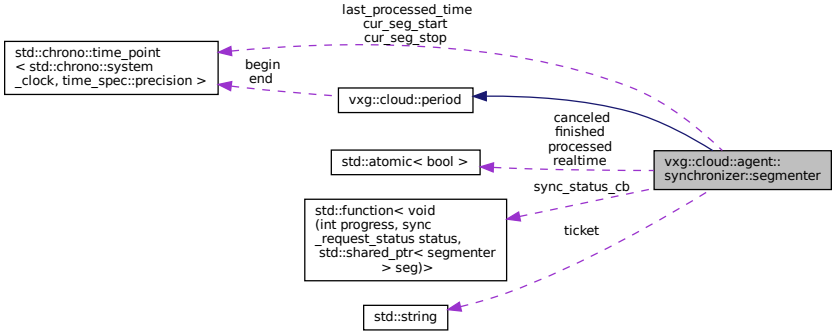
# 10.47 vxg::cloud::agent::synchronizer::segmenter Struct Reference

`#include <agent/timeline-synchronizer.h>`

Inheritance diagram for vxg::cloud::agent::synchronizer::segmenter:




Collaboration diagram for vxg::cloud::agent::synchronizer::segmenter:




## Public Types

- typedef **std::shared_ptr**< segmenter > ptr

## Public Member Functions

- virtual ~segmenter ()
- bool operator< (const segmenter &r)
- bool intersects (const segmenter &r)

## Data Fields

- cloud::time cur_seg_start
- cloud::time cur_seg_stop
- cloud::time last_processed_time
- cloud::duration step
- cloud::duration delay
- **std::atomic**< bool > processed

  *Processing finished, doesn't mean upload of all processed chunks is finished.*
- **std::atomic**< bool > canceled

  *Canceled.*
- **std::atomic**< bool > finished

  *Upload of all processed chunks finished, no matter what was result of the chunk upload attempt.*
- **std::atomic**< bool > realtime

  *Realtime delay between chunks processing.*
- **std::string** ticket
- size_t chunks_planned
- size_t chunks_done
- size_t chunks_failed
- sync_status_report_cb sync_status_cb
- bool final_sync_status_reported

### 10.47.1 Detailed Description

Definition at line 32 of file timeline-synchronizer.h.

### 10.47.2 Member Typedef Documentation

#### 10.47.2.1 ptr

```
typedef std::shared_ptr<segmenter> vxg::cloud::agent::synchronizer::segmenter::ptr
```

Definition at line 72 of file timeline-synchronizer.h.

### 10.47.3 Constructor & Destructor Documentation

#### 10.47.3.1 ~segmenter()

```
virtual vxg::cloud::agent::synchronizer::segmenter::~segmenter ( ) [inline], [virtual]
```

Definition at line 55 of file timeline-synchronizer.h.

## 10.47.4 Member Function Documentation

### 10.47.4.1 intersects()

```
bool vxg::cloud::agent::synchronizer::segmenter::intersects (
            const segmenter & r )  [inline]
```

Definition at line 61 of file timeline-synchronizer.h.

### 10.47.4.2 operator<()

```
bool vxg::cloud::agent::synchronizer::segmenter::operator< (
            const segmenter & r )  [inline]
```

Definition at line 57 of file timeline-synchronizer.h.

## 10.47.5 Field Documentation

### 10.47.5.1 canceled

```
std::atomic<bool> vxg::cloud::agent::synchronizer::segmenter::canceled
```

Canceled.

Definition at line 42 of file timeline-synchronizer.h.

### 10.47.5.2 chunks_done

```
size_t vxg::cloud::agent::synchronizer::segmenter::chunks_done
```

Definition at line 50 of file timeline-synchronizer.h.

### 10.47.5.3 chunks_failed

```
size_t vxg::cloud::agent::synchronizer::segmenter::chunks_failed
```

Definition at line 51 of file timeline-synchronizer.h.

#### 10.47.5.4 chunks_planned

```
size_t vxg::cloud::agent::synchronizer::segmenter::chunks_planned
```

Definition at line 49 of file timeline-synchronizer.h.

#### 10.47.5.5 cur_seg_start

```
cloud::time vxg::cloud::agent::synchronizer::segmenter::cur_seg_start
```

Definition at line 33 of file timeline-synchronizer.h.

#### 10.47.5.6 cur_seg_stop

```
cloud::time vxg::cloud::agent::synchronizer::segmenter::cur_seg_stop
```

Definition at line 34 of file timeline-synchronizer.h.

#### 10.47.5.7 delay

```
cloud::duration vxg::cloud::agent::synchronizer::segmenter::delay
```

Definition at line 37 of file timeline-synchronizer.h.

#### 10.47.5.8 final_sync_status_reported

```
bool vxg::cloud::agent::synchronizer::segmenter::final_sync_status_reported
```

Definition at line 53 of file timeline-synchronizer.h.

#### 10.47.5.9 finished

```
std::atomic<bool> vxg::cloud::agent::synchronizer::segmenter::finished
```

Upload of all processed chunks finished, no matter what was result of the chunk upload attempt.

Definition at line 45 of file timeline-synchronizer.h.

#### 10.47.5.10 last_processed_time

```
cloud::time vxg::cloud::agent::synchronizer::segmenter::last_processed_time
```

Definition at line 35 of file timeline-synchronizer.h.

#### 10.47.5.11 processed

```
std::atomic<bool> vxg::cloud::agent::synchronizer::segmenter::processed
```

Processing finished, doesn't mean upload of all processed chunks is finished.

Definition at line 40 of file timeline-synchronizer.h.

#### 10.47.5.12 realtime

```
std::atomic<bool> vxg::cloud::agent::synchronizer::segmenter::realtime
```

Realtime delay between chunks processing.

Definition at line 47 of file timeline-synchronizer.h.

#### 10.47.5.13 step

```
cloud::duration vxg::cloud::agent::synchronizer::segmenter::step
```

Definition at line 36 of file timeline-synchronizer.h.

#### 10.47.5.14 sync_status_cb

```
sync_status_report_cb vxg::cloud::agent::synchronizer::segmenter::sync_status_cb
```

Definition at line 52 of file timeline-synchronizer.h.

#### 10.47.5.15 ticket

```
std::string vxg::cloud::agent::synchronizer::segmenter::ticket
```

Definition at line 48 of file timeline-synchronizer.h.

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

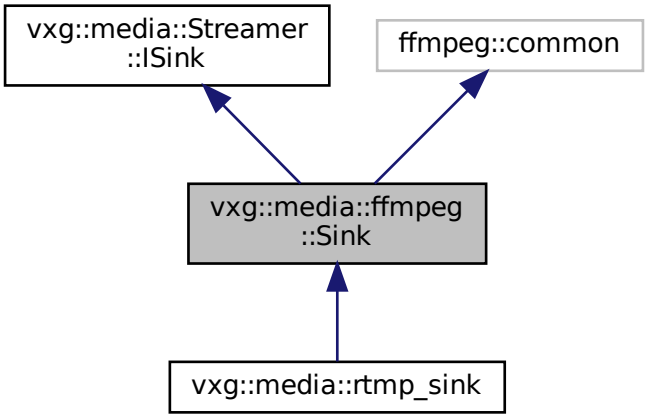
- timeline-synchronizer.h

## 10.48 vxg::media::ffmpeg::Sink Class Reference

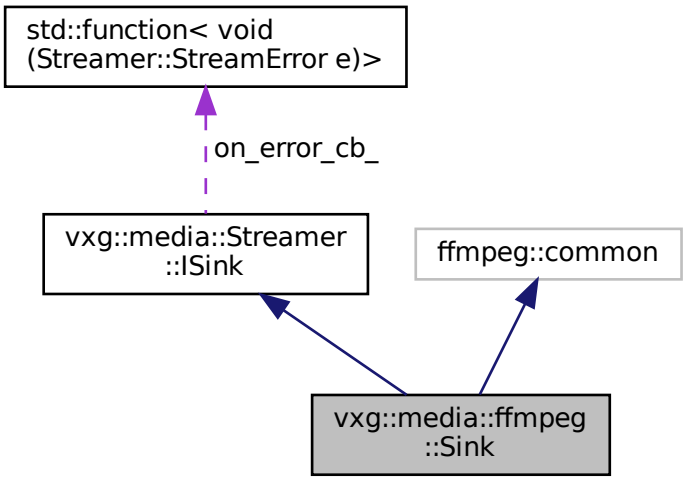
Base ffmpeg sink class.

`#include <streamer/ffmpeg_sink.h>`

Inheritance diagram for vxg::media::ffmpeg::Sink:




Collaboration diagram for vxg::media::ffmpeg::Sink:



## Public Member Functions

- Sink ()
- virtual ~Sink ()
- bool init ( **std::string** url, **std::string** fmt, **std::shared_ptr**< **std::vector**< uint8_t >> data_buffer=nullptr)

  *Sink init.*
- virtual bool init ( **std::string** url="")

  *Init sink.*
- virtual bool finit ()

  *Deinit sink.*
- virtual void stop ()
- virtual void error (Streamer::StreamError stream_error)

  *Media processing error callback, called when ISink::process returned false or linked source's ISource::pullFrame returned false, or when ISource::error was called.*
- virtual **std::string** name ()

  *Sink name.*
- virtual bool droppable ()

  *If sink of with dropping its media frames.*
- virtual bool negotiate ( **std::vector**< Streamer::StreamInfo >)

  *Negotiation callback, this method called with collected from the ISource::negotiate media stream description.*
- virtual cloud::duration duration ()

  *Processed stream duration.*

## Additional Inherited Members

### 10.48.1 Detailed Description

Base ffmpeg sink class.

Definition at line 12 of file ffmpeg_sink.h.

### 10.48.2 Constructor & Destructor Documentation

#### 10.48.2.1 Sink()

```
vxg::media::ffmpeg::Sink::Sink ( )
```

#### 10.48.2.2 ~Sink()

```
virtual vxg::media::ffmpeg::Sink::~Sink ( )  [virtual]
```

## 10.48.3 Member Function Documentation

### 10.48.3.1 droppable()

```
virtual bool vxg::media::ffmpeg::Sink::droppable ( )  [inline], [virtual]
```

If sink of with dropping its media frames.

**Returns**

true Internal media thread allowed to drop frames if internal media queue is full.

false No media frames dropping allowed.

Implements vxg::media::Streamer::ISink.

Reimplemented in vxg::media::rtmp_sink.

Definition at line 57 of file ffmpeg_sink.h.

### 10.48.3.2 duration()

```
virtual cloud::duration vxg::media::ffmpeg::Sink::duration ( )  [inline], [virtual]
```

Processed stream duration.

**Returns**

duration

Reimplemented from vxg::media::Streamer::ISink.

Definition at line 59 of file ffmpeg_sink.h.

### 10.48.3.3 error()

```
virtual void vxg::media::ffmpeg::Sink::error (
            Streamer::StreamError error )  [inline], [virtual]
```

Media processing error callback, called when ISink::process returned false or linked source's ISource::pullFrame returned false, or when ISource::error was called.

Method may be overriden, default implementation calls on_error_cb that was provided by user with set_error_cb().

**Parameters**

| | |
|---|---|
| *error* | Error type. |

Reimplemented from vxg::media::Streamer::ISink.

Definition at line 33 of file ffmpeg_sink.h.

#### 10.48.3.4 finit()

```
virtual bool vxg::media::ffmpeg::Sink::finit ( )  [virtual]
```

Deinit sink.

**Returns**

true finit success.

false finit failed.

Implements vxg::media::Streamer::ISink.

#### 10.48.3.5 init() [1/2]

```
bool vxg::media::ffmpeg::Sink::init (
            std::string url,
            std::string fmt,
            std::shared_ptr<  std::vector< uint8_t >> data_buffer = nullptr )
```

Sink init.

**Parameters**

| | |
|---|---|
| *url* | Output url |
| *fmt* | Output format |
| *data_buffer* | Output buffer for output to memory, if specified and not nullptr the `url` will be ignored. |

**Returns**

true On success

false On failure

#### 10.48.3.6 init() [2/2]

```
virtual bool vxg::media::ffmpeg::Sink::init (
              std::string url = "" )  [virtual]
```

Init sink.

**Parameters**

| | | |
|---|---|---|
| in | *url* | Url if needed. |

**Returns**

true init success.

false init failed.

Implements vxg::media::Streamer::ISink.

Reimplemented in vxg::media::rtmp_sink.

#### 10.48.3.7 name()

```
virtual  std::string vxg::media::ffmpeg::Sink::name ( )  [inline], [virtual]
```

Sink name.

**Returns**

**std::string**

Implements vxg::media::Streamer::ISink.

Reimplemented in vxg::media::rtmp_sink.

Definition at line 55 of file ffmpeg_sink.h.

#### 10.48.3.8 negotiate()

```
virtual bool vxg::media::ffmpeg::Sink::negotiate (
              std::vector< Streamer::StreamInfo > info )  [virtual]
```

Negotiation callback, this method called with collected from the ISource::negotiate media stream description.

**Parameters**

| | |
|---|---|
| *info* | List of elementary streams descriptions. |

**Returns**

true If streams descriptions accepted.

false Streams not accepted, will cause media thread stopping.

Reimplemented from vxg::media::Streamer::ISink.

Reimplemented in vxg::media::rtmp_sink.

#### 10.48.3.9 stop()

```
virtual void vxg::media::ffmpeg::Sink::stop ( )  [virtual]
```

Reimplemented from vxg::media::Streamer::ISink.

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

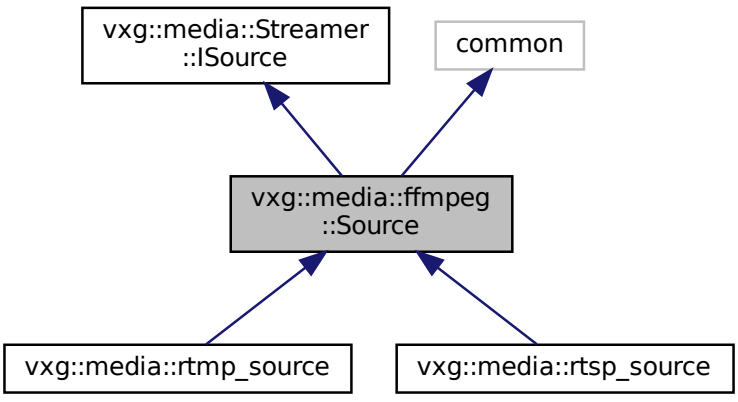
- ffmpeg_sink.h

## 10.49 vxg::media::ffmpeg::Source Class Reference

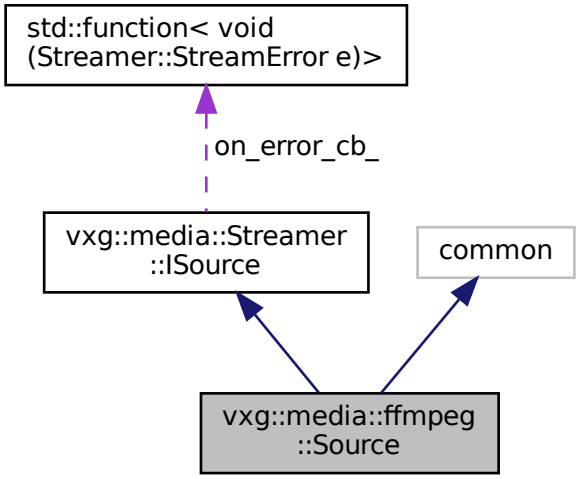
Base ffmpeg source class.

```
#include <streamer/ffmpeg_source.h>
```

Inheritance diagram for vxg::media::ffmpeg::Source:



Collaboration diagram for vxg::media::ffmpeg::Source:




## Public Member Functions

- Source ( **std::vector**< Streamer::StreamInfo > suggested_input_streams={})
- virtual ~Source ()
- bool init ( **std::string** url, AVDictionary *opts, **std::string** fmt="")

  *Init ffmpeg source with specific ffmpeg options.*
- bool init ( **std::shared_ptr**< **std::vector**< uint8_t >> input_buffer, AVDictionary *opts, **std::string** fmt)

  *Init ffmpeg memory source with specific ffmpeg options.*
- virtual bool init ( **std::string** url="")

  *Init source.*
- virtual void finit ()

  *Finit souce.*
- virtual **std::shared_ptr**< Streamer::MediaFrame > pullFrame ()

  *Main method of the Mode::PULL mode data producing.*
- virtual **std::string** name ()

  *Source class name.*
- virtual **std::vector**< Streamer::StreamInfo > negotiate ()

  *Negotiation callback.*
- virtual void stop ()

## Additional Inherited Members

### 10.49.1 Detailed Description

Base ffmpeg source class.

Definition at line 10 of file ffmpeg_source.h.

## 10.49.2 Constructor & Destructor Documentation

### 10.49.2.1 Source()

```
vxg::media::ffmpeg::Source::Source (
            std::vector< Streamer::StreamInfo > suggested_input_streams = {} )
```

Definition at line 9 of file ffmpeg_source.cc.

### 10.49.2.2 ~Source()

```
vxg::media::ffmpeg::Source::~Source ( )  [virtual]
```

Definition at line 14 of file ffmpeg_source.cc.

## 10.49.3 Member Function Documentation

### 10.49.3.1 finit()

```
void vxg::media::ffmpeg::Source::finit ( )  [virtual]
```

Finit souce.

Implements vxg::media::Streamer::ISource.

Definition at line 32 of file ffmpeg_source.cc.

### 10.49.3.2 init() [1/3]

```
bool vxg::media::ffmpeg::Source::init (
            std::shared_ptr<  std::vector< uint8_t >> input_buffer,
           AVDictionary * opts,
            std::string fmt )
```

Init ffmpeg memory source with specific ffmpeg options.

**Parameters**

| | | |
|---|---|---|
| in | *input_buffer* | Input memory buffer containing whole media. |
| in | *opts* | ffmpeg options |
| in | *fmt* | ffmpeg input format to prevent auto-detection. ex.: "flv", "mp4", "http" etc. |

**Returns**

true

false

Definition at line 22 of file ffmpeg_source.cc.

#### 10.49.3.3 init() [2/3]

```
bool vxg::media::ffmpeg::Source::init (
              std::string url,
             AVDictionary * opts,
              std::string fmt = "" )
```

Init ffmpeg source with specific ffmpeg options.

**Parameters**

| | | |
|---|---|---|
| in | *url* | Url |
| in | *opts* | ffmpeg options |
| in | *fmt* | ffmpeg input format to prevent auto-detection. ex.: "flv", "rtsp", "http" etc. |

**Returns**

true

false

Definition at line 16 of file ffmpeg_source.cc.

#### 10.49.3.4 init() [3/3]

```
bool vxg::media::ffmpeg::Source::init (
              std::string url = "" )  [virtual]
```

Init source.

**Parameters**

| | |
|---|---|
| *url* | Url if needed. |

**Returns**

true Init success.

false Init failed.

Implements vxg::media::Streamer::ISource.

Reimplemented in vxg::media::rtsp_source, and vxg::media::rtmp_source.

Definition at line 28 of file ffmpeg_source.cc.

#### 10.49.3.5 name()

```
virtual std::string vxg::media::ffmpeg::Source::name ( ) [inline], [virtual]
```

Source class name.

**Returns**

**std::string**

Implements vxg::media::Streamer::ISource.

Reimplemented in vxg::media::rtsp_source.

Definition at line 42 of file ffmpeg_source.h.

#### 10.49.3.6 negotiate()

```
std::vector< Streamer::StreamInfo > vxg::media::ffmpeg::Source::negotiate ( ) [virtual]
```

Negotiation callback.

Called by internals. Class implementation should return the list of the streams info source will be producing for the sinks, this list will be then passed to the ISink::negotiate method.

**Returns**

std::vector<Streamer::StreamInfo>

Implements vxg::media::Streamer::ISource.

Definition at line 36 of file ffmpeg_source.cc.

#### 10.49.3.7 pullFrame()

```
std::shared_ptr< Streamer::MediaFrame > vxg::media::ffmpeg::Source::pullFrame ( ) [virtual]
```

Main method of the Mode::PULL mode data producing.

Called by internals if the source operation mode is Mode::PULL. Implementation should return media frame object with correctly filled fields.

**Returns**

std::shared_ptr<MediaFrame>

Implements vxg::media::Streamer::ISource.

Definition at line 95 of file ffmpeg_source.cc.

#### 10.49.3.8 stop()

```
void vxg::media::ffmpeg::Source::stop ( )  [virtual]
```

Reimplemented from vxg::media::Streamer::ISource.

Definition at line 191 of file ffmpeg_source.cc.

The documentation for this class was generated from the following files:

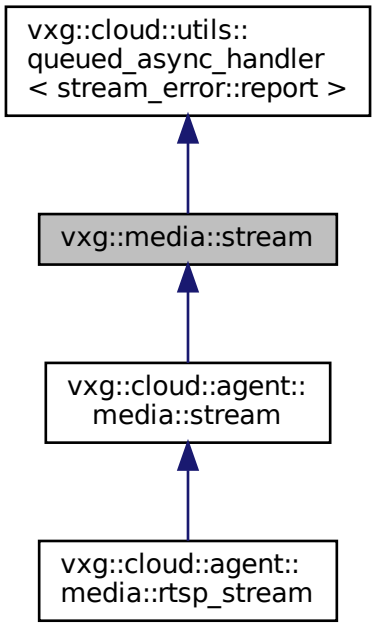
- ffmpeg_source.h
- ffmpeg_source.cc

## 10.50 vxg::media::stream Class Reference

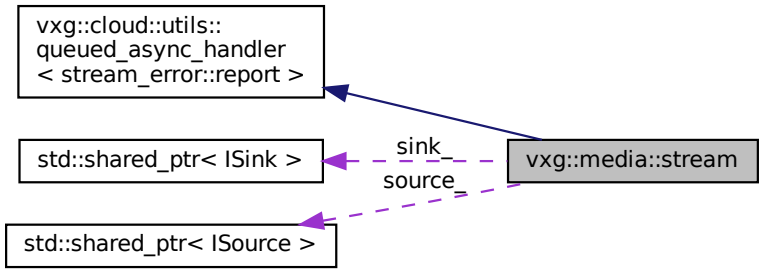
base media stream abstract class

```
#include <streamer/stream.h>
```

Inheritance diagram for vxg::media::stream:



Collaboration diagram for vxg::media::stream:




## Public Types

- using on_error_cb = **std::function**< void(const stream_error::report &error)>
- typedef **std::shared_ptr**< stream > ptr

  ***std::shared_ptr*** *to the base_stream*

## Public Member Functions

- stream ( **std::string** name, Streamer::ISource::ptr source, Streamer::ISink::ptr sink)

  *Construct a new base stream object.*
- virtual ~stream ()
- virtual bool init_source ( **std::string** url)

  *Initialize the source.*
- virtual void finit_source ()

  *Deinitialize source.*
- virtual bool init_sink ( **std::string** uri)

  *Init media sink.*
- virtual void finit_sink ()

  *Deinitialize sink.*
- virtual void set_on_error_cb (on_error_cb e_cb)

  *Set the on_error callback.*

## Protected Attributes

- Streamer::ISource::ptr source_

  *media source*
- Streamer::ISink::ptr sink_

  *media sink*

### 10.50.1 Detailed Description

base media stream abstract class

Media stream is the class representing media stream retranslation from the media source derived from the Streamer::ISource to the media sink derived from the Streamer::ISink. For instance, media stream could be a pair of RTSP source and RTMP sink, i.e. such media stream will be a retranslator of the RTSP stream to the RTMP

Definition at line 56 of file streamer/stream.h.

### 10.50.2 Member Typedef Documentation

#### 10.50.2.1 on_error_cb

```
using vxg::media::stream::on_error_cb =  std::function<void(const stream_error::report& error)>
```

Definition at line 73 of file streamer/stream.h.

#### 10.50.2.2 ptr

```
typedef  std::shared_ptr<stream> vxg::media::stream::ptr
```

**std::shared_ptr** to the base_stream

Definition at line 77 of file streamer/stream.h.

### 10.50.3 Constructor & Destructor Documentation

#### 10.50.3.1 stream()

```
vxg::media::stream::stream (
              std::string name,
            Streamer::ISource::ptr source,
            Streamer::ISink::ptr sink )  [inline]
```

Construct a new base stream object.

**Parameters**

| | |
|---|---|
| *name* | Unique stream name which will be used by the VXG Cloud API |
| *source* | Source object pointer |
| *sink* | Sink object pointer |

Definition at line 84 of file streamer/stream.h.

#### 10.50.3.2 ~stream()

```
virtual vxg::media::stream::~stream ( )  [inline], [virtual]
```

Reimplemented in vxg::cloud::agent::media::stream.

Definition at line 104 of file streamer/stream.h.

### 10.50.4 Member Function Documentation

#### 10.50.4.1 finit_sink()

```
virtual void vxg::media::stream::finit_sink ( )  [inline], [virtual]
```

Deinitialize sink.

Derived class deinitialize and deallocates base_stream::sink_

Definition at line 158 of file streamer/stream.h.

#### 10.50.4.2 finit_source()

```
virtual void vxg::media::stream::finit_source ( )  [inline], [virtual]
```

Deinitialize source.

Definition at line 128 of file streamer/stream.h.

#### 10.50.4.3 init_sink()

```
virtual bool vxg::media::stream::init_sink (
              std::string uri )  [inline], [virtual]
```

Init media sink.

Derived class should allocate and initialize base_stream::sink_ with RTMP sink publishing media stream to the RTMP server pointed by the uri

**Parameters**

| | | |
|---|---|---|
| in | *uri* | sink stream url if needed |

**Returns**

true Sink started

false Sink start failed

Definition at line 143 of file streamer/stream.h.

#### 10.50.4.4 init_source()

```
virtual bool vxg::media::stream::init_source (
              std::string url )  [inline], [virtual]
```

Initialize the source.

Called by the internal code, derived class should allocate and set base_stream::source_ with Streamer::ISink derived object pointer.

**Parameters**

| | |
|---|---|
| *url* | source url |

**Returns**

true if successfully initialized source

false if source initialization failed

Definition at line 115 of file streamer/stream.h.

#### 10.50.4.5 set_on_error_cb()

```
virtual void vxg::media::stream::set_on_error_cb (
             on_error_cb e_cb )  [inline], [virtual]
```

Set the on_error callback.

**Parameters**

| | |
|---|---|
| *e_cb* | Callback |

Definition at line 264 of file streamer/stream.h.

### 10.50.5 Field Documentation

#### 10.50.5.1 sink_

`Streamer::ISink::ptr vxg::media::stream::sink_ [protected]`

media sink

Definition at line 273 of file streamer/stream.h.

#### 10.50.5.2 source_

`Streamer::ISource::ptr vxg::media::stream::source_ [protected]`

media source

Definition at line 271 of file streamer/stream.h.

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

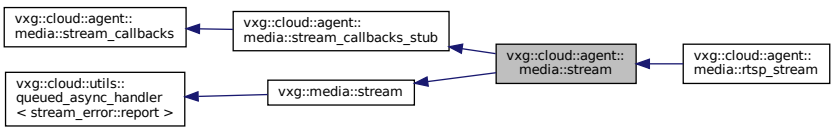
- streamer/stream.h

## 10.51 vxg::cloud::agent::media::stream Class Reference

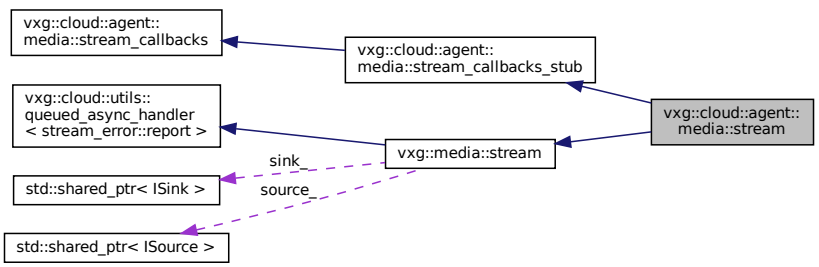
Cloud agent media stream abstract class.

`#include <agent/stream.h>`

Inheritance diagram for vxg::cloud::agent::media::stream:




Collaboration diagram for vxg::cloud::agent::media::stream:



## Public Types

- typedef **std::shared_ptr**< stream > ptr

  ***std::shared_ptr*** *to the base_stream*

## Public Member Functions

- stream ( **std::string** name, vxg::media::Streamer::ISource::ptr source, bool recorder_needs_source=false, vxg::media::Streamer::ISink::ptr sink= **std::make_shared**< vxg::media::rtmp_sink >())

  *Construct a new agent media stream object.*
- virtual ~stream ()

## Additional Inherited Members

### 10.51.1 Detailed Description

Cloud agent media stream abstract class.

vxg::media::stream derived class with VXG Cloud proto callbacks

Definition at line 214 of file agent/stream.h.

### 10.51.2 Member Typedef Documentation

#### 10.51.2.1 ptr

```
typedef  std::shared_ptr<stream> vxg::cloud::agent::media::stream::ptr
```

**std::shared_ptr** to the base_stream

Definition at line 217 of file agent/stream.h.

### 10.51.3 Constructor & Destructor Documentation

#### 10.51.3.1 stream()

```
vxg::cloud::agent::media::stream::stream (
              std::string name,
             vxg::media::Streamer::ISource::ptr source,
             bool recorder_needs_source = false,
             vxg::media::Streamer::ISink::ptr sink =  std::make_shared<vxg::media::rtmp_sink>()
)  [inline]
```

Construct a new agent media stream object.

**Parameters**

| | | |
|---|---|---|
| in | *name* | Unique stream name which will be used by the VXG Cloud API |
| in | *source* | Source object pointer |
| in | *recorder_needs_source* | Indicates if stream needs source start before calling start_record() virtual method. |
| in | *sink* | Sink object pointer, rtmp_sink as default |

Definition at line 227 of file agent/stream.h.

#### 10.51.3.2 ~stream()

```
virtual vxg::cloud::agent::media::stream::~stream ( )  [inline], [virtual]
```

Reimplemented from vxg::media::stream.

Definition at line 234 of file agent/stream.h.

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

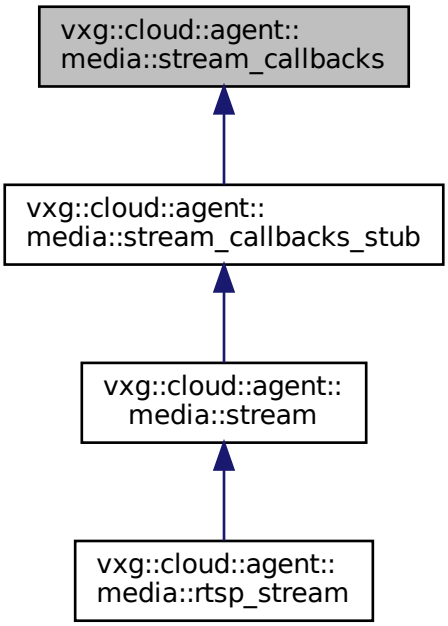
- agent/stream.h

## 10.52 vxg::cloud::agent::media::stream_callbacks Class Reference

Cloud agent media stream callbacks abstract class.

```
#include <agent/stream.h>
```

Inheritance diagram for vxg::cloud::agent::media::stream_callbacks:



## Public Member Functions

- stream_callbacks (bool recorder_needs_source)

  *Construct a new stream callbacks object.*
- virtual ~stream_callbacks ()
- virtual bool get_stream_caps (cloud::agent::proto::stream_caps &caps)=0

  *Get the media stream caps.*
- virtual bool get_supported_stream (cloud::agent::proto::supported_stream_config &supported_stream)=0

  *Get the supported stream description.*
- virtual bool get_stream_config (cloud::agent::proto::stream_config &config)=0

  *Get the stream config.*
- virtual bool set_stream_config (const cloud::agent::proto::stream_config &config)=0

  *Set the streams config.*
- virtual bool get_snapshot (cloud::agent::proto::event_object::snapshot_info_object &snapshot)=0

  *Get the snapshot image of this media stream.*
- virtual bool record_needs_source ()

  *Should returns true if agent::manager should start stream source before calling start_record()*
- virtual bool start_record ()=0

  *Start recording of this media stream.*
- virtual void stop_record ()=0

  *Stop recording of this stream.*
- virtual **std::vector**< cloud::agent::proto::video_clip_info > record_get_list (cloud::time begin, cloud::time end, bool align=true)=0

  *Get list of the recorded clips for specific time period.*
- virtual cloud::agent::proto::video_clip_info record_export (cloud::time begin, cloud::time end)=0

  *Export recorded clip for specified time.*

### 10.52.1 Detailed Description

Cloud agent media stream callbacks abstract class.

VXG Cloud proto callbacks related to media stream

Definition at line 19 of file agent/stream.h.

### 10.52.2 Constructor & Destructor Documentation

#### 10.52.2.1 stream_callbacks()

```
vxg::cloud::agent::media::stream_callbacks::stream_callbacks (
            bool recorder_needs_source ) [inline]
```

Construct a new stream callbacks object.

**Parameters**

| | |
|---|---|
| *recorder_needs_source* | Indicates if stream needs source start |

Definition at line 29 of file agent/stream.h.

#### 10.52.2.2 ~stream_callbacks()

```
virtual vxg::cloud::agent::media::stream_callbacks::~stream_callbacks ( )  [inline], [virtual]
```

Definition at line 31 of file agent/stream.h.

### 10.52.3 Member Function Documentation

#### 10.52.3.1 get_snapshot()

```
virtual bool vxg::cloud::agent::media::stream_callbacks::get_snapshot (
            cloud::agent::proto::event_object::snapshot_info_object & snapshot )  [pure virtual]
```

Get the snapshot image of this media stream.

**Parameters**

| | | |
|---|---|---|
| out | *snapshot* | snapshot object |

**Returns**

true if `snapshot` is valid

false if `snapshot` is invalid

#### 10.52.3.2 get_stream_caps()

```
virtual bool vxg::cloud::agent::media::stream_callbacks::get_stream_caps (
            cloud::agent::proto::stream_caps & caps )  [pure virtual]
```

Get the media stream caps.

video/audio elementary streams caps request passes caps with names of the elementary streams for which caps are required to be filled inside this method

**Parameters**

| | | |
|---|---|---|
| out | *caps* | |

**Returns**

true if `caps` valid

false if `caps` is invalid

Implemented in vxg::cloud::agent::media::stream_callbacks_stub.

#### 10.52.3.3 get_stream_config()

```
virtual bool vxg::cloud::agent::media::stream_callbacks::get_stream_config (
            cloud::agent::proto::stream_config & config )  [pure virtual]
```

Get the stream config.

**Parameters**

| | | |
|---|---|---|
| `in,out` | *config* | input `config` contains list of streams for which configuration should be returned |

**Returns**

true if `config` is valid

false if `config` is invalid

Implemented in vxg::cloud::agent::media::stream_callbacks_stub.

#### 10.52.3.4 get_supported_stream()

```
virtual bool vxg::cloud::agent::media::stream_callbacks::get_supported_stream (
            cloud::agent::proto::supported_stream_config & supported_stream )  [pure virtual]
```

Get the supported stream description.

**Parameters**

| | | |
|---|---|---|
| `out` | *supported_stream* | Stream supported by device |

**Returns**

true if `supported_stream` is valid

false if `supported_stream` is not valid

#### 10.52.3.5 record_export()

```
virtual cloud::agent::proto::video_clip_info vxg::cloud::agent::media::stream_callbacks↩
::record_export (
            cloud::time begin,
            cloud::time end ) [pure virtual]
```

Export recorded clip for specified time.

**Parameters**

| | |
|---|---|
| *begin* | |
| *end* | |

**Returns**

proto::video_clip_info

Implemented in vxg::cloud::agent::media::stream_callbacks_stub.

#### 10.52.3.6 record_get_list()

```
virtual std::vector<cloud::agent::proto::video_clip_info> vxg::cloud::agent::media::stream_↩
callbacks::record_get_list (
            cloud::time begin,
            cloud::time end,
            bool align = true ) [pure virtual]
```

Get list of the recorded clips for specific time period.

**Parameters**

| | | |
|---|---|---|
| in | *begin* | beginning of the time period |
| in | *end* | ending of the time period |
| in | *align* | Align returned records to key frames and begin/end. If true the implementation should align returned records to not include data with timestamps less than `begin` and greater than `end`. Also any returned record MUST start with key frame and the last frame of any not last record in the list MUST be the frame prior to key frame - first frame of the next record. |
| in | *limit* | Max records number that may be returned. Value 0 means no limitation. |

**Returns**

std::vector<proto::video_clip_info>

Implemented in vxg::cloud::agent::media::stream_callbacks_stub.

#### 10.52.3.7 record_needs_source()

```
virtual bool vxg::cloud::agent::media::stream_callbacks::record_needs_source ( )  [inline],
[virtual]
```

Should returns true if agent::manager should start stream source before calling start_record()

**Returns**

true agent::manager should start stream source

false agent::manager may not start stream source

Definition at line 86 of file agent/stream.h.

#### 10.52.3.8 set_stream_config()

```
virtual bool vxg::cloud::agent::media::stream_callbacks::set_stream_config (
            const cloud::agent::proto::stream_config & config )  [pure virtual]
```

Set the streams config.

**Parameters**

| | | |
|---|---|---|
| in | *config* | input `config` contains list of streams for which configuration should be set |

**Returns**

true if `config` successfully set

false if `config` failed to set

Implemented in vxg::cloud::agent::media::stream_callbacks_stub.

#### 10.52.3.9 start_record()

```
virtual bool vxg::cloud::agent::media::stream_callbacks::start_record ( )  [pure virtual]
```

Start recording of this media stream.

Called only if memory card is presented and can be used.

**Returns**

true if recording started

false if recording start failed

**See also**

agent::event_stream::on_get_memorycard_info

Implemented in vxg::cloud::agent::media::stream_callbacks_stub.

#### 10.52.3.10 stop_record()

```
virtual void vxg::cloud::agent::media::stream_callbacks::stop_record ( )  [pure virtual]
```

Stop recording of this stream.

Implemented in vxg::cloud::agent::media::stream_callbacks_stub.

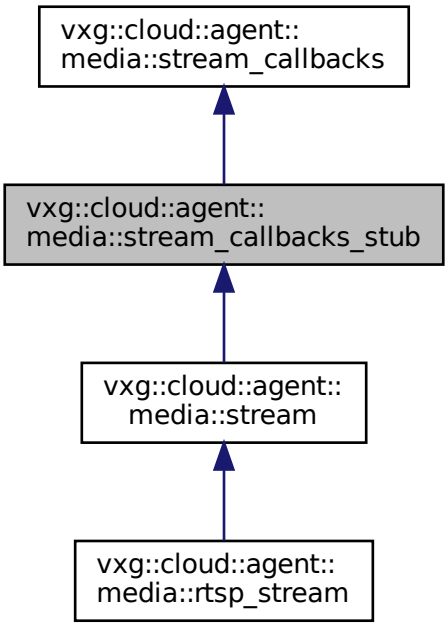
The documentation for this class was generated from the following file:

- agent/stream.h

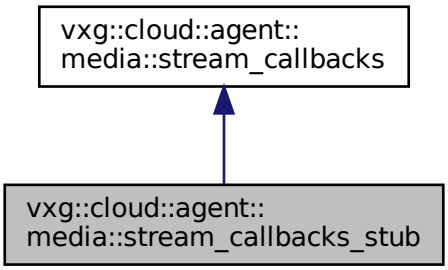
## 10.53 vxg::cloud::agent::media::stream_callbacks_stub Class Reference

```
#include <agent/stream.h>
```

Inheritance diagram for vxg::cloud::agent::media::stream_callbacks_stub:



Collaboration diagram for vxg::cloud::agent::media::stream_callbacks_stub:




## Public Member Functions

- stream_callbacks_stub ( **std::string** name, bool record_needs_source)

  *Construct a new stream callbacks stub object.*
- virtual ~stream_callbacks_stub ()
- bool get_supported_stream (proto::supported_stream_config &config) override
- virtual bool get_stream_caps (proto::stream_caps &caps) override

  *Get the media stream caps.*
- virtual bool get_stream_config (proto::stream_config &streamConfig) override

  *Get the stream config.*
- virtual bool set_stream_config (const proto::stream_config &streamConfig) override

  *Set the streams config.*
- virtual bool get_snapshot (proto::event_object::snapshot_info_object &snapshot) override
- virtual **std::vector**< proto::video_clip_info > record_get_list (cloud::time begin, cloud::time end, bool align) override

  *Get list of the recorded clips for specific time period.*
- virtual proto::video_clip_info record_export (cloud::time begin, cloud::time end) override

  *Export recorded clip for specified time.*
- virtual bool start_record () override

  *Start recording of this media stream.*
- virtual void stop_record () override

  *Stop recording of this stream.*

### 10.53.1 Detailed Description

Definition at line 128 of file agent/stream.h.

### 10.53.2 Constructor & Destructor Documentation

#### 10.53.2.1 stream_callbacks_stub()

```
vxg::cloud::agent::media::stream_callbacks_stub::stream_callbacks_stub (
             std::string name,
            bool record_needs_source )  [inline]
```

Construct a new stream callbacks stub object.

**Parameters**

| | |
|---|---|
| *name* | Stream name used for get_supported_stream() stub |
| *record_needs_source* | |

Definition at line 142 of file agent/stream.h.

#### 10.53.2.2 ~stream_callbacks_stub()

```
virtual vxg::cloud::agent::media::stream_callbacks_stub::~stream_callbacks_stub ( )  [inline],
[virtual]
```

Definition at line 144 of file agent/stream.h.

### 10.53.3 Member Function Documentation

#### 10.53.3.1 get_snapshot()

```
virtual bool vxg::cloud::agent::media::stream_callbacks_stub::get_snapshot (
            proto::event_object::snapshot_info_object & snapshot )  [inline], [override],
[virtual]
```

Definition at line 177 of file agent/stream.h.

#### 10.53.3.2 get_stream_caps()

```
virtual bool vxg::cloud::agent::media::stream_callbacks_stub::get_stream_caps (
            proto::stream_caps & caps )  [inline], [override], [virtual]
```

Get the media stream caps.

video/audio elementary streams caps request passes caps with names of the elementary streams for which caps are required to be filled inside this method

**Parameters**

| | | |
|---|---|---|
| out | *caps* | |

**Returns**

true if caps valid

false if caps is invalid

Implements vxg::cloud::agent::media::stream_callbacks.

Definition at line 157 of file agent/stream.h.

#### 10.53.3.3 get_stream_config()

```
virtual bool vxg::cloud::agent::media::stream_callbacks_stub::get_stream_config (
            proto::stream_config & config )  [inline], [override], [virtual]
```

Get the stream config.

**Parameters**

| | | |
|---|---|---|
| in,out | *config* | input config contains list of streams for which configuration should be returned |

**Returns**

true if config is valid

false if config is invalid

Implements vxg::cloud::agent::media::stream_callbacks.

Definition at line 163 of file agent/stream.h.

#### 10.53.3.4 get_supported_stream()

```
bool vxg::cloud::agent::media::stream_callbacks_stub::get_supported_stream (
            proto::supported_stream_config & config )  [inline], [override]
```

Definition at line 146 of file agent/stream.h.

#### 10.53.3.5 record_export()

```
virtual proto::video_clip_info vxg::cloud::agent::media::stream_callbacks_stub::record_export
(
            cloud::time begin,
            cloud::time end )  [inline], [override], [virtual]
```

Export recorded clip for specified time.

**Parameters**

| | |
|---|---|
| *begin* | |
| *end* | |

**Returns**

proto::video_clip_info

Implements vxg::cloud::agent::media::stream_callbacks.

Definition at line 192 of file agent/stream.h.

#### 10.53.3.6 record_get_list()

```
virtual  std::vector<proto::video_clip_info> vxg::cloud::agent::media::stream_callbacks_stub↩
::record_get_list (
            cloud::time begin,
            cloud::time end,
            bool align )  [inline], [override], [virtual]
```

Get list of the recorded clips for specific time period.

**Parameters**

| | | |
|---|---|---|
| in | *begin* | beginning of the time period |
| in | *end* | ending of the time period |
| in | *align* | Align returned records to key frames and begin/end. If true the implementation should align returned records to not include data with timestamps less than `begin` and greater than `end`. Also any returned record MUST start with key frame and the last frame of any not last record in the list MUST be the frame prior to key frame - first frame of the next record. |
| in | *limit* | Max records number that may be returned. Value 0 means no limitation. |

**Returns**

std::vector<proto::video_clip_info>

Implements vxg::cloud::agent::media::stream_callbacks.

Definition at line 185 of file agent/stream.h.

#### 10.53.3.7 set_stream_config()

```
virtual bool vxg::cloud::agent::media::stream_callbacks_stub::set_stream_config (
            const proto::stream_config & config )  [inline], [override], [virtual]
```

Set the streams config.

**Parameters**

| | | |
|---|---|---|
| in | *config* | input `config` contains list of streams for which configuration should be set |

**Returns**

true if `config` successfully set

false if `config` failed to set

Implements vxg::cloud::agent::media::stream_callbacks.

Definition at line 170 of file agent/stream.h.

#### 10.53.3.8 start_record()

```
virtual bool vxg::cloud::agent::media::stream_callbacks_stub::start_record ( )  [inline],
[override], [virtual]
```

Start recording of this media stream.

Called only if memory card is presented and can be used.

**Returns**

true if recording started

false if recording start failed

**See also**

agent::event_stream::on_get_memorycard_info

Implements vxg::cloud::agent::media::stream_callbacks.

Definition at line 200 of file agent/stream.h.

#### 10.53.3.9 stop_record()

```
virtual void vxg::cloud::agent::media::stream_callbacks_stub::stop_record ( )  [inline], [override],
[virtual]
```

Stop recording of this stream.

Implements vxg::cloud::agent::media::stream_callbacks.

Definition at line 206 of file agent/stream.h.

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

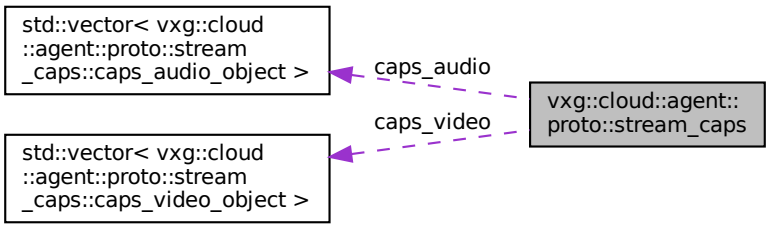
- agent/stream.h

# 10.54 vxg::cloud::agent::proto::stream_caps Struct Reference

Media stream capabilites.

`#include <agent-proto/objects/caps.h>`

Collaboration diagram for vxg::cloud::agent::proto::stream_caps:




## Data Structures

- struct caps_audio_object

  *Audio streams capabilities.*
- struct caps_video_object

  *Video streams capabilities.*

## Data Fields

- **std::vector**< caps_video_object > caps_video

  *List of video streams capabilities.*
- **std::vector**< caps_audio_object > caps_audio

  *List of audio streams capabilities.*

### 10.54.1 Detailed Description

Media stream capabilites.

Definition at line 175 of file caps.h.

### 10.54.2 Field Documentation

#### 10.54.2.1 caps_audio

```
std::vector<caps_audio_object> vxg::cloud::agent::proto::stream_caps::caps_audio
```

List of audio streams capabilities.

Definition at line 276 of file caps.h.

#### 10.54.2.2 caps_video

```
std::vector<caps_video_object> vxg::cloud::agent::proto::stream_caps::caps_video
```

List of video streams capabilities.

Definition at line 274 of file caps.h.

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

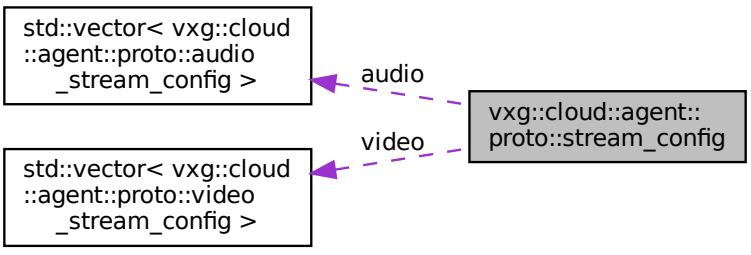
- caps.h

## 10.55 vxg::cloud::agent::proto::stream_config Struct Reference

Media stream config.

```
#include <agent-proto/objects/config.h>
```

Collaboration diagram for vxg::cloud::agent::proto::stream_config:




### Data Fields

- **std::vector**< video_stream_config > video
  *List of video media stream configs.*
- **std::vector**< audio_stream_config > audio
  *List of audio media stream configs.*

### 10.55.1 Detailed Description

Media stream config.

Definition at line 219 of file config.h.

### 10.55.2 Field Documentation

#### 10.55.2.1 audio

```
std::vector<audio_stream_config> vxg::cloud::agent::proto::stream_config::audio
```

List of audio media stream configs.

Definition at line 223 of file config.h.

#### 10.55.2.2 video

```
std::vector<video_stream_config> vxg::cloud::agent::proto::stream_config::video
```

List of video media stream configs.

Definition at line 221 of file config.h.

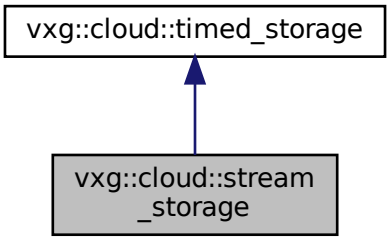
The documentation for this struct was generated from the following file:

- config.h

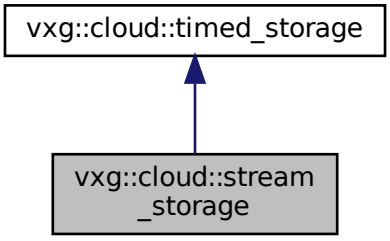
## 10.56 vxg::cloud::stream_storage Class Reference

```
#include <agent/stream-storage.h>
```

Inheritance diagram for vxg::cloud::stream_storage:



Collaboration diagram for vxg::cloud::stream_storage:




## Public Types

- using ptr = shared_ptr< stream_storage >

## Public Member Functions

- stream_storage (agent::media::stream::ptr stream)
- virtual ~stream_storage ()
- virtual **std::vector**< item_ptr > list (cloud::time start, cloud::time stop) override
- virtual bool load (item_ptr i) override
- virtual bool store (item_ptr) override
- virtual bool store_async (item_ptr, async_store_finished_cb finished_cb, async_store_is_canceled_cb is_↩ canceled_cb) override
- virtual void erase (item_ptr)

### 10.56.1 Detailed Description

Definition at line 10 of file stream-storage.h.

### 10.56.2 Member Typedef Documentation

#### 10.56.2.1 ptr

```
using vxg::cloud::stream_storage::ptr = shared_ptr<stream_storage>
```

Definition at line 25 of file stream-storage.h.

## 10.56.3 Constructor & Destructor Documentation

### 10.56.3.1 stream_storage()

```
vxg::cloud::stream_storage::stream_storage (
            agent::media::stream::ptr stream )  [inline]
```

Definition at line 26 of file stream-storage.h.

### 10.56.3.2 ~stream_storage()

```
virtual vxg::cloud::stream_storage::~stream_storage ( )  [inline], [virtual]
```

Definition at line 27 of file stream-storage.h.

## 10.56.4 Member Function Documentation

### 10.56.4.1 erase()

```
virtual void vxg::cloud::stream_storage::erase (
            item_ptr  )  [inline], [virtual]
```

Implements vxg::cloud::timed_storage.

Definition at line 64 of file stream-storage.h.

### 10.56.4.2 list()

```
virtual  std::vector<item_ptr> vxg::cloud::stream_storage::list (
            cloud::time start,
            cloud::time stop )  [inline], [override], [virtual]
```

Implements vxg::cloud::timed_storage.

Definition at line 29 of file stream-storage.h.

#### 10.56.4.3 load()

```
virtual bool vxg::cloud::stream_storage::load (
            item_ptr i )  [inline], [override], [virtual]
```

Implements vxg::cloud::timed_storage.

Definition at line 43 of file stream-storage.h.

#### 10.56.4.4 store()

```
virtual bool vxg::cloud::stream_storage::store (
            item_ptr  )  [inline], [override], [virtual]
```

Implements vxg::cloud::timed_storage.

Definition at line 54 of file stream-storage.h.

#### 10.56.4.5 store_async()

```
virtual bool vxg::cloud::stream_storage::store_async (
            item_ptr ,
            async_store_finished_cb finished_cb,
            async_store_is_canceled_cb is_canceled_cb )  [inline], [override], [virtual]
```

Reimplemented from vxg::cloud::timed_storage.

Definition at line 56 of file stream-storage.h.

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

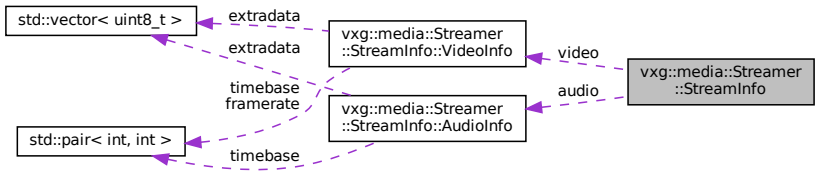
- stream-storage.h

## 10.57 vxg::media::Streamer::StreamInfo Struct Reference

Stream info descriotion.

`#include <streamer/base_streamer.h>`

Collaboration diagram for vxg::media::Streamer::StreamInfo:



## Data Structures

- struct AudioInfo

  *Audio stream info.*
- struct VideoInfo

  *Video stream info.*

## Public Types

- enum StreamType { ST_UNKNOWN, ST_VIDEO, ST_AUDIO, ST_DATA, ST_ANY }

  *Stream type.*
- enum VideoCodec { VC_UNKNOWN, VC_H264 }

  *Video codec type.*
- enum AudioCodec { AC_UNKNOWN, AC_AAC, AC_G711_U, AC_G711_A, AC_LPCM, AC_G726, AC_OPUS }

  *Audio codec.*
- enum DataCodec { DC_UNKNOWN, DC_ONVIF }

  *Data codec.*

## Data Fields

- StreamType type

  *Stream type.*
- VideoInfo video

  *Video stream info. Should be filled if stream type is ST_VIDEO.*
- AudioInfo audio

  *Audio stream info. Should be filled if stream type is ST_AUDIO.*

### 10.57.1 Detailed Description

Stream info descriotion.

Definition at line 311 of file base_streamer.h.

### 10.57.2 Member Enumeration Documentation

#### 10.57.2.1 AudioCodec

`enum vxg::media::Streamer::StreamInfo::AudioCodec`

Audio codec.

**Enumerator**

| | |
|---|---|
| AC_UNKNOWN | |
| AC_AAC | |
| AC_G711_U | |
| AC_G711_A | |
| AC_LPCM | |
| AC_G726 | |
| AC_OPUS | |

Definition at line 351 of file base_streamer.h.

#### 10.57.2.2 DataCodec

`enum vxg::media::Streamer::StreamInfo::DataCodec`

Data codec.

**Enumerator**

| | |
|---|---|
| DC_UNKNOWN | |
| DC_ONVIF | |

Definition at line 384 of file base_streamer.h.

#### 10.57.2.3 StreamType

`enum vxg::media::Streamer::StreamInfo::StreamType`

Stream type.

**Enumerator**

| | |
|---|---|
| ST_UNKNOWN | |
| ST_VIDEO | |
| ST_AUDIO | |
| ST_DATA | |
| ST_ANY | |

Definition at line 313 of file base_streamer.h.

#### 10.57.2.4 VideoCodec

`enum vxg::media::Streamer::StreamInfo::VideoCodec`

Video codec type.

**Enumerator**

| | |
|---|---|
| VC_UNKNOWN | |
| VC_H264 | |

Definition at line 316 of file base_streamer.h.

### 10.57.3 Field Documentation

#### 10.57.3.1 audio

`AudioInfo vxg::media::Streamer::StreamInfo::audio`

Audio stream info. Should be filled if stream type is ST_AUDIO.

Definition at line 399 of file base_streamer.h.

#### 10.57.3.2 type

`StreamType vxg::media::Streamer::StreamInfo::type`

Stream type.

Definition at line 395 of file base_streamer.h.

#### 10.57.3.3 video

`VideoInfo vxg::media::Streamer::StreamInfo::video`

Video stream info. Should be filled if stream type is ST_VIDEO.

Definition at line 397 of file base_streamer.h.

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

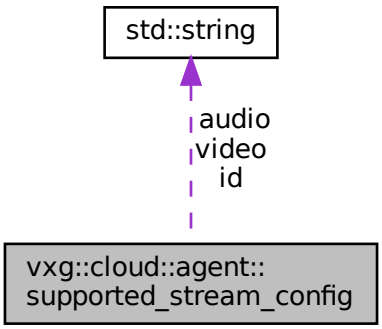
- base_streamer.h

## 10.58 vxg::cloud::agent::supported_stream_config Struct Reference

Supported stream config.

`#include <agent-proto/objects/config.h>`

Collaboration diagram for vxg::cloud::agent::supported_stream_config:




### Data Fields

- **std::string** id

  *id: string, name of media stream, unique for the camera*
- **std::string** video

  *video: optional string, video ES that is sent in this media stream*
- **std::string** audio

  *audio: optional string, audio ES that is sent in this media stream*

### 10.58.1 Detailed Description

Supported stream config.

Definition at line 1297 of file config.h.

### 10.58.2 Field Documentation

#### 10.58.2.1 audio

**std::string** vxg::cloud::agent::supported_stream_config::audio

audio: optional string, audio ES that is sent in this media stream

Definition at line 1303 of file config.h.

#### 10.58.2.2 id

```
std::string vxg::cloud::agent::supported_stream_config::id
```

id: string, name of media stream, unique for the camera

Definition at line 1299 of file config.h.

#### 10.58.2.3 video

```
std::string vxg::cloud::agent::supported_stream_config::video
```

video: optional string, video ES that is sent in this media stream

Definition at line 1301 of file config.h.

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

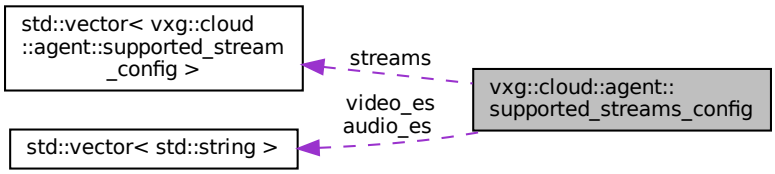
- config.h

## 10.59 vxg::cloud::agent::supported_streams_config Struct Reference

Supported streams config, list of supported_stream_config.

```
#include <agent-proto/objects/config.h>
```

Collaboration diagram for vxg::cloud::agent::supported_streams_config:




### Data Fields

- **std::vector**< supported_stream_config > streams

  *streams: list of supported_stream_config struct, camera media streams*
- **std::vector**< **std::string** > video_es

  *list of string, camera video ES*
- **std::vector**< **std::string** > audio_es

  *list of string, camera audio ES*

### 10.59.1 Detailed Description

Supported streams config, list of supported_stream_config.

Definition at line 1313 of file config.h.

### 10.59.2 Field Documentation

#### 10.59.2.1 audio_es

```
std::vector< std::string> vxg::cloud::agent::supported_streams_config::audio_es
```

list of string, camera audio ES

Definition at line 1319 of file config.h.

#### 10.59.2.2 streams

```
std::vector<supported_stream_config> vxg::cloud::agent::supported_streams_config::streams
```

streams: list of supported_stream_config struct, camera media streams

Definition at line 1315 of file config.h.

#### 10.59.2.3 video_es

```
std::vector< std::string> vxg::cloud::agent::supported_streams_config::video_es
```

list of string, camera video ES

Definition at line 1317 of file config.h.

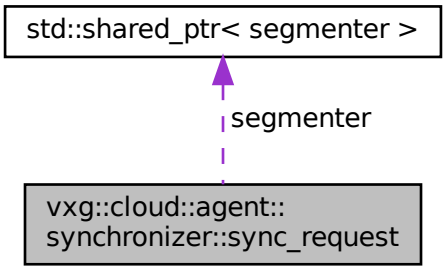
The documentation for this struct was generated from the following file:

- config.h

## 10.60 vxg::cloud::agent::synchronizer::sync_request Struct Reference

`#include <agent/timeline-synchronizer.h>`

Collaboration diagram for vxg::cloud::agent::synchronizer::sync_request:




### Data Fields

- segmenter_ptr segmenter

### 10.60.1 Detailed Description

Definition at line 76 of file timeline-synchronizer.h.

### 10.60.2 Field Documentation

#### 10.60.2.1 segmenter

`segmenter_ptr vxg::cloud::agent::synchronizer::sync_request::segmenter`

Definition at line 77 of file timeline-synchronizer.h.

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

- timeline-synchronizer.h

## 10.61 vxg::cloud::agent::synchronizer Class Reference

`#include <agent/timeline-synchronizer.h>`

## Data Structures

- struct config
- struct segmenter
- struct sync_request

## Public Types

- enum sync_request_status { sync_request_status::PENDING, sync_request_status::DONE, sync_request_status::ERROR, sync_request_status::CANCELED }
- using sync_status_report_cb = **std::function**< void(int progress, sync_request_status status, **std**↩ **::shared_ptr**< segmenter > seg)>
- using segmenter_ptr = **std::shared_ptr**< segmenter >
- using sync_request_ptr = **std::shared_ptr**< sync_request >
- typedef **std::shared_ptr**< synchronizer > ptr

## Public Member Functions

- bool start ()
- void stop ()
- sync_request_ptr sync (cloud::time begin, cloud::time end=utils::time::null(), sync_status_report_cb status↩ _report_cb=nullptr, **std::string** upload_token="", cloud::duration delay= **std::chrono::microseconds**(0))
- void sync_finalize (sync_request_ptr req, cloud::time end)
- void sync_cancel (const **std::string** &ticket)

## Static Public Member Functions

- static ptr create (const synchronizer::config &c, vxg::cloud::sync::timeline_ptr s, vxg::cloud::sync::timeline_ptr d)

### 10.61.1 Detailed Description

Definition at line 13 of file timeline-synchronizer.h.

### 10.61.2 Member Typedef Documentation

#### 10.61.2.1 ptr

```
typedef std::shared_ptr<synchronizer> vxg::cloud::agent::synchronizer::ptr
```

Definition at line 695 of file timeline-synchronizer.h.

#### 10.61.2.2 segmenter_ptr

```
using vxg::cloud::agent::synchronizer::segmenter_ptr = std::shared_ptr<segmenter>
```

Definition at line 74 of file timeline-synchronizer.h.

#### 10.61.2.3 sync_request_ptr

```
using vxg::cloud::agent::synchronizer::sync_request_ptr = std::shared_ptr<sync_request>
```

Definition at line 79 of file timeline-synchronizer.h.

#### 10.61.2.4 sync_status_report_cb

```
using vxg::cloud::agent::synchronizer::sync_status_report_cb = std::function<void(int progress,
sync_request_status status, std::shared_ptr<segmenter> seg)>
```

Definition at line 30 of file timeline-synchronizer.h.

### 10.61.3 Member Enumeration Documentation

#### 10.61.3.1 sync_request_status

```
enum vxg::cloud::agent::synchronizer::sync_request_status [strong]
```

**Enumerator**

| | |
|---|---|
| PENDING | |
| DONE | |
| ERROR | |
| CANCELED | |

Definition at line 18 of file timeline-synchronizer.h.

### 10.61.4 Member Function Documentation

#### 10.61.4.1 create()

```
static ptr vxg::cloud::agent::synchronizer::create (
            const synchronizer::config & c,
            vxg::cloud::sync::timeline_ptr s,
            vxg::cloud::sync::timeline_ptr d )  [inline], [static]
```

Definition at line 697 of file timeline-synchronizer.h.

#### 10.61.4.2 start()

```
bool vxg::cloud::agent::synchronizer::start ( )  [inline]
```

Definition at line 713 of file timeline-synchronizer.h.

#### 10.61.4.3 stop()

```
void vxg::cloud::agent::synchronizer::stop ( )  [inline]
```

Definition at line 731 of file timeline-synchronizer.h.

#### 10.61.4.4 sync()

```
sync_request_ptr vxg::cloud::agent::synchronizer::sync (
            cloud::time begin,
            cloud::time end = utils::time::null(),
            sync_status_report_cb status_report_cb = nullptr,
             std::string upload_token = "",
            cloud::duration delay =  std::chrono::microseconds(0) )  [inline]
```

Definition at line 759 of file timeline-synchronizer.h.

#### 10.61.4.5 sync_cancel()

```
void vxg::cloud::agent::synchronizer::sync_cancel (
            const  std::string & ticket )  [inline]
```

Definition at line 801 of file timeline-synchronizer.h.

#### 10.61.4.6 sync_finalize()

```
void vxg::cloud::agent::synchronizer::sync_finalize (
            sync_request_ptr req,
            cloud::time end ) [inline]
```

Definition at line 797 of file timeline-synchronizer.h.

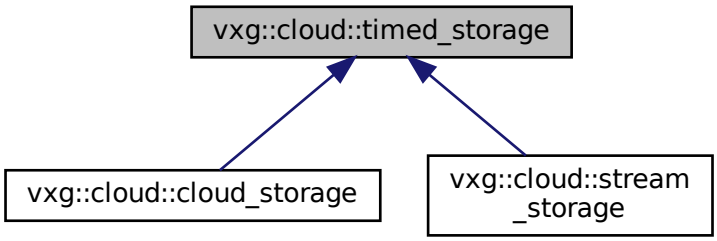
The documentation for this class was generated from the following file:

- timeline-synchronizer.h

## 10.62 vxg::cloud::timed_storage Class Reference

`#include <agent/timeline.h>`

Inheritance diagram for vxg::cloud::timed_storage:




### Data Structures

- struct item

### Public Types

- typedef **std::shared_ptr**< struct item > item_ptr
- using async_store_finished_cb = **std::function**< void(bool)>
- using async_store_is_canceled_cb = **std::function**< bool(void)>

### Public Member Functions

- timed_storage ()
- virtual ~timed_storage ()
- virtual **std::vector**< item_ptr > list (cloud::time start, cloud::time stop)=0
- virtual bool load (item_ptr)=0
- virtual bool store (item_ptr)=0
- virtual bool store_async (item_ptr, async_store_finished_cb finished_cb, async_store_is_canceled_cb is_↩ canceled_cb)
- virtual void erase (item_ptr)=0
- virtual bool init ()
- virtual void finit ()

### 10.62.1 Detailed Description

Definition at line 67 of file timeline.h.

### 10.62.2 Member Typedef Documentation

#### 10.62.2.1 async_store_finished_cb

```
using vxg::cloud::timed_storage::async_store_finished_cb =  std::function<void(bool)>
```

Definition at line 114 of file timeline.h.

#### 10.62.2.2 async_store_is_canceled_cb

```
using vxg::cloud::timed_storage::async_store_is_canceled_cb =  std::function<bool(void)>
```

Definition at line 115 of file timeline.h.

#### 10.62.2.3 item_ptr

```
typedef  std::shared_ptr<struct item> vxg::cloud::timed_storage::item_ptr
```

Definition at line 108 of file timeline.h.

### 10.62.3 Constructor & Destructor Documentation

#### 10.62.3.1 timed_storage()

```
vxg::cloud::timed_storage::timed_storage ( )  [inline]
```

Definition at line 69 of file timeline.h.

#### 10.62.3.2 ~timed_storage()

```
virtual vxg::cloud::timed_storage::~timed_storage ( )  [inline], [virtual]
```

Definition at line 70 of file timeline.h.

## 10.62.4 Member Function Documentation

### 10.62.4.1 erase()

```
virtual void vxg::cloud::timed_storage::erase (
            item_ptr  )  [pure virtual]
```

Implemented in vxg::cloud::cloud_storage, and vxg::cloud::stream_storage.

### 10.62.4.2 finit()

```
virtual void vxg::cloud::timed_storage::finit ( )  [inline], [virtual]
```

Definition at line 125 of file timeline.h.

### 10.62.4.3 init()

```
virtual bool vxg::cloud::timed_storage::init ( )  [inline], [virtual]
```

Definition at line 124 of file timeline.h.

### 10.62.4.4 list()

```
virtual  std::vector<item_ptr> vxg::cloud::timed_storage::list (
            cloud::time start,
            cloud::time stop )  [pure virtual]
```

Implemented in vxg::cloud::cloud_storage, and vxg::cloud::stream_storage.

### 10.62.4.5 load()

```
virtual bool vxg::cloud::timed_storage::load (
            item_ptr  )  [pure virtual]
```

Implemented in vxg::cloud::cloud_storage, and vxg::cloud::stream_storage.

#### 10.62.4.6 store()

```
virtual bool vxg::cloud::timed_storage::store (
            item_ptr  )  [pure virtual]
```

Implemented in vxg::cloud::stream_storage, and vxg::cloud::cloud_storage.

#### 10.62.4.7 store_async()

```
virtual bool vxg::cloud::timed_storage::store_async (
            item_ptr ,
            async_store_finished_cb finished_cb,
            async_store_is_canceled_cb is_canceled_cb )  [inline], [virtual]
```

Reimplemented in vxg::cloud::stream_storage.

Definition at line 116 of file timeline.h.

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

- timeline.h

## 10.63 vxg::cloud::timeline< T > Class Template Reference

```
#include <agent/timeline.h>
```

### Public Member Functions

- timeline (const vxg::cloud::agent::proto::access_token &access_token, transport::libwebsockets::http::ptr http=nullptr)
- timeline ( **std::string** path)
- **std::vector**< period > _squash_periods ( **std::vector**< timed_storage::item_ptr > periods)
- **std::vector**< period > slices (cloud::time start, cloud::time stop)

### 10.63.1 Detailed Description

**template**<**class T**>
**class vxg::cloud::timeline**< **T** >

Definition at line 457 of file timeline.h.

### 10.63.2 Constructor & Destructor Documentation

#### 10.63.2.1 timeline() [1/2]

```
template<class T >
vxg::cloud::timeline< T >::timeline (
            const vxg::cloud::agent::proto::access_token & access_token,
            transport::libwebsockets::http::ptr http = nullptr )  [inline]
```

Definition at line 461 of file timeline.h.

#### 10.63.2.2 timeline() [2/2]

```
template<class T >
vxg::cloud::timeline< T >::timeline (
             std::string path )  [inline]
```

Definition at line 464 of file timeline.h.

### 10.63.3 Member Function Documentation

#### 10.63.3.1 _squash_periods()

```
template<class T >
std::vector<period> vxg::cloud::timeline< T >::_squash_periods (
             std::vector< timed_storage::item_ptr > periods )  [inline]
```

Definition at line 466 of file timeline.h.

#### 10.63.3.2 slices()

```
template<class T >
std::vector<period> vxg::cloud::timeline< T >::slices (
            cloud::time start,
            cloud::time stop )  [inline]
```

Definition at line 497 of file timeline.h.

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

- timeline.h

## 10.64 vxg::cloud::sync::timeline Class Reference

```
#include <agent/timeline.h>
```

## Public Types

- using async_store_finished_cb = **std::function**< void(bool)>
- using async_store_is_canceled_cb = **std::function**< bool(void)>

## Public Member Functions

- timeline (timed_storage_ptr storage)
- virtual ~timeline ()
- **std::vector**< period > _squash_periods ( **std::vector**< timed_storage::item_ptr > periods)
- virtual bool init ()
- virtual void finit ()
- **std::vector**< period > slices (cloud::time start, cloud::time stop)
- **std::vector**< timed_storage::item_ptr > list (cloud::time start, cloud::time stop)
- bool store (timed_storage::item_ptr item)
- bool load (timed_storage::item_ptr item)
- virtual bool store_async (timed_storage::item_ptr item, async_store_finished_cb finished_cb, async_store_is_canceled_cb is_canceled_cb)

### 10.64.1 Detailed Description

Definition at line 503 of file timeline.h.

### 10.64.2 Member Typedef Documentation

#### 10.64.2.1 async_store_finished_cb

```
using vxg::cloud::sync::timeline::async_store_finished_cb =  std::function<void(bool)>
```

Definition at line 575 of file timeline.h.

#### 10.64.2.2 async_store_is_canceled_cb

```
using vxg::cloud::sync::timeline::async_store_is_canceled_cb =  std::function<bool(void)>
```

Definition at line 576 of file timeline.h.

### 10.64.3 Constructor & Destructor Documentation

#### 10.64.3.1 timeline()

```
vxg::cloud::sync::timeline::timeline (
            timed_storage_ptr storage )  [inline]
```

Definition at line 508 of file timeline.h.

#### 10.64.3.2 ~timeline()

```
virtual vxg::cloud::sync::timeline::~timeline ( )  [inline], [virtual]
```

Definition at line 509 of file timeline.h.

### 10.64.4 Member Function Documentation

#### 10.64.4.1 _squash_periods()

```
std::vector<period> vxg::cloud::sync::timeline::_squash_periods (
            std::vector< timed_storage::item_ptr > periods )  [inline]
```

Definition at line 511 of file timeline.h.

#### 10.64.4.2 finit()

```
virtual void vxg::cloud::sync::timeline::finit ( )  [inline], [virtual]
```

Definition at line 543 of file timeline.h.

#### 10.64.4.3 init()

```
virtual bool vxg::cloud::sync::timeline::init ( )  [inline], [virtual]
```

Definition at line 541 of file timeline.h.

#### 10.64.4.4 list()

```
std::vector<timed_storage::item_ptr> vxg::cloud::sync::timeline::list (
            cloud::time start,
            cloud::time stop )  [inline]
```

Definition at line 550 of file timeline.h.

#### 10.64.4.5 load()

```
bool vxg::cloud::sync::timeline::load (
            timed_storage::item_ptr item )  [inline]
```

Definition at line 568 of file timeline.h.

#### 10.64.4.6 slices()

```
std::vector<period> vxg::cloud::sync::timeline::slices (
            cloud::time start,
            cloud::time stop )  [inline]
```

Definition at line 546 of file timeline.h.

#### 10.64.4.7 store()

```
bool vxg::cloud::sync::timeline::store (
            timed_storage::item_ptr item )  [inline]
```

Definition at line 561 of file timeline.h.

#### 10.64.4.8 store_async()

```
virtual bool vxg::cloud::sync::timeline::store_async (
            timed_storage::item_ptr item,
            async_store_finished_cb finished_cb,
            async_store_is_canceled_cb is_canceled_cb )  [inline], [virtual]
```

Definition at line 577 of file timeline.h.

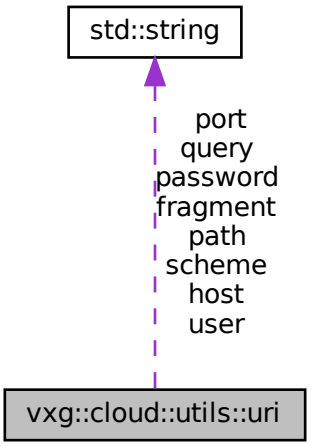
The documentation for this class was generated from the following file:

- timeline.h

# 10.65 vxg::cloud::utils::uri Struct Reference

`#include <utils/utils.h>`

Collaboration diagram for vxg::cloud::utils::uri:




## Static Public Member Functions

- static bool parse (const **std::string** &in_uri, uri &result)

## Data Fields

- **std::string** scheme
- **std::string** user
- **std::string** password
- **std::string** host
- **std::string** port
- **std::string** path
- **std::string** query
- **std::string** fragment

### 10.65.1 Detailed Description

Definition at line 67 of file utils.h.

### 10.65.2 Member Function Documentation

#### 10.65.2.1 parse()

```
static bool vxg::cloud::utils::uri::parse (
            const  std::string & in_uri,
            uri & result )  [inline], [static]
```

Definition at line 77 of file utils.h.

### 10.65.3 Field Documentation

#### 10.65.3.1 fragment

```
std::string vxg::cloud::utils::uri::fragment
```

Definition at line 75 of file utils.h.

#### 10.65.3.2 host

```
std::string vxg::cloud::utils::uri::host
```

Definition at line 71 of file utils.h.

#### 10.65.3.3 password

```
std::string vxg::cloud::utils::uri::password
```

Definition at line 70 of file utils.h.

#### 10.65.3.4 path

```
std::string vxg::cloud::utils::uri::path
```

Definition at line 73 of file utils.h.

#### 10.65.3.5 port

```
std::string vxg::cloud::utils::uri::port
```

Definition at line 72 of file utils.h.

#### 10.65.3.6 query

```
std::string vxg::cloud::utils::uri::query
```

Definition at line 74 of file utils.h.

#### 10.65.3.7 scheme

```
std::string vxg::cloud::utils::uri::scheme
```

Definition at line 68 of file utils.h.

#### 10.65.3.8 user

```
std::string vxg::cloud::utils::uri::user
```

Definition at line 69 of file utils.h.

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

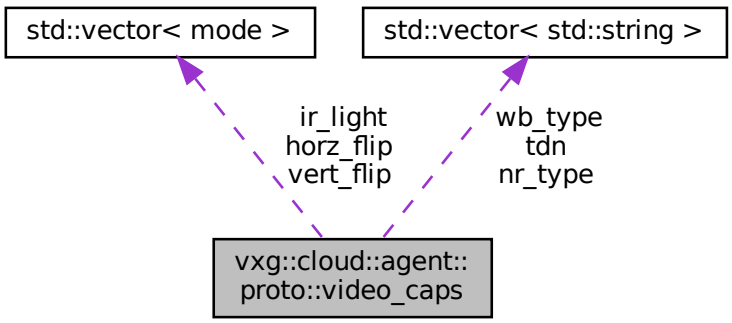
- utils.h

## 10.66 vxg::cloud::agent::proto::video_caps Struct Reference

Video image capabilities.

`#include <agent-proto/objects/caps.h>`

Collaboration diagram for vxg::cloud::agent::proto::video_caps:



## Data Fields

- **std::vector**< mode > vert_flip

  *vert_flip: list of string, supported vertical flip modes, possible values [“off”, “on”, “auto”]*
- **std::vector**< mode > horz_flip

  *horz_flip: list of string, supported horizontal flip modes, possible values [“off”, “on”, “auto”]*
- **std::vector**< **std::string** > tdn

  *tdn: list of string, supported TDM modes, possible values [“day”, “night”, “auto”]*
- **std::vector**< mode > ir_light

  *ir_light: list of string, supported IR light modes, possible values [“off”, “on”, “auto”]*
- bool brightness

  *brightness: bool, True when camera supports brightness control*
- bool contrast

  *contrast: bool, True when camera supports contrast control*
- bool saturation

  *saturation: bool, True when camera supports saturation control*
- bool sharpness

  *sharpness: bool, True when camera supports sharpness control*
- **std::vector**< **std::string** > nr_type

  *nr_type: list of string, supported noise reduce types.*
- bool nr_level

  *nr_level: bool, True when noise reduce filter assumes control of NR level*
- **std::vector**< **std::string** > wb_type

  *wb_type: list of string, supported white balance types.*
- bool pwr_frequency

  *pwr_frequency: bool, True camera supports compensation of images flickering due to flashing of lamps in indoor environment*

### 10.66.1 Detailed Description

Video image capabilities.

Definition at line 366 of file caps.h.

### 10.66.2 Field Documentation

#### 10.66.2.1 brightness

```
bool vxg::cloud::agent::proto::video_caps::brightness
```

brightness: bool, True when camera supports brightness control

Definition at line 384 of file caps.h.

#### 10.66.2.2 contrast

```
bool vxg::cloud::agent::proto::video_caps::contrast
```

contrast: bool, True when camera supports contrast control

Definition at line 387 of file caps.h.

#### 10.66.2.3 horz_flip

```
std::vector<mode> vxg::cloud::agent::proto::video_caps::horz_flip
```

horz_flip: list of string, supported horizontal flip modes, possible values [“off”, “on”, “auto”]

Definition at line 373 of file caps.h.

#### 10.66.2.4 ir_light

```
std::vector<mode> vxg::cloud::agent::proto::video_caps::ir_light
```

ir_light: list of string, supported IR light modes, possible values [“off”, “on”, “auto”]

Definition at line 381 of file caps.h.

#### 10.66.2.5 nr_level

```
bool vxg::cloud::agent::proto::video_caps::nr_level
```

nr_level: bool, True when noise reduce filter assumes control of NR level

Definition at line 402 of file caps.h.

#### 10.66.2.6 nr_type

```
std::vector< std::string> vxg::cloud::agent::proto::video_caps::nr_type
```

nr_type: list of string, supported noise reduce types.

Empty list when camera doesn't support it. Example: ["off", "normal", "expert"]

Definition at line 398 of file caps.h.

#### 10.66.2.7 pwr_frequency

```
bool vxg::cloud::agent::proto::video_caps::pwr_frequency
```

pwr_frequency: bool, True camera supports compensation of images flickering due to flashing of lamps in indoor environment

Definition at line 411 of file caps.h.

#### 10.66.2.8 saturation

```
bool vxg::cloud::agent::proto::video_caps::saturation
```

saturation: bool, True when camera supports saturation control

Definition at line 390 of file caps.h.

#### 10.66.2.9 sharpness

```
bool vxg::cloud::agent::proto::video_caps::sharpness
```

sharpness: bool, True when camera supports sharpness control

Definition at line 393 of file caps.h.

#### 10.66.2.10 tdn

```
std::vector< std::string> vxg::cloud::agent::proto::video_caps::tdn
```

tdn: list of string, supported TDM modes, possible values [“day”, “night”, “auto”]

Definition at line 377 of file caps.h.

#### 10.66.2.11 vert_flip

```
std::vector<mode> vxg::cloud::agent::proto::video_caps::vert_flip
```

vert_flip: list of string, supported vertical flip modes, possible values [“off”, “on”, “auto”]

Definition at line 369 of file caps.h.

#### 10.66.2.12 wb_type

```
std::vector< std::string> vxg::cloud::agent::proto::video_caps::wb_type
```

wb_type: list of string, supported white balance types.

Empty list when camera doesn't support it. Example: ["auto", "3200K (Indor)", "4200K (Fluo)", "5600K (Outdoor)"]

Definition at line 407 of file caps.h.

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

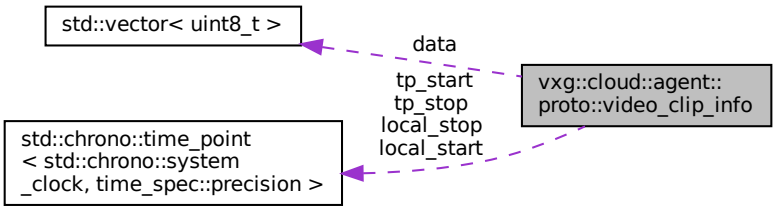
- caps.h

## 10.67 vxg::cloud::agent::proto::video_clip_info Struct Reference

Video recoding(mp4 file) clip description,.

```
#include <agent-proto/objects/config.h>
```

Collaboration diagram for vxg::cloud::agent::proto::video_clip_info:




### Data Fields

- cloud::time tp_start
  *Clip start time UTC.*
- cloud::time tp_stop
  *Clip stop time UTC.*
- cloud::time local_start
  *Clip start time local.*
- cloud::time local_stop
  *Clip stop time local.*
- int video_width
  *Video clip picture width.*
- int video_height
  *Video clip picture height.*
- **std::vector**< uint8_t > data
  *Video data buffer, we use move semantics internally so no data copying will be invoked.*

### 10.67.1 Detailed Description

Video recoding(mp4 file) clip description,.

Definition at line 449 of file config.h.

### 10.67.2 Field Documentation

#### 10.67.2.1 data

```
std::vector<uint8_t> vxg::cloud::agent::proto::video_clip_info::data
```

Video data buffer, we use move semantics internally so no data copying will be invoked.

Definition at line 475 of file config.h.

#### 10.67.2.2 local_start

```
cloud::time vxg::cloud::agent::proto::video_clip_info::local_start
```

Clip start time local.

Definition at line 463 of file config.h.

#### 10.67.2.3 local_stop

```
cloud::time vxg::cloud::agent::proto::video_clip_info::local_stop
```

Clip stop time local.

Definition at line 466 of file config.h.

#### 10.67.2.4 tp_start

```
cloud::time vxg::cloud::agent::proto::video_clip_info::tp_start
```

Clip start time UTC.

Definition at line 458 of file config.h.

#### 10.67.2.5 tp_stop

```
cloud::time vxg::cloud::agent::proto::video_clip_info::tp_stop
```

Clip stop time UTC.

Definition at line 460 of file config.h.

#### 10.67.2.6 video_height

```
int vxg::cloud::agent::proto::video_clip_info::video_height
```

Video clip picture height.

Definition at line 471 of file config.h.

#### 10.67.2.7 video_width

```
int vxg::cloud::agent::proto::video_clip_info::video_width
```

Video clip picture width.

Definition at line 469 of file config.h.

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

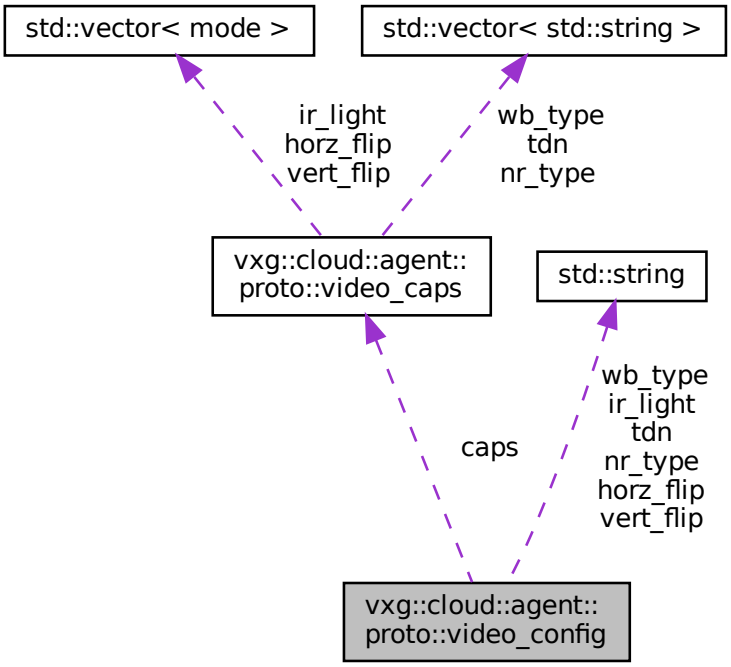
- config.h

## 10.68 vxg::cloud::agent::proto::video_config Struct Reference

Video image config.

```
#include <agent-proto/objects/config.h>
```

Collaboration diagram for vxg::cloud::agent::proto::video_config:




## Data Fields

- **std::string** vert_flip

  *vert_flip: optional string, vertical image flip mode: ["off", "on", "auto"]*
- **std::string** horz_flip

  *horz_flip: optional string, horizontal image flip mode: ["off", "on", "auto"]*
- **std::string** tdn

  *tdn: optional string, possible values ["day", "night", "auto"]*
- **std::string** ir_light

  *ir_light: optional string, IR light for night conditions ["off", "on", "auto"]*
- int brightness

  *brightness: optional int, a brightness value from range 0-100 (%)*
- int contrast

  *contrast: optional int, a contrast value from range 0-100 (%)*
- int saturation

  *saturation: optional int, a saturation value from range 0-100 (%)*
- int sharpness

  *sharpness: optional int, a sharpness value from range 0-100 (%)*
- **std::string** nr_type

  *nr_type: optional string, one of predefined noise reduce types from caps*
- int nr_level

  *nr_level: optional int, level of noise reduce when filter requires it 0-100 (%)*
- **std::string** wb_type

*wb_type: optional string, one of predefined white balance types from caps*

- int pwr_frequency

  *pwr_frequency: optional int, power line frequency [50, 60] (Hz)*

- video_caps caps

  *caps*

## 10.68.1 Detailed Description

Video image config.

Definition at line 306 of file config.h.

## 10.68.2 Field Documentation

### 10.68.2.1 brightness

```
int vxg::cloud::agent::proto::video_config::brightness
```

brightness: optional int, a brightness value from range 0-100 (%)

Definition at line 323 of file config.h.

### 10.68.2.2 caps

```
video_caps vxg::cloud::agent::proto::video_config::caps
```

caps

Definition at line 349 of file config.h.

### 10.68.2.3 contrast

```
int vxg::cloud::agent::proto::video_config::contrast
```

contrast: optional int, a contrast value from range 0-100 (%)

Definition at line 326 of file config.h.

#### 10.68.2.4 horz_flip

```
std::string vxg::cloud::agent::proto::video_config::horz_flip
```

horz_flip: optional string, horizontal image flip mode: [“off”, “on”, “auto”]

Definition at line 313 of file config.h.

#### 10.68.2.5 ir_light

```
std::string vxg::cloud::agent::proto::video_config::ir_light
```

ir_light: optional string, IR light for night conditions [“off”, “on”, “auto”]

Definition at line 320 of file config.h.

#### 10.68.2.6 nr_level

```
int vxg::cloud::agent::proto::video_config::nr_level
```

nr_level: optional int, level of noise reduce when filter requires it 0-100 (%)

Definition at line 339 of file config.h.

#### 10.68.2.7 nr_type

```
std::string vxg::cloud::agent::proto::video_config::nr_type
```

nr_type: optional string, one of predefined noise reduce types from caps

Definition at line 335 of file config.h.

#### 10.68.2.8 pwr_frequency

```
int vxg::cloud::agent::proto::video_config::pwr_frequency
```

pwr_frequency: optional int, power line frequency [50, 60] (Hz)

Definition at line 346 of file config.h.

#### 10.68.2.9 saturation

```
int vxg::cloud::agent::proto::video_config::saturation
```

saturation: optional int, a saturation value from range 0-100 (%)

Definition at line 329 of file config.h.

#### 10.68.2.10 sharpness

```
int vxg::cloud::agent::proto::video_config::sharpness
```

sharpness: optional int, a sharpness value from range 0-100 (%)

Definition at line 332 of file config.h.

#### 10.68.2.11 tdn

```
std::string vxg::cloud::agent::proto::video_config::tdn
```

tdn: optional string, possible values [“day”, “night”, “auto”]

Definition at line 316 of file config.h.

#### 10.68.2.12 vert_flip

```
std::string vxg::cloud::agent::proto::video_config::vert_flip
```

vert_flip: optional string, vertical image flip mode: [“off”, “on”, “auto”]

Definition at line 309 of file config.h.

#### 10.68.2.13 wb_type

```
std::string vxg::cloud::agent::proto::video_config::wb_type
```

wb_type: optional string, one of predefined white balance types from caps

Definition at line 343 of file config.h.

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

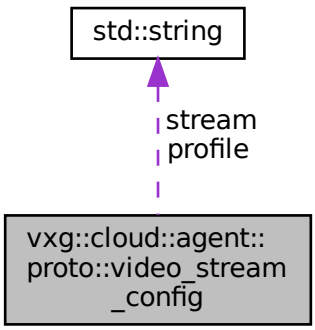
- config.h

## 10.69 vxg::cloud::agent::proto::video_stream_config Struct Reference

Video stream config.

`#include <agent-proto/objects/config.h>`

Collaboration diagram for vxg::cloud::agent::proto::video_stream_config:




### Data Fields

- **std::string** stream

  *Mandatory: video ES to use.*
- video_format format

  *Mandatory: video encoding format.*
- **std::string** profile

  *Optional: profile that specifies format, when format assumes it.*
- int horz

  *Mandatory: int (horz) - video resolution width x height.*
- int vert

  *Mandatory: int (vert) - video resolution width x height.*
- double fps

  *Mandatory: framerate.*
- bool vbr

  *Mandatory: prefer VBR; if false or not set CBR should be used.*
- int gop

  *Mandatory: gop size (I-Frame interval);.*
- int brt

  *Optional: bitrate, kbps.*
- int vbr_brt

  *Optional: bitrate for VBR, kbps.*
- int quality

  *Optional: int [-4..4], quality profile hint for encoder, where 0 means normal.*
- int smoothing

  *Optional: a smoothing value from range 0-100 (%)*

## 10.69.1 Detailed Description

Video stream config.

Definition at line 83 of file config.h.

## 10.69.2 Field Documentation

### 10.69.2.1 brt

```
int vxg::cloud::agent::proto::video_stream_config::brt
```

Optional: bitrate, kbps.

Definition at line 117 of file config.h.

### 10.69.2.2 format

```
video_format vxg::cloud::agent::proto::video_stream_config::format
```

Mandatory: video encoding format.

Definition at line 90 of file config.h.

### 10.69.2.3 fps

```
double vxg::cloud::agent::proto::video_stream_config::fps
```

Mandatory: framerate.

Definition at line 105 of file config.h.

### 10.69.2.4 gop

```
int vxg::cloud::agent::proto::video_stream_config::gop
```

Mandatory: gop size (I-Frame interval);.

Definition at line 113 of file config.h.

#### 10.69.2.5 horz

```
int vxg::cloud::agent::proto::video_stream_config::horz
```

Mandatory: int (horz) - video resolution width x height.

Definition at line 98 of file config.h.

#### 10.69.2.6 profile

```
std::string vxg::cloud::agent::proto::video_stream_config::profile
```

Optional: profile that specifies format, when format assumes it.

Definition at line 94 of file config.h.

#### 10.69.2.7 quality

```
int vxg::cloud::agent::proto::video_stream_config::quality
```

Optional: int [-4..4], quality profile hint for encoder, where 0 means normal.

Definition at line 125 of file config.h.

#### 10.69.2.8 smoothing

```
int vxg::cloud::agent::proto::video_stream_config::smoothing
```

Optional: a smoothing value from range 0-100 (%)

Definition at line 129 of file config.h.

#### 10.69.2.9 stream

```
std::string vxg::cloud::agent::proto::video_stream_config::stream
```

Mandatory: video ES to use.

Definition at line 86 of file config.h.

#### 10.69.2.10 vbr

```
bool vxg::cloud::agent::proto::video_stream_config::vbr
```

Mandatory: prefer VBR; if false or not set CBR should be used.

Definition at line 109 of file config.h.

#### 10.69.2.11 vbr_brt

```
int vxg::cloud::agent::proto::video_stream_config::vbr_brt
```

Optional: bitrate for VBR, kbps.

Definition at line 121 of file config.h.

#### 10.69.2.12 vert

```
int vxg::cloud::agent::proto::video_stream_config::vert
```

Mandatory: int (vert) - video resolution width x height.

Definition at line 101 of file config.h.

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

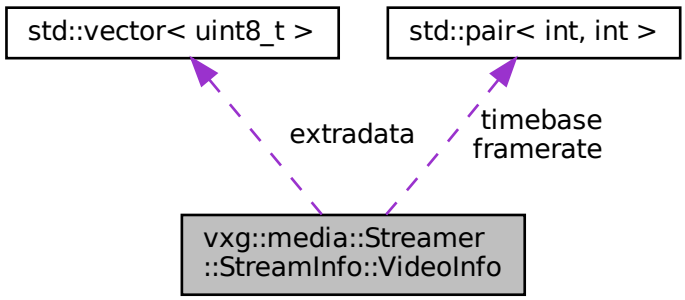
- config.h

## 10.70 vxg::media::Streamer::StreamInfo::VideoInfo Struct Reference

Video stream info.

```
#include <streamer/base_streamer.h>
```

Collaboration diagram for vxg::media::Streamer::StreamInfo::VideoInfo:



## Data Fields

- VideoCodec codec

  *Video codec type.*
- int width

  *Video width if needed.*
- int height

  *Video height if needed.*
- **std::pair**< int, int > framerate

  *Video framerate if needed.*
- int bitrate

  *Video bitrate if needed.*
- **std::pair**< int, int > timebase

  *Timescale of the timestamps, source fills it with timescale of timestamps source receives, MediaFrame::pts should use this timescale.*
- **std::vector**< uint8_t > extradata

  *Can be AVC1 extradata or SPS/PPS, source fills it and sink should know and understand this format.*

### 10.70.1 Detailed Description

Video stream info.

This structure as well as ISink::negotiate method aimed to inform sink about streams source provides, if sink don't care the values of this structure may be ignored.

Definition at line 325 of file base_streamer.h.

### 10.70.2 Field Documentation

#### 10.70.2.1 bitrate

```
int vxg::media::Streamer::StreamInfo::VideoInfo::bitrate
```

Video bitrate if needed.

Definition at line 335 of file base_streamer.h.

#### 10.70.2.2 codec

```
VideoCodec vxg::media::Streamer::StreamInfo::VideoInfo::codec
```

Video codec type.

Definition at line 327 of file base_streamer.h.

#### 10.70.2.3 extradata

```
std::vector<uint8_t> vxg::media::Streamer::StreamInfo::VideoInfo::extradata
```

Can be AVC1 extradata or SPS/PPS, source fills it and sink should know and understand this format.

Definition at line 342 of file base_streamer.h.

#### 10.70.2.4 framerate

```
std::pair<int, int> vxg::media::Streamer::StreamInfo::VideoInfo::framerate
```

Video framerate if needed.

Definition at line 333 of file base_streamer.h.

#### 10.70.2.5 height

```
int vxg::media::Streamer::StreamInfo::VideoInfo::height
```

Video height if needed.

Definition at line 331 of file base_streamer.h.

#### 10.70.2.6 timebase

```
std::pair<int, int> vxg::media::Streamer::StreamInfo::VideoInfo::timebase
```

Timescale of the timestamps, source fills it with timescale of timestamps source receives, MediaFrame::pts should use this timescale.

Definition at line 339 of file base_streamer.h.

#### 10.70.2.7 width

```
int vxg::media::Streamer::StreamInfo::VideoInfo::width
```

Video width if needed.

Definition at line 329 of file base_streamer.h.

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

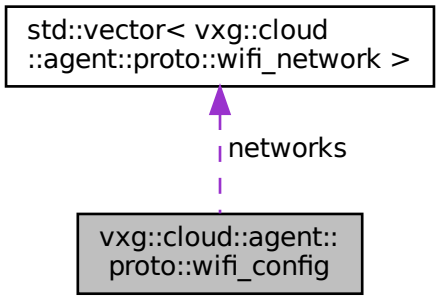
- base_streamer.h

## 10.71 vxg::cloud::agent::proto::wifi_config Struct Reference

WiFi config.

`#include <agent-proto/objects/config.h>`

Collaboration diagram for vxg::cloud::agent::proto::wifi_config:




### Data Fields

- **std::vector**< wifi_network > networks
  *List of wifi_network objects.*

### 10.71.1 Detailed Description

WiFi config.

Definition at line 581 of file config.h.

### 10.71.2 Field Documentation

#### 10.71.2.1 networks

**std::vector**<wifi_network> vxg::cloud::agent::proto::wifi_config::networks

List of wifi_network objects.

Definition at line 583 of file config.h.

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

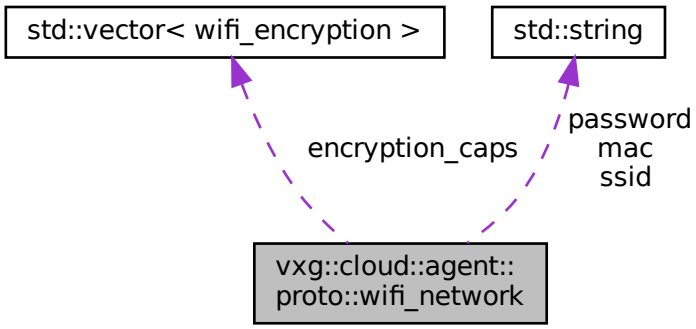
- config.h

# 10.72 vxg::cloud::agent::proto::wifi_network Struct Reference

WiFi network object.

`#include <agent-proto/objects/config.h>`

Collaboration diagram for vxg::cloud::agent::proto::wifi_network:




## Data Fields

- **std::string** ssid

  *ssid: string, network SSID*
- int signal

  *signal: int, signal strength, dB*
- **std::string** mac

  *mac: string, AP MAC address*
- **std::vector**< wifi_encryption > encryption_caps

  *encryption_caps: list of string, supported encryption types,*
- wifi_encryption encryption

  *encryption: string, current encryption type, see encryption_caps for possible values*
- **std::string** password

  *password: string, network password*

### 10.72.1 Detailed Description

WiFi network object.

Definition at line 552 of file config.h.

### 10.72.2 Field Documentation

#### 10.72.2.1 encryption

`wifi_encryption vxg::cloud::agent::proto::wifi_network::encryption`

encryption: string, current encryption type, see encryption_caps for possible values

Definition at line 563 of file config.h.

#### 10.72.2.2 encryption_caps

`std::vector<wifi_encryption> vxg::cloud::agent::proto::wifi_network::encryption_caps`

encryption_caps: list of string, supported encryption types,

Definition at line 560 of file config.h.

#### 10.72.2.3 mac

`std::string vxg::cloud::agent::proto::wifi_network::mac`

mac: string, AP MAC address

Definition at line 558 of file config.h.

#### 10.72.2.4 password

`std::string vxg::cloud::agent::proto::wifi_network::password`

password: string, network password

Definition at line 565 of file config.h.

#### 10.72.2.5 signal

`int vxg::cloud::agent::proto::wifi_network::signal`

signal: int, signal strength, dB

Definition at line 556 of file config.h.

#### 10.72.2.6 ssid

`std::string vxg::cloud::agent::proto::wifi_network::ssid`

ssid: string, network SSID

Definition at line 554 of file config.h.

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

- config.h

# Chapter 11

# File Documentation

## 11.1 app-dev.md File Reference

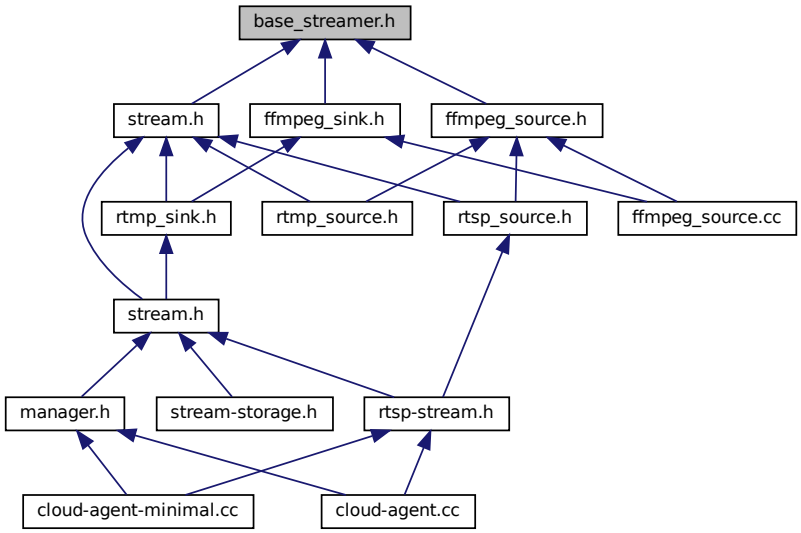
## 11.2 arm-example.txt File Reference

## 11.3 base_streamer.h File Reference

```
#include <cstdlib>
#include <future>
#include <map>
#include <queue>
#include <string>
#include <pthread.h>
#include <streamer/stats.h>
#include <utils/logging.h>
#include <utils/utils.h>
```

Include dependency graph for base_streamer.h:

This graph shows which files directly or indirectly include this file:




## Data Structures

- struct vxg::media::Streamer::StreamInfo

  *Stream info descriotion.*
- struct vxg::media::Streamer::StreamInfo::VideoInfo

  *Video stream info.*
- struct vxg::media::Streamer::StreamInfo::AudioInfo

  *Audio stream info.*
- struct vxg::media::Streamer::MediaFrame

  *Media frame container.*
- class vxg::media::Streamer::ISink
- class vxg::media::Streamer::ISource

  *ISource interface class.*

## Namespaces

- vxg
- vxg::media
- vxg::media::Streamer

## Macros

- #define __BASE_STREAMER_H

## Typedefs

- using vxg::media::Streamer::on_error_cb = **std::function**< void(Streamer::StreamError e)>

  *On error callback, used for both ISink and ISource if was provided by user.*

### Enumerations

- enum vxg::media::Streamer::DropDirection { vxg::media::Streamer::DROP_FRONT, vxg::media::Streamer::DROP_BACK }
- enum vxg::media::Streamer::StreamError { vxg::media::Streamer::E_NONE, vxg::media::Streamer::E_FATAL, vxg::media::Streamer::E_EOS }

  *Stream error.*
- enum vxg::media::Streamer::MediaType { vxg::media::Streamer::UKNOWN, vxg::media::Streamer::VIDEO, vxg::media::Streamer::VIDEO_AVC_SPS, vxg::media::Streamer::VIDEO_AVC_PPS, vxg::media::Streamer::VIDEO_SEQ_HDR, vxg::media::Streamer::AUDIO, vxg::media::Streamer::AUDIO_SEQ_HDR, vxg::media::Streamer::FLV, vxg::media::Streamer::DATA, vxg::media::Streamer::MAX }

  *Media frame type.*

### Variables

- constexpr int vxg::media::Streamer::SINK_THREAD_PRIO
- constexpr int vxg::media::Streamer::SRC_THREAD_PRIO

### 11.3.1 Macro Definition Documentation

#### 11.3.1.1 __BASE_STREAMER_H

```
#define __BASE_STREAMER_H
```

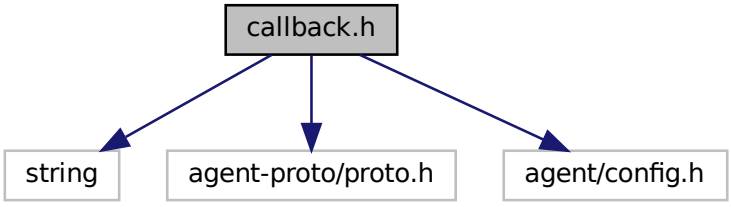
Definition at line 14 of file base_streamer.h.

## 11.4 build-system.md File Reference

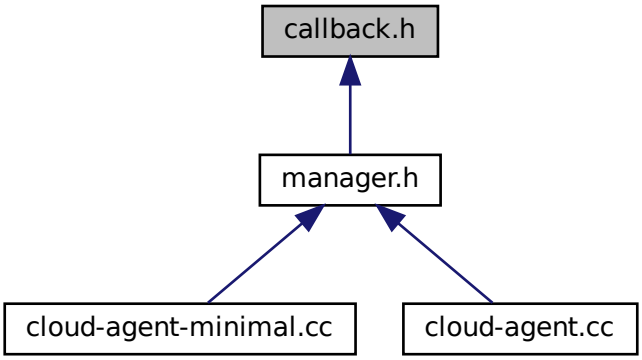
## 11.5 callback.h File Reference

```
#include <string>
#include <agent-proto/proto.h>
#include <agent/config.h>
```

Include dependency graph for callback.h:



This graph shows which files directly or indirectly include this file:




### Data Structures

- class vxg::cloud::agent::callback

  *VXG Cloud manager common callbacks class.*

### Namespaces

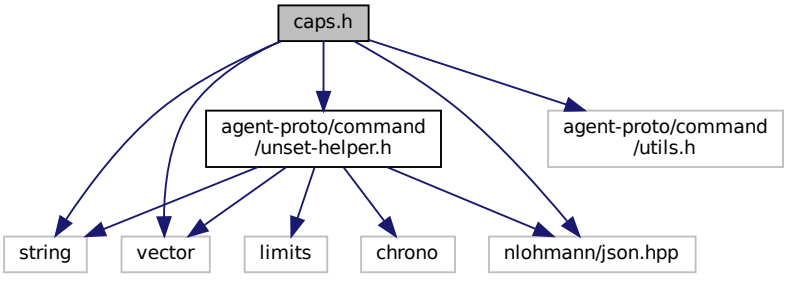
- vxg
- vxg::cloud
- vxg::cloud::agent

  *VXG Cloud Agent namespace.*

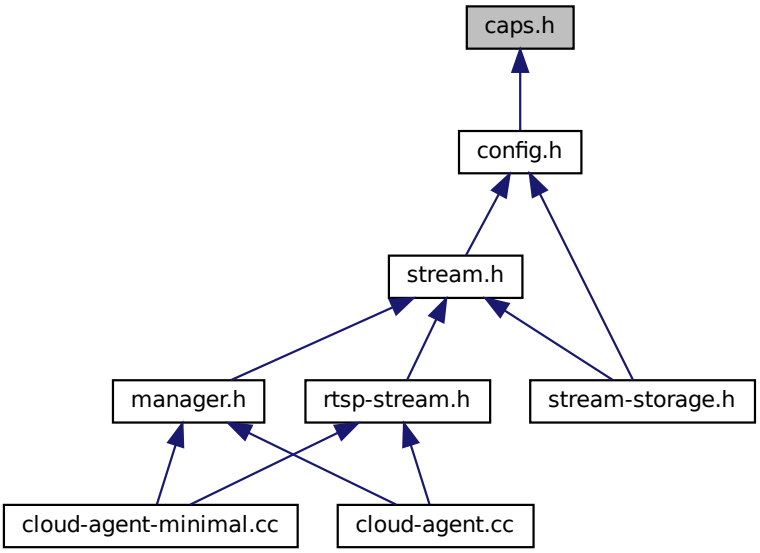
## 11.6 caps.h File Reference

```
#include <string>
#include <vector>
#include <nlohmann/json.hpp>
#include <agent-proto/command/unset-helper.h>
#include <agent-proto/command/utils.h>
```

Include dependency graph for caps.h:



This graph shows which files directly or indirectly include this file:




## Data Structures

- struct vxg::cloud::agent::proto::stream_caps

  *Media stream capabilites.*
- struct vxg::cloud::agent::proto::stream_caps::caps_video_object

  *Video streams capabilities.*
- struct vxg::cloud::agent::proto::stream_caps::caps_audio_object

  *Audio streams capabilities.*
- struct vxg::cloud::agent::proto::motion_detection_caps

  *Motion detection capabilities camera capabilities that limit possible motion detection configuration.*
- struct vxg::cloud::agent::proto::video_caps

  *Video image capabilities.*
- struct vxg::cloud::agent::proto::event_caps

  *Events capabilies.*
- struct vxg::cloud::agent::proto::audio_caps

  *Audio capabilities.*
- struct vxg::cloud::agent::proto::osd_caps

  *OSD capabilities.*

## Namespaces

- vxg
- vxg::cloud
- vxg::cloud::agent

  *VXG Cloud Agent namespace.*
- vxg::cloud::agent::proto

## Macros

- #define ignore_exception(...)

## Typedefs

- using json = nlohmann::json

## Enumerations

- enum vxg::cloud::agent::proto::mode { vxg::cloud::agent::proto::M_OFF, vxg::cloud::agent::proto::M_ON, vxg::cloud::agent::proto::M_AUTO, vxg::cloud::agent::proto::M_INVALID }

  *Mode on/off.*
- enum vxg::cloud::agent::proto::video_format { vxg::cloud::agent::proto::VF_H264, vxg::cloud::agent::proto::VF_H265, vxg::cloud::agent::proto::VF_MJPEG, vxg::cloud::agent::proto::VF_INVALID }

  *Video codec format.*
- enum vxg::cloud::agent::proto::audio_format { vxg::cloud::agent::proto::AF_G711A, vxg::cloud::agent::proto::AF_G711U, vxg::cloud::agent::proto::AF_RAW, vxg::cloud::agent::proto::AF_ADPCM, vxg::cloud::agent::proto::AF_MP3, vxg::cloud::agent::proto::AF_NELLY8, vxg::cloud::agent::proto::AF_NELLY16, vxg::cloud::agent::proto::AF_NELLY, vxg::cloud::agent::proto::AF_OPUS, vxg::cloud::agent::proto::AF_AAC, vxg::cloud::agent::proto::AF_SPEEX, vxg::cloud::agent::proto::AF_INVALID }

  *Audio codec format.*
- enum vxg::cloud::agent::proto::audio_file_format { vxg::cloud::agent::proto::AFF_AU_G711U, vxg::cloud::agent::proto::AFF_MP vxg::cloud::agent::proto::AFF_WAV_PCM, vxg::cloud::agent::proto::AFF_INVALID }

  *Audio file format.*
- enum vxg::cloud::agent::proto::motion_sensitivity { vxg::cloud::agent::proto::MS_REGION, vxg::cloud::agent::proto::MS_FRAM vxg::cloud::agent::proto::MS_INVALID }

  *Motion sensitivity.*
- enum vxg::cloud::agent::proto::motion_region_shape { vxg::cloud::agent::proto::MR_RECTANGLE, vxg::cloud::agent::proto::MR_ANY, vxg::cloud::agent::proto::MR_INVALID }

  *Motion region shape.*
- enum vxg::cloud::agent::proto::ptz_action { vxg::cloud::agent::proto::A_LEFT, vxg::cloud::agent::proto::A_RIGHT, vxg::cloud::agent::proto::A_TOP, vxg::cloud::agent::proto::A_BOTTOM, vxg::cloud::agent::proto::A_ZOOM_IN, vxg::cloud::agent::proto::A_ZOOM_OUT, vxg::cloud::agent::proto::A_STOP, vxg::cloud::agent::proto::A_INVALID }

  *PTZ actions.*
- enum vxg::cloud::agent::proto::ptz_preset_action { vxg::cloud::agent::proto::PA_CREATE, vxg::cloud::agent::proto::PA_DELETE, vxg::cloud::agent::proto::PA_GOTO, vxg::cloud::agent::proto::PA_UPDATE, vxg::cloud::agent::proto::PA_INVALID }

  *PTZ preset action.*
- enum vxg::cloud::agent::proto::time_format_n { vxg::cloud::agent::proto::TF_12H, vxg::cloud::agent::proto::TF_24H, vxg::cloud::agent::proto::TF_INVALID }

  *3.34 get_osd_conf (SRV) 3.35 osd_conf (CM) 3.36 set_osd_conf (SRV)*

### 11.6.1 Macro Definition Documentation

#### 11.6.1.1 ignore_exception

```
#define ignore_exception(
              ...  )
```

Definition at line 20 of file caps.h.

### 11.6.2 Typedef Documentation

#### 11.6.2.1 json

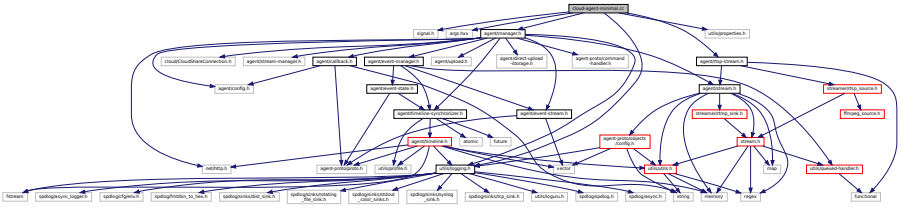
```
using json = nlohmann::json
```

Definition at line 12 of file caps.h.

## 11.7 cloud-agent-minimal.cc File Reference

```
#include <signal.h>
#include <args.hxx>
#include <agent/manager.h>
#include <agent/rtsp-stream.h>
#include <utils/logging.h>
#include <utils/properties.h>
```

Include dependency graph for cloud-agent-minimal.cc:



### Functions

- static void signal_handler (int sig)
- bool parse_args (int argc, char **argv)
- int main (int argc, char **argv)

### Variables

- agent::config agent_config

  *[Includes and namespaces]*
- static bool quit
- static vxg::properties props
- **std::string** vxg_cloud_token

  *[Minimal callback class implementation]*
- **std::string** rtsp_url

### 11.7.1 Function Documentation

#### 11.7.1.1 main()

```
int main (
            int argc,
            char ** argv )
```

[Create and start agent object]

[Create and start agent object]

[Stop agent]

[Stop agent]

Definition at line 87 of file cloud-agent-minimal.cc.

#### 11.7.1.2 parse_args()

```
bool parse_args (
            int argc,
            char ** argv )
```

Definition at line 48 of file cloud-agent-minimal.cc.

#### 11.7.1.3 signal_handler()

```
static void signal_handler (
            int sig )  [static]
```

Definition at line 20 of file cloud-agent-minimal.cc.

### 11.7.2 Variable Documentation

#### 11.7.2.1 agent_config

```
agent::config agent_config
```

[Includes and namespaces]

Definition at line 15 of file cloud-agent-minimal.cc.

#### 11.7.2.2 props

```
vxg::properties props  [static]
```

Definition at line 18 of file cloud-agent-minimal.cc.

#### 11.7.2.3 quit

```
bool quit  [static]
```

Definition at line 17 of file cloud-agent-minimal.cc.

#### 11.7.2.4 rtsp_url

```
std::string rtsp_url
```

Definition at line 46 of file cloud-agent-minimal.cc.

#### 11.7.2.5 vxg_cloud_token

```
std::string vxg_cloud_token
```

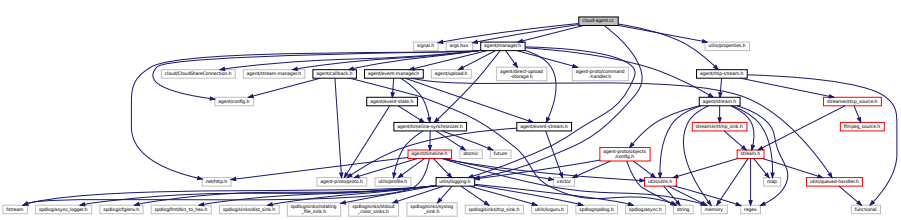
[Minimal callback class implementation]

Definition at line 45 of file cloud-agent-minimal.cc.

## 11.8 cloud-agent.cc File Reference

```
#include <signal.h>
#include <args.hxx>
#include <agent/manager.h>
#include <agent/rtsp-stream.h>
#include <utils/logging.h>
#include <utils/properties.h>
```

Include dependency graph for cloud-agent.cc:



## Functions

- static void signal_handler (int sig)
- bool parse_args (int argc, char **argv)
- int main (int argc, char **argv)

## Variables

- agent::config agent_config

  *[Includes and namespaces]*
- static bool quit
- static vxg::properties props
- **std::string** vxg_cloud_token

  *[Event stream callback class implementation]*
- **std::string** rtsp_url

### 11.8.1 Function Documentation

#### 11.8.1.1 main()

```
int main (
              int argc,
              char ** argv )
```

[Create and start agent object]

[Create and start agent object]

[Stop agent]

[Stop agent]

Definition at line 368 of file cloud-agent.cc.

#### 11.8.1.2 parse_args()

```
bool parse_args (
              int argc,
              char ** argv )
```

Definition at line 336 of file cloud-agent.cc.

#### 11.8.1.3 signal_handler()

```
static void signal_handler (
            int sig )  [static]
```

Definition at line 20 of file cloud-agent.cc.

### 11.8.2 Variable Documentation

#### 11.8.2.1 agent_config

```
agent::config agent_config
```

[Includes and namespaces]

Definition at line 15 of file cloud-agent.cc.

#### 11.8.2.2 props

```
vxg::properties props  [static]
```

Definition at line 17 of file cloud-agent.cc.

#### 11.8.2.3 quit

```
bool quit  [static]
```

Definition at line 16 of file cloud-agent.cc.

#### 11.8.2.4 rtsp_url

```
std::string rtsp_url
```

Definition at line 334 of file cloud-agent.cc.

#### 11.8.2.5 vxg_cloud_token

```
std::string vxg_cloud_token
```

[Event stream callback class implementation]

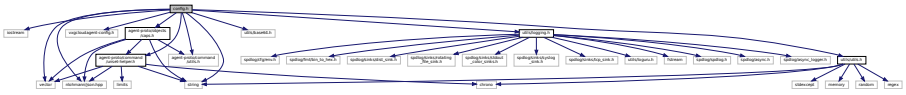
Definition at line 333 of file cloud-agent.cc.

## 11.9 compile.md File Reference

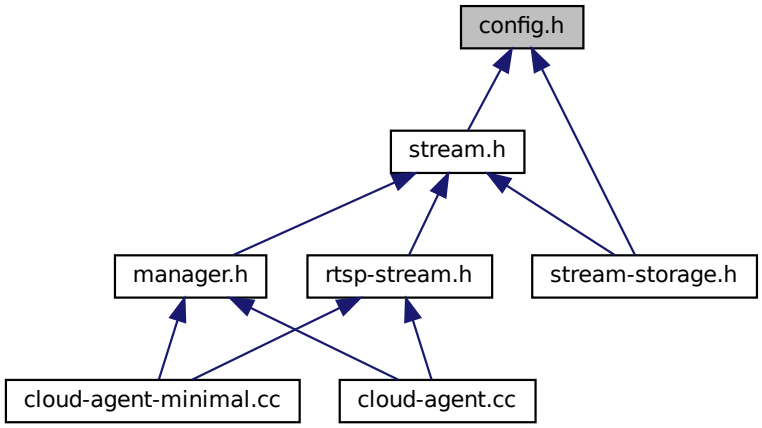
## 11.10 config.h File Reference

```
#include <iostream>
#include <string>
#include <vector>
#include <vxgcloudagent-config.h>
#include <nlohmann/json.hpp>
#include <agent-proto/command/unset-helper.h>
#include <agent-proto/command/utils.h>
#include <agent-proto/objects/caps.h>
#include <utils/base64.h>
#include <utils/logging.h>
#include <utils/utils.h>
```

Include dependency graph for config.h:



This graph shows which files directly or indirectly include this file:



## Data Structures

- struct vxg::cloud::agent::proto::video_stream_config

  *Video stream config.*
- struct vxg::cloud::agent::proto::audio_stream_config

  *Audio media stream config.*
- struct vxg::cloud::agent::proto::stream_config

  *Media stream config.*
- struct vxg::cloud::agent::proto::motion_region

  *Motion detection related structs.*
- struct vxg::cloud::agent::proto::motion_detection_config

  *Motion detection config.*
- struct vxg::cloud::agent::proto::video_config

  *Video image config.*
- struct vxg::cloud::agent::proto::video_clip_info

  *Video recoding(mp4 file) clip description,.*
- struct vxg::cloud::agent::proto::wifi_network

  *WiFi network object.*
- struct vxg::cloud::agent::proto::wifi_config

  *WiFi config.*
- struct vxg::cloud::agent::event_config

  *Event config.*
- struct vxg::cloud::agent::events_config

  *Events config, list of event_config objects.*
- struct vxg::cloud::agent::audio_config

  *Audio config.*
- struct vxg::cloud::agent::ptz_preset

  *PTZ preset.*
- struct vxg::cloud::agent::ptz_config

  *PTZ config.*
- struct vxg::cloud::agent::ptz_command

  *PTZ command.*
- struct vxg::cloud::agent::osd_config

  *OSD config.*
- struct vxg::cloud::agent::access_token

  *VXG Cloud access token.*
- struct vxg::cloud::agent::access_token::proxy_config

  *Socks proxy settings.*
- struct vxg::cloud::agent::supported_stream_config

  *Supported stream config.*
- struct vxg::cloud::agent::supported_streams_config

  *Supported streams config, list of supported_stream_config.*
- struct vxg::cloud::agent::audio_detection_config

  *5.6 audio_detection_config (CM) Current audio detection settings.*
- struct vxg::cloud::agent::audio_detection_config::audio_detection_conf_caps

## Namespaces

- vxg
- vxg::cloud
- vxg::cloud::time_spec

  *time point*
- nlohmann
- vxg::cloud::agent

  *VXG Cloud Agent namespace.*
- vxg::cloud::agent::proto

## Typedefs

- using vxg::cloud::time_spec::precision = **std::chrono::microseconds**
- template<typename T >
  using vxg::cloud::time_spec::duration = typename **std::conditional**< **std::is_same**< T, precision >::value, precision, **std::chrono::duration**< T > >::type
- using vxg::cloud::time = **std::chrono::time_point**< **std::chrono::system_clock**, time_spec::precision >
- using vxg::cloud::duration = time_spec::duration< time_spec::precision >
- typedef wifi_config vxg::cloud::agent::proto::wifi_list

  *wifi_config*

## Enumerations

- enum vxg::cloud::agent::proto::event_status { vxg::cloud::agent::proto::ES_OK, vxg::cloud::agent::proto::ES_ERROR, vxg::cloud::agent::proto::ES_INVALID }

  *Event status.*
- enum vxg::cloud::agent::proto::event_type { vxg::cloud::agent::proto::ET_MOTION, vxg::cloud::agent::proto::ET_SOUND, vxg::cloud::agent::proto::ET_NET, vxg::cloud::agent::proto::ET_RECORD, vxg::cloud::agent::proto::ET_MEMORYCARD, vxg::cloud::agent::proto::ET_WIFI, vxg::cloud::agent::proto::ET_CUSTOM, vxg::cloud::agent::proto::ET_INVALID }

  *Types of events.*
- enum vxg::cloud::agent::proto::memorycard_status { vxg::cloud::agent::proto::MCS_NONE, vxg::cloud::agent::proto::MCS_NORMAL, vxg::cloud::agent::proto::MCS_NEED_FORM vxg::cloud::agent::proto::MCS_FORMATTING, vxg::cloud::agent::proto::MCS_INITIALIZATION, vxg::cloud::agent::proto::MCS_INVALID }

  *Memory card status.*
- enum vxg::cloud::agent::proto::wifi_encryption { vxg::cloud::agent::proto::WFE_OPEN, vxg::cloud::agent::proto::WFE_WEP, vxg::cloud::agent::proto::WFE_WPA, vxg::cloud::agent::proto::WFE_WPA2, vxg::cloud::agent::proto::WFE_WPA_ENTERPRISE, vxg::cloud::agent::proto::WFE_WPA2_ENTERPRISE, vxg::cloud::agent::proto::WFE_INVALID }

  *WiFi encryption type.*
- enum vxg::cloud::agent::proto::wifi_network_state { vxg::cloud::agent::proto::WNS_UNKNOWN, vxg::cloud::agent::proto::WNS_INITIALIZE_0, vxg::cloud::agent::proto::WNS_INIT vxg::cloud::agent::proto::WNS_TRY_CONNECT, vxg::cloud::agent::proto::WNS_RECEIVING_IP, vxg::cloud::agent::proto::WNS_CONNECTED, vxg::cloud::agent::proto::WNS_ }

  *WiFi connection state.*

### Functions

- **std::string** vxg::cloud::agent::proto::name () const

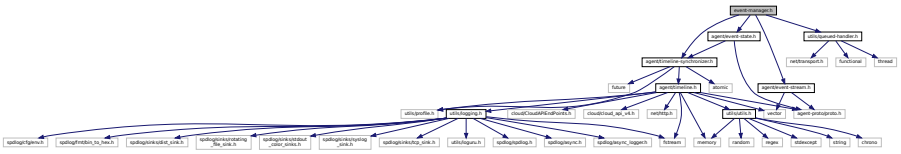
### 11.10.1 Detailed Description

VXG Cloud CM protocol objects

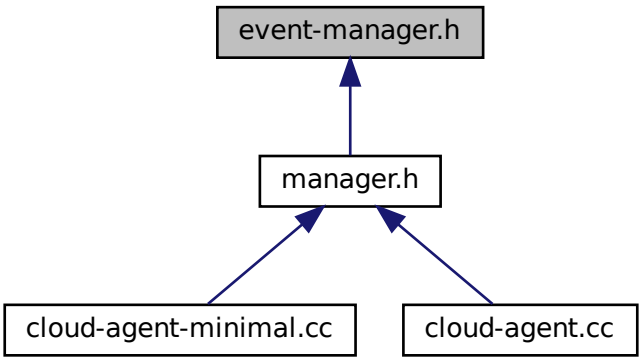
## 11.11 event-manager.h File Reference

```
#include <agent/event-state.h>
#include <agent/event-stream.h>
#include <agent/timeline-synchronizer.h>
#include <utils/queued-handler.h>
```

Include dependency graph for event-manager.h:



This graph shows which files directly or indirectly include this file:




### Data Structures

- class vxg::cloud::agent::event_manager
- struct vxg::cloud::agent::event_manager::config
- struct vxg::cloud::agent::event_manager::event_state_report_cb

### Namespaces

- vxg
- vxg::cloud
- vxg::cloud::agent

  *VXG Cloud Agent namespace.*

### Typedefs

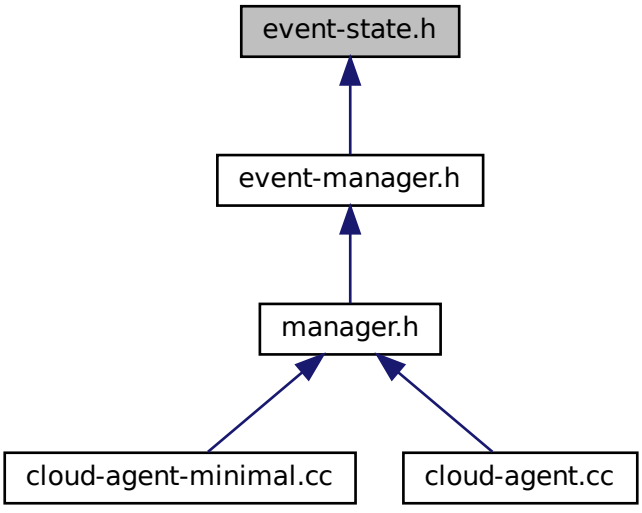
- using vxg::cloud::agent::event_manager_ptr = **std::shared_ptr**< event_manager >

## 11.12 event-state.h File Reference

```
#include <agent-proto/proto.h>
#include <agent/timeline-synchronizer.h>
```

Include dependency graph for event-state.h:

This graph shows which files directly or indirectly include this file:




### Data Structures

- class vxg::cloud::agent::event_state
- struct vxg::cloud::agent::event_state::event_state_changed_cb

### Namespaces

- vxg
- vxg::cloud
- vxg::cloud::agent

  *VXG Cloud Agent namespace.*

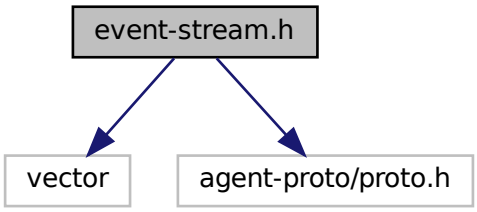
### Typedefs

- using vxg::cloud::agent::event_state_ptr = **std::shared_ptr**< event_state >

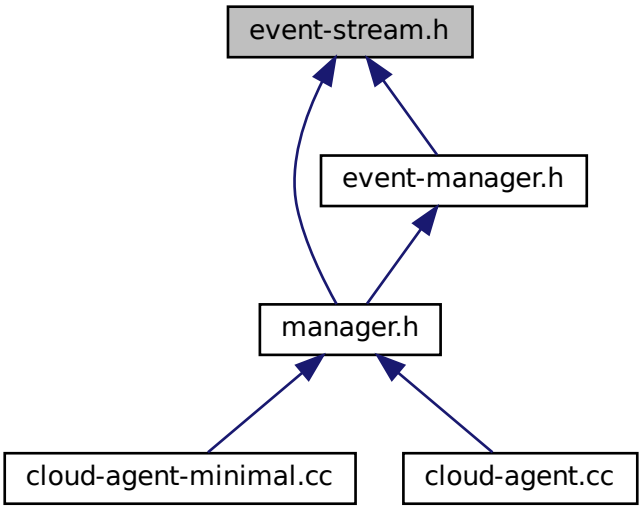
## 11.13 event-stream.h File Reference

```
#include <vector>
#include <agent-proto/proto.h>
```

Include dependency graph for event-stream.h:




This graph shows which files directly or indirectly include this file:



### Data Structures

- class vxg::cloud::agent::event_stream

  *Event stream, abstract class for event generation.*

### Namespaces

- vxg
- vxg::cloud
- vxg::cloud::agent

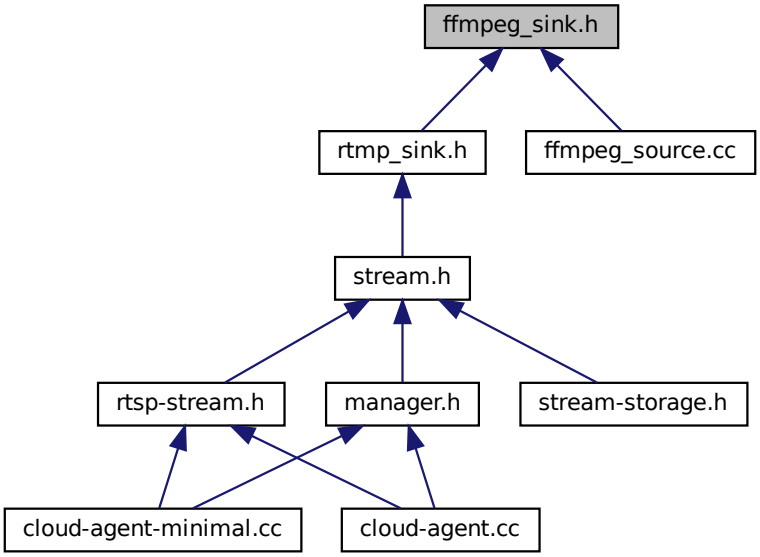
  *VXG Cloud Agent namespace.*

## 11.14 ffmpeg_sink.h File Reference

```
#include "base_streamer.h"
#include "ffmpeg_common.h"
```

Include dependency graph for ffmpeg_sink.h:

This graph shows which files directly or indirectly include this file:



### Data Structures

- class vxg::media::ffmpeg::Sink

  *Base ffmpeg sink class.*

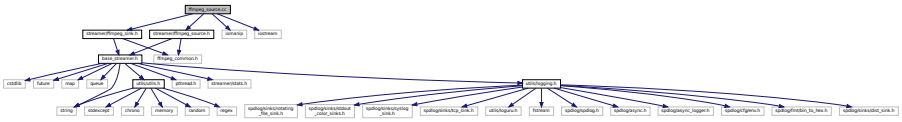
### Namespaces

- vxg
- vxg::media
- vxg::media::ffmpeg

## 11.15 ffmpeg_source.cc File Reference

```
#include <streamer/ffmpeg_sink.h>
#include <streamer/ffmpeg_source.h>
#include <iomanip>
#include <iostream>
```

Include dependency graph for ffmpeg_source.cc:



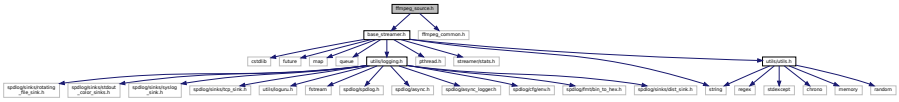
### Namespaces

- vxg
- vxg::media

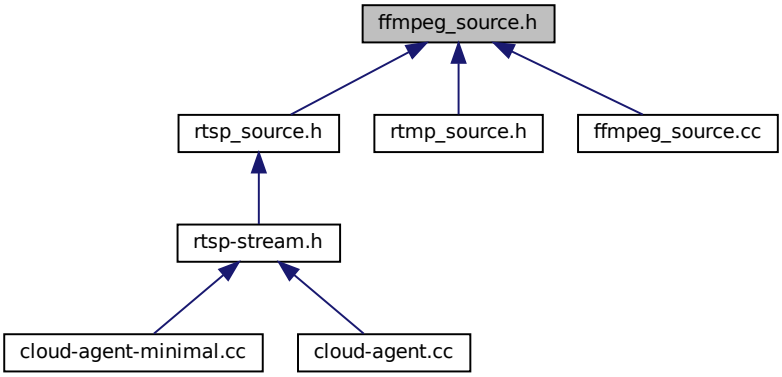
## 11.16 ffmpeg_source.h File Reference

```
#include "base_streamer.h"
#include "ffmpeg_common.h"
```

Include dependency graph for ffmpeg_source.h:



This graph shows which files directly or indirectly include this file:




### Data Structures

- class vxg::media::ffmpeg::Source

  *Base ffmpeg source class.*

### Namespaces

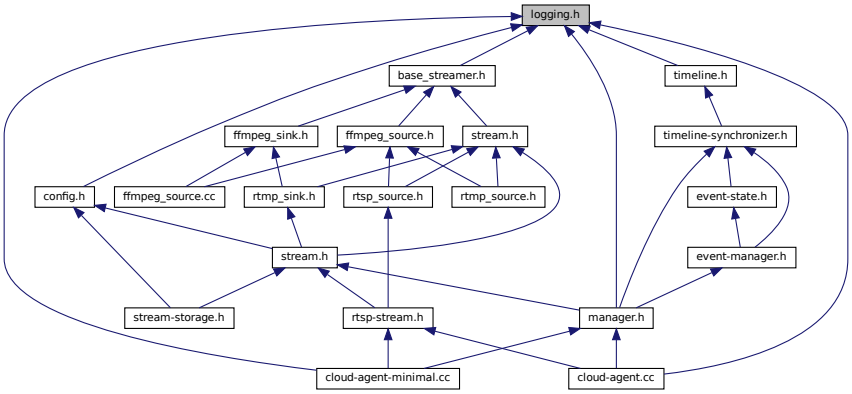
- vxg
- vxg::media
- vxg::media::ffmpeg

## 11.17 logging.h File Reference

```
#include <spdlog/spdlog.h>
#include <spdlog/async.h>
#include <spdlog/async_logger.h>
#include <spdlog/cfg/env.h>
#include <spdlog/fmt/bin_to_hex.h>
#include <spdlog/sinks/dist_sink.h>
#include <spdlog/sinks/rotating_file_sink.h>
#include <spdlog/sinks/stdout_color_sinks.h>
#include <spdlog/sinks/syslog_sink.h>
#include <spdlog/sinks/tcp_sink.h>
#include <utils/loguru.h>
#include <fstream>
```

Include dependency graph for logging.h:

This graph shows which files directly or indirectly include this file:




## Data Structures

- class vxg::logger

  *Logger class, current implementation based on spdlog.*
- struct vxg::logger::options

## Namespaces

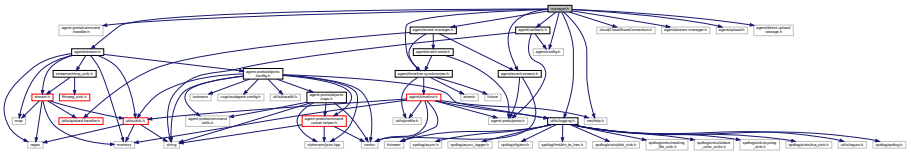
- vxg

# 11.18 mainpage.md File Reference

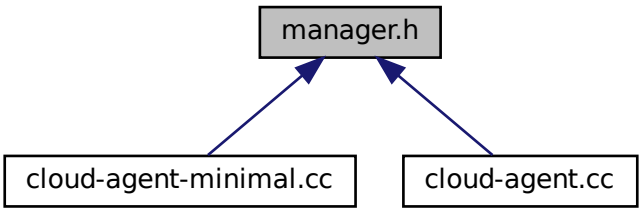
# 11.19 manager.h File Reference

```
#include <agent-proto/command-handler.h>
#include <agent/callback.h>
#include <agent/config.h>
#include <agent/event-stream.h>
#include <cloud/CloudShareConnection.h>
#include <agent/stream-manager.h>
#include <agent/stream.h>
#include <agent/upload.h>
#include <net/http.h>
#include <utils/logging.h>
#include <agent/direct-upload-storage.h>
#include <agent/event-manager.h>
#include <agent/timeline-synchronizer.h>
```

Include dependency graph for manager.h:



This graph shows which files directly or indirectly include this file:




### Data Structures

- class vxg::cloud::agent::manager

  *VXG Cloud agent manager class.*

### Namespaces

- vxg
- vxg::cloud
- vxg::cloud::agent

  *VXG Cloud Agent namespace.*

### Functions

- **std::string** vxg::cloud::agent::version ()

  *VXG Cloud Agent library version.*

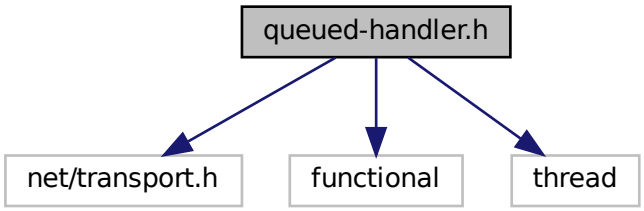
## 11.20 meson.build File Reference

## 11.21 queued-handler.h File Reference

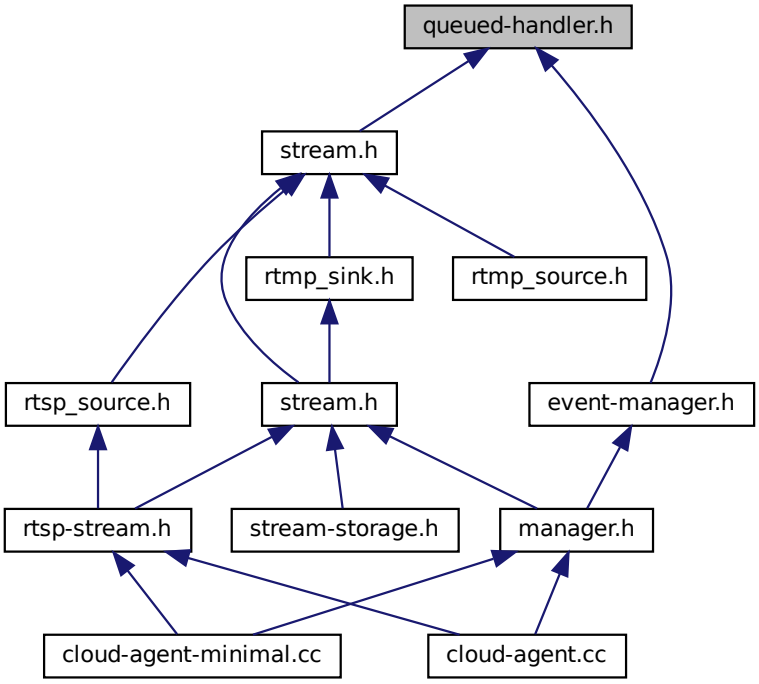
```
#include <net/transport.h>
#include <functional>
```

```
#include <thread>
```

Include dependency graph for queued-handler.h:




This graph shows which files directly or indirectly include this file:




## Data Structures

- class vxg::cloud::utils::queued_async_handler< T >

## Namespaces

- vxg
- vxg::cloud
- vxg::cloud::utils

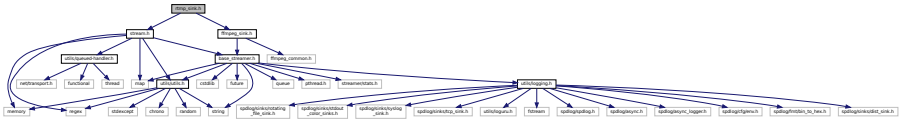
### Typedefs

- template<class T >
  using vxg::cloud::utils::queued_async_handler_ptr = **std::shared_ptr**< queued_async_handler< T > >

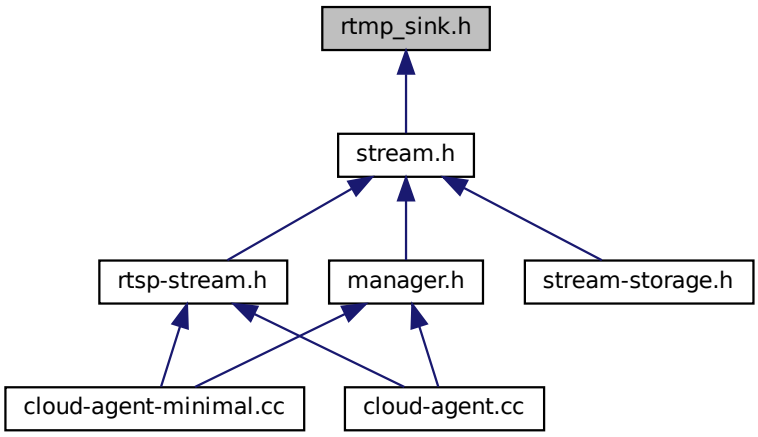
## 11.22 rtmp_sink.h File Reference

```
#include "ffmpeg_sink.h"
#include "stream.h"
```

Include dependency graph for rtmp_sink.h:



This graph shows which files directly or indirectly include this file:




### Data Structures

- class vxg::media::rtmp_sink

  *RTMP sink class.*

### Namespaces

- vxg
- vxg::media

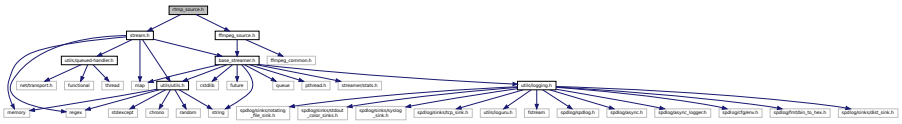
### 11.22.1 Detailed Description

RTMP sink

## 11.23 rtmp_source.h File Reference

```
#include "ffmpeg_source.h"
#include "stream.h"
```

Include dependency graph for rtmp_source.h:



### Data Structures

- class vxg::media::rtmp_source

  *RTMP source class.*

### Namespaces

- vxg
- vxg::media

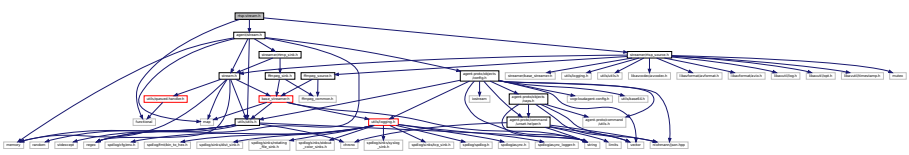
### 11.23.1 Detailed Description

RTMP source

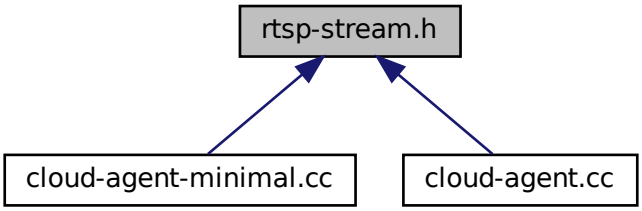
## 11.24 rtsp-stream.h File Reference

```
#include <functional>
#include <agent/stream.h>
#include <streamer/rtsp_source.h>
```

Include dependency graph for rtsp-stream.h:



This graph shows which files directly or indirectly include this file:




### Data Structures

- class vxg::cloud::agent::media::rtsp_stream

  *Implementation of the media::stream with RTSP source and NIY stubs.*

### Namespaces

- vxg
- vxg::cloud
- vxg::cloud::agent

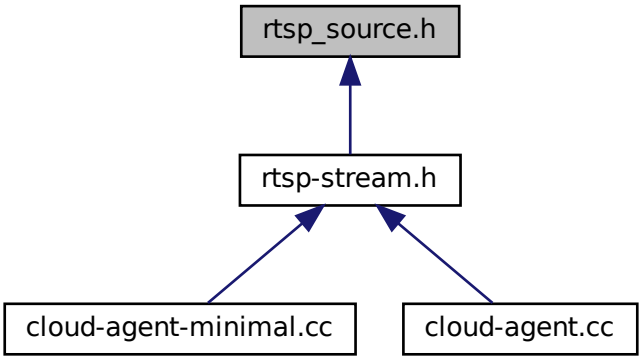
  *VXG Cloud Agent namespace.*
- vxg::cloud::agent::media

## 11.25 rtsp_source.h File Reference

```
#include "ffmpeg_source.h"
#include "stream.h"
```

Include dependency graph for rtsp_source.h:

This graph shows which files directly or indirectly include this file:




### Data Structures

- class vxg::media::rtsp_source
  *RTSP source class.*

### Namespaces

- vxg
- vxg::media

### Typedefs

- using vxg::media::rtsp_source_ptr = **std::shared_ptr**< rtsp_source >

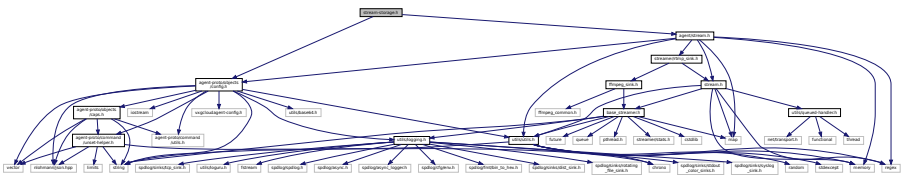
### 11.25.1 Detailed Description

RTSP source

## 11.26 stream-storage.h File Reference

```
#include <agent-proto/objects/config.h>
#include <agent/stream.h>
```

Include dependency graph for stream-storage.h:



### Data Structures

- class vxg::cloud::stream_storage

### Namespaces

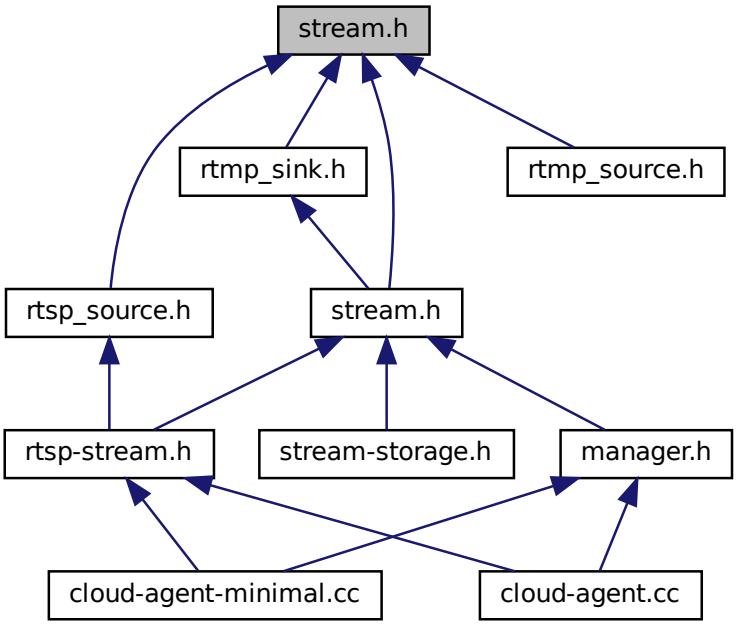
- vxg
- vxg::cloud

## 11.27 stream.h File Reference

```
#include <map>
#include <memory>
#include <regex>
#include <streamer/base_streamer.h>
#include <utils/queued-handler.h>
#include <utils/utils.h>
```

Include dependency graph for streamer/stream.h:

This graph shows which files directly or indirectly include this file:



### Data Structures

- struct vxg::media::stream_error::report

  *Media stream error report simple object.*

- class vxg::media::stream

  *base media stream abstract class*

### Namespaces

- vxg
- vxg::media
- vxg::media::stream_error

  *Media stream error namespace.*

### Enumerations

- enum vxg::media::stream_error::origin : int { vxg::media::stream_error::origin::O_SOURCE, vxg::media::stream_error::origin::O vxg::media::stream_error::origin::O_UNKNOWN }

  *Origin of the error.*

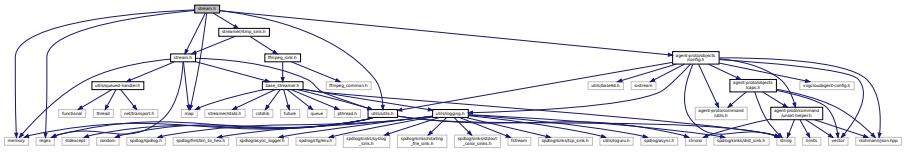
- enum vxg::media::stream_error::error : int { vxg::media::stream_error::error::E_CONNECT, vxg::media::stream_error::error::E_ vxg::media::stream_error::error::E_UNKNOWN }

  *Error code.*

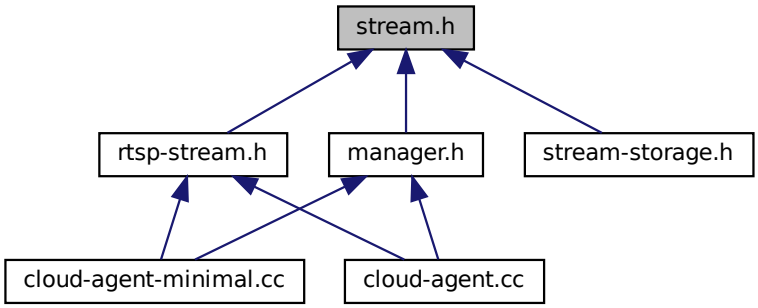
## 11.28 stream.h File Reference

```
#include <map>
#include <memory>
#include <regex>
#include <agent-proto/objects/config.h>
#include <streamer/rtmp_sink.h>
#include <streamer/stream.h>
#include <utils/utils.h>
```

Include dependency graph for agent/stream.h:



This graph shows which files directly or indirectly include this file:




### Data Structures

- class vxg::cloud::agent::media::stream_callbacks

  *Cloud agent media stream callbacks abstract class.*
- class vxg::cloud::agent::media::stream_callbacks_stub
- class vxg::cloud::agent::media::stream

  *Cloud agent media stream abstract class.*

### Namespaces

- vxg
- vxg::cloud
- vxg::cloud::agent

  *VXG Cloud Agent namespace.*
- vxg::cloud::agent::media

### Typedefs

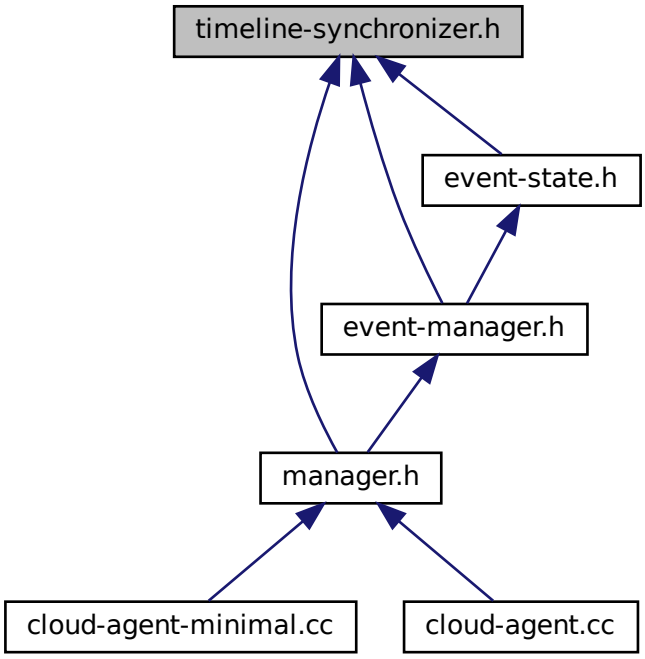
- using vxg::cloud::agent::media::stream_ptr = **std::shared_ptr**< stream >

## 11.29 timeline-synchronizer.h File Reference

```
#include <utils/profile.h>
#include <atomic>
#include <future>
#include <agent/timeline.h>
```

Include dependency graph for timeline-synchronizer.h:

This graph shows which files directly or indirectly include this file:




## Data Structures

- class vxg::cloud::agent::synchronizer
- struct vxg::cloud::agent::synchronizer::config
- struct vxg::cloud::agent::synchronizer::segmenter
- struct vxg::cloud::agent::synchronizer::sync_request

## Namespaces

- vxg
- vxg::cloud
- vxg::cloud::agent

  *VXG Cloud Agent namespace.*

## Typedefs

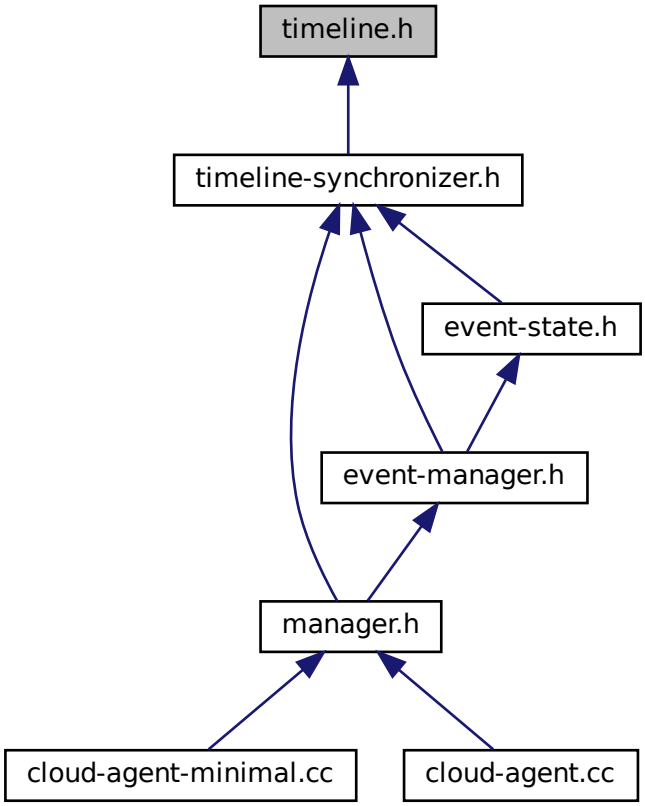
- using vxg::cloud::agent::synchronizer_ptr = **std::shared_ptr**< synchronizer >

## 11.30 timeline.h File Reference

```
#include <agent-proto/proto.h>
#include <net/http.h>
#include <utils/logging.h>
#include <utils/profile.h>
#include <utils/utils.h>
#include <cloud/CloudAPIEndPoints.h>
#include <cloud/cloud_api_v4.h>
#include <fstream>
#include <memory>
#include <vector>
```

Include dependency graph for timeline.h:

This graph shows which files directly or indirectly include this file:



### Data Structures

- struct vxg::cloud::period
- class vxg::cloud::timed_storage
- struct vxg::cloud::timed_storage::item
- class vxg::cloud::cloud_storage
- class vxg::cloud::timeline< T >
- class vxg::cloud::sync::timeline

### Namespaces

- vxg
- vxg::cloud
- vxg::cloud::sync

### Typedefs

- typedef **std::shared_ptr**< timed_storage > vxg::cloud::timed_storage_ptr
- using vxg::cloud::sync::timeline_ptr = **std::shared_ptr**< timeline >

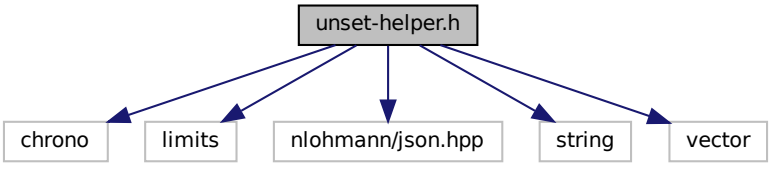
### Functions

- bool vxg::cloud::operator< (const timed_storage::item_ptr l, const timed_storage::item_ptr r)

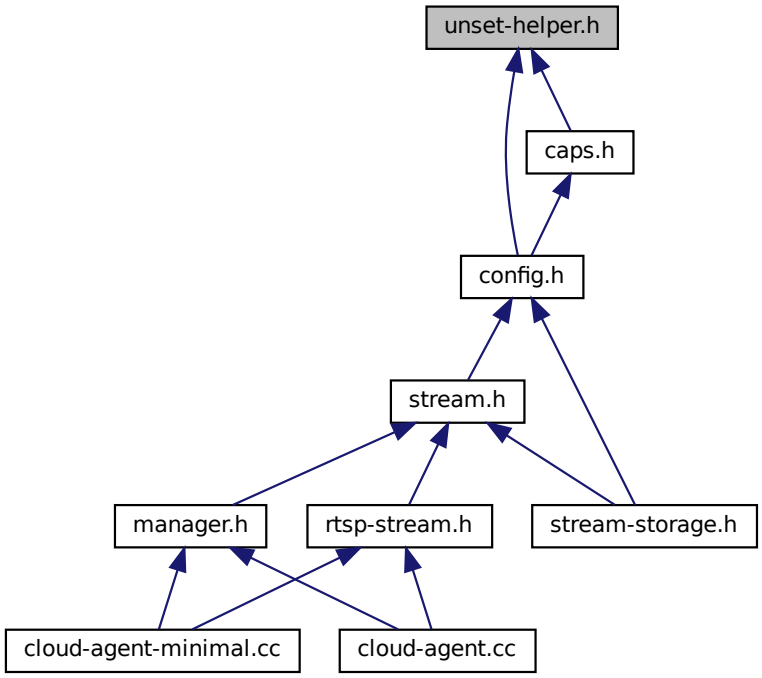
## 11.31 unset-helper.h File Reference

```
#include <chrono>
#include <limits>
#include <nlohmann/json.hpp>
#include <string>
#include <vector>
```

Include dependency graph for unset-helper.h:



This graph shows which files directly or indirectly include this file:




## Data Structures

- struct alter_bool

  *alternative bool class Standard bool type has two states, this class adds 3rd state - undefined.*

## Namespaces

- vxg
- vxg::cloud
- vxg::cloud::time_spec

  *time point*

## Functions

- **std::string** unset_value_for_impl ( **std::string** ∗)
- int unset_value_for_impl (int ∗)

  *Returns value of int type that can be treated as unset.*
- double unset_value_for_impl (double ∗)
- uint64_t unset_value_for_impl (uint64_t ∗)
- int64_t unset_value_for_impl (int64_t ∗)
- vxg::cloud::time unset_value_for_impl (vxg::cloud::time ∗)
- vxg::cloud::duration unset_value_for_impl (vxg::cloud::duration ∗)

- nlohmann::json unset_value_for_impl (nlohmann::json *)
- template<typename T >
  T unset_value_for ()

  *Template function which returns object value treated as 'unset' or uninitialized.*
- template<typename T >
  **std::vector**< T > unset_value_for_impl ( **std::vector**< T > *)
- template<typename T >
  T unset_value_for_impl (T *)
- template<typename T >
  bool __is_unset (T)

  *Used for objects constructed from json, helps to check if original json object has specific field.*
- template<> bool __is_unset< int > (int t)

  *Predicate function checks if int value was not initialized.*
- template<> bool __is_unset< std::string > ( **std::string** t)
- template<> bool __is_unset< double > (double t)
- template<> bool __is_unset< vxg::cloud::time > (vxg::cloud::time t)
- template<> bool __is_unset< vxg::cloud::duration > (vxg::cloud::duration t)
- template<> bool __is_unset< nlohmann::json > (nlohmann::json t)
- template<> bool __is_unset< std::nullptr_t > ( **std::nullptr_t** t)
- template<typename T >
  bool __is_unset (nlohmann::json t)
- template<> bool __is_unset< alter_bool > (alter_bool t)

## Variables

- const **std::string** UnsetString
- const vxg::cloud::time UnsetTime
- const vxg::cloud::duration UnsetDuration
- const int UnsetInt
- const double UnsetFloat
- const double UnsetDouble
- const uint64_t UnsetUInt64
- const int64_t UnsetInt64

### 11.31.1 Function Documentation

#### 11.31.1.1 __is_unset() [1/2]

```
template<typename T >
bool __is_unset (
            nlohmann::json t )  [inline]
```

Definition at line 155 of file unset-helper.h.

#### 11.31.1.2 __is_unset() [2/2]

```
template<typename T >
bool __is_unset (
             T  )  [inline]
```

Used for objects constructed from json, helps to check if original json object has specific field.

You need to declare template specification for new types.

**See also**

__is_unset<int>(int t)

**Template Parameters**

| | |
|---|---|
| *T* | object of type |

**Returns**

true If object's field was actually set during construction, i.e. original json has such field in it's body.

false If object's field wasn't set, original json has no such field. It's also possible that json has such field but its value is set to value treated as unset value.

**See also**

__is_unset<>()

Definition at line 104 of file unset-helper.h.

#### 11.31.1.3 __is_unset< alter_bool >()

```
template<>
bool __is_unset< alter_bool > (
             alter_bool t )  [inline]
```

Definition at line 219 of file unset-helper.h.

#### 11.31.1.4 __is_unset< double >()

```
template<>
bool __is_unset< double > (
             double t )  [inline]
```

Definition at line 126 of file unset-helper.h.

#### 11.31.1.5 __is_unset< int >()

```
template<>
bool __is_unset< int > (
             int t )  [inline]
```

Predicate function checks if int value was not initialized.

**Template Parameters**

| | |
|---|---|
| *int* | |

**Parameters**

| | |
|---|---|
| *t* | |

**Returns**

true value is uninitalized.

false value is initialized.

**See also**

unset_value_for<int>()

Definition at line 116 of file unset-helper.h.

### 11.31.1.6 __is_unset< nlohmann::json >()

```
template<>
bool __is_unset< nlohmann::json > (
            nlohmann::json t )  [inline]
```

Definition at line 141 of file unset-helper.h.

### 11.31.1.7 __is_unset< std::nullptr_t >()

```
template<>
bool __is_unset<  std::nullptr_t > (
              std::nullptr_t t )  [inline]
```

Definition at line 150 of file unset-helper.h.

### 11.31.1.8 __is_unset< std::string >()

```
template<>
bool __is_unset<  std::string > (
              std::string t )  [inline]
```

Definition at line 121 of file unset-helper.h.

#### 11.31.1.9 __is_unset< vxg::cloud::duration >()

```
template<>
bool __is_unset< vxg::cloud::duration > (
            vxg::cloud::duration t )  [inline]
```

Definition at line 136 of file unset-helper.h.

#### 11.31.1.10 __is_unset< vxg::cloud::time >()

```
template<>
bool __is_unset< vxg::cloud::time > (
            vxg::cloud::time t )  [inline]
```

Definition at line 131 of file unset-helper.h.

#### 11.31.1.11 unset_value_for()

```
template<typename T >
T unset_value_for ( )
```

Template function which returns object value treated as 'unset' or uninitialized.

**Template Parameters**

| | |
|---|---|
| *T* | |

**Returns**

T Value equals to conditionally 'unset'.

Definition at line 73 of file unset-helper.h.

#### 11.31.1.12 unset_value_for_impl() [1/10]

```
double unset_value_for_impl (
            double *  )  [inline]
```

Definition at line 39 of file unset-helper.h.

#### 11.31.1.13 unset_value_for_impl() [2/10]

```
int unset_value_for_impl (
            int *  )  [inline]
```

Returns value of int type that can be treated as unset.

**Returns**

int

Definition at line 35 of file unset-helper.h.

#### 11.31.1.14 unset_value_for_impl() [3/10]

```
int64_t unset_value_for_impl (
            int64_t *  )  [inline]
```

Definition at line 47 of file unset-helper.h.

#### 11.31.1.15 unset_value_for_impl() [4/10]

```
nlohmann::json unset_value_for_impl (
            nlohmann::json *  )  [inline]
```

Definition at line 62 of file unset-helper.h.

#### 11.31.1.16 unset_value_for_impl() [5/10]

```
 std::string unset_value_for_impl (
             std::string *  )  [inline]
```

Definition at line 27 of file unset-helper.h.

#### 11.31.1.17 unset_value_for_impl() [6/10]

```
template<typename T >
std::vector<T> unset_value_for_impl (
             std::vector< T > *  )  [inline]
```

Definition at line 78 of file unset-helper.h.

#### 11.31.1.18 unset_value_for_impl() [7/10]

```
template<typename T >
T unset_value_for_impl (
             T *  )
```

Definition at line 85 of file unset-helper.h.

#### 11.31.1.19 unset_value_for_impl() [8/10]

```
uint64_t unset_value_for_impl (
             uint64_t *  )  [inline]
```

Definition at line 43 of file unset-helper.h.

#### 11.31.1.20 unset_value_for_impl() [9/10]

```
vxg::cloud::duration unset_value_for_impl (
             vxg::cloud::duration *  )  [inline]
```

Definition at line 57 of file unset-helper.h.

#### 11.31.1.21 unset_value_for_impl() [10/10]

```
vxg::cloud::time unset_value_for_impl (
             vxg::cloud::time *  )  [inline]
```

Definition at line 51 of file unset-helper.h.

### 11.31.2 Variable Documentation

#### 11.31.2.1 UnsetDouble

```
const double UnsetDouble
```

Definition at line 229 of file unset-helper.h.

#### 11.31.2.2 UnsetDuration

```
const vxg::cloud::duration UnsetDuration
```

Definition at line 225 of file unset-helper.h.

#### 11.31.2.3 UnsetFloat

```
const double UnsetFloat
```

Definition at line 228 of file unset-helper.h.

#### 11.31.2.4 UnsetInt

```
const int UnsetInt
```

Definition at line 227 of file unset-helper.h.

#### 11.31.2.5 UnsetInt64

```
const int64_t UnsetInt64
```

Definition at line 231 of file unset-helper.h.

#### 11.31.2.6 UnsetString

```
const  std::string UnsetString
```

Definition at line 223 of file unset-helper.h.

#### 11.31.2.7 UnsetTime

```
const vxg::cloud::time UnsetTime
```

Definition at line 224 of file unset-helper.h.

#### 11.31.2.8 UnsetUInt64

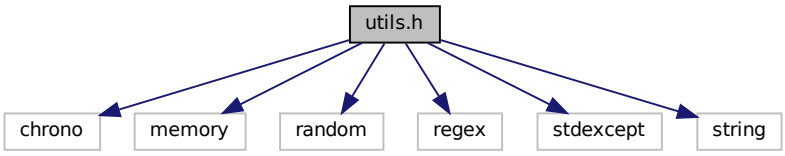
```
const uint64_t UnsetUInt64
```

Definition at line 230 of file unset-helper.h.

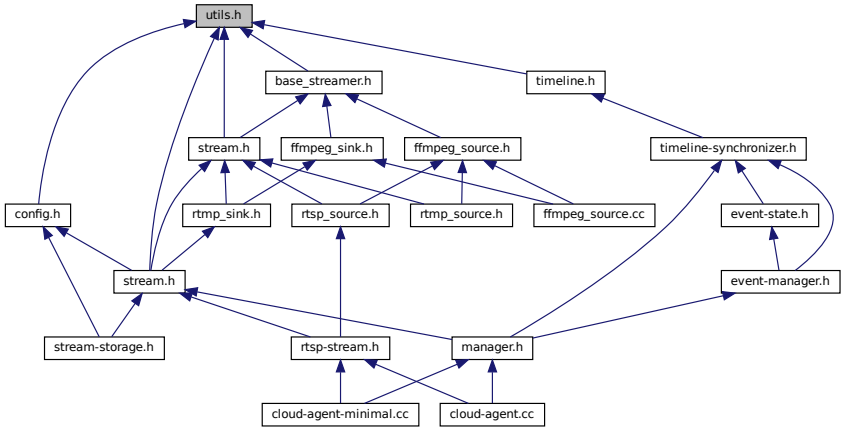
## 11.32 utils.h File Reference

```
#include <chrono>
#include <memory>
#include <random>
#include <regex>
#include <stdexcept>
#include <string>
```

Include dependency graph for utils.h:




This graph shows which files directly or indirectly include this file:




### Data Structures

- struct vxg::cloud::utils::uri
- struct vxg::cloud::utils::motion::map

## Namespaces

- vxg
- vxg::cloud
- vxg::cloud::time_spec
  *time point*
- vxg::cloud::utils
- vxg::cloud::utils::time
- vxg::cloud::utils::motion
- vxg::cloud::utils::gcc_abi
- std

## Typedefs

- using vxg::cloud::time_spec::precision_ratio = **std::micro**

## Functions

- void vxg::cloud::utils::set_thread_name ( **std::string** name)
- cloud::time vxg::cloud::utils::time::now ()
- **std::string** vxg::cloud::utils::time::now_ISO8601_UTC ()
- **std::string** vxg::cloud::utils::time::now_ISO8601_UTC_packed ()
- **std::string** vxg::cloud::utils::time::to_iso_8601 (cloud::time t)
- **std::string** vxg::cloud::utils::time::to_iso (cloud::time t)
- **std::string** vxg::cloud::utils::time::to_iso2 (cloud::time t)
- **std::string** vxg::cloud::utils::time::to_iso_packed (cloud::time t)
- **std::string** vxg::cloud::utils::time::to_iso_local (cloud::time t)
- cloud::time vxg::cloud::utils::time::from_double (double t)
- double vxg::cloud::utils::time::to_double (cloud::time t)
- cloud::time vxg::cloud::utils::time::from_iso ( **std::string** st)
- cloud::time vxg::cloud::utils::time::from_iso2 ( **std::string** st)
- cloud::time vxg::cloud::utils::time::from_iso_packed ( **std::string** st)
- bool vxg::cloud::utils::time::iso_time_valid (const **std::string** &s)
- cloud::time vxg::cloud::utils::time::null ()
- cloud::time vxg::cloud::utils::time::epoch ()
- cloud::time vxg::cloud::utils::time::max ()
- bool vxg::cloud::utils::time::is_iso_packed (const **std::string** &s)
- bool vxg::cloud::utils::time::is_iso (const **std::string** &s)
- template<typename... Args>
  **std::string** vxg::cloud::utils::string_format (const **std::string** &format, Args... args)
- **std::string** vxg::cloud::utils::string_trim (const **std::string** &name, **std::regex** regx)
- **std::string** vxg::cloud::utils::string_trim (const **std::string** &name)
- **std::vector**< **std::string** > vxg::cloud::utils::string_split (const **std::string** &s, char delimiter)
- bool vxg::cloud::utils::string_startswith ( **std::string** const &fullString, **std::string** const &start)
- bool vxg::cloud::utils::string_endswith ( **std::string** const &fullString, **std::string** const &ending)
- bool vxg::cloud::utils::string_replace ( **std::string** &str, const **std::string** &from, const **std::string** &to)
- **std::string** vxg::cloud::utils::string_urlencode (const **std::string** &value)
- **std::string** vxg::cloud::utils::string_urldecode (const **std::string** &text)
- **std::string** vxg::cloud::utils::string_tolower (const **std::string** &s)
- **std::string** vxg::cloud::utils::string_toupper (const **std::string** &s)
- bool vxg::cloud::utils::string_contains ( **std::string** s, char c)
- bool vxg::cloud::utils::string_contains ( **std::string** s, **std::string** substring)
- **std::string** vxg::cloud::utils::dirname (const **std::string** &filepath)
- **std::string** vxg::cloud::utils::gcc_abi::demangle ( **std::string** name)
- **std::string** vxg::cloud::utils::random_string (size_t length=32)
- template<typename T , typename... CONSTRUCTOR_ARGS>
  **std::unique_ptr**< T > std::make_unique (CONSTRUCTOR_ARGS &&... constructor_args)

# Index


__BASE_STREAMER_H
    base_streamer.h, 301
__is_unset
    unset-helper.h, 333
__is_unset< alter_bool >
    unset-helper.h, 334
__is_unset< double >
    unset-helper.h, 334
__is_unset< int >
    unset-helper.h, 334
__is_unset< nlohmann::json >
    unset-helper.h, 335
__is_unset< std::nullptr_t >
    unset-helper.h, 335
__is_unset< std::string >
    unset-helper.h, 335
__is_unset< vxg::cloud::duration >
    unset-helper.h, 335
__is_unset< vxg::cloud::time >
    unset-helper.h, 336
__notify_record_event
    vxg::cloud::agent::manager, 164
__transport_to_ff
    vxg::media::rtsp_source, 215
_squash_periods
    vxg::cloud::sync::timeline, 275
    vxg::cloud::timeline< T >, 273
_update_storage_status
    vxg::cloud::agent::manager, 164
~ISink
    vxg::media::Streamer::ISink, 139
~Sink
    vxg::media::ffmpeg::Sink, 225
~Source
    vxg::media::ffmpeg::Source, 231
~cloud_storage
    vxg::cloud::cloud_storage, 107
~event_manager
    vxg::cloud::agent::event_manager, 118
~event_state
    vxg::cloud::agent::event_state, 121
~event_state_changed_cb
    vxg::cloud::agent::event_state::event_state_changed_cb, 124
~event_state_report_cb
    vxg::cloud::agent::event_manager::event_state_report_cb, 127
~event_stream
    vxg::cloud::agent::event_stream, 131
~queued_async_handler
    vxg::cloud::utils::queued_async_handler< T >, 203
~rtsp_stream
    vxg::cloud::agent::media::rtsp_stream, 218
~segmenter
    vxg::cloud::agent::synchronizer::segmenter, 220
~stream
    vxg::cloud::agent::media::stream, 241
    vxg::media::stream, 237
~stream_callbacks
    vxg::cloud::agent::media::stream_callbacks, 243
~stream_callbacks_stub
    vxg::cloud::agent::media::stream_callbacks_stub, 249
~stream_storage
    vxg::cloud::stream_storage, 257
~timed_storage
    vxg::cloud::timed_storage, 270
~timeline
    vxg::cloud::sync::timeline, 275

A_BOTTOM
    vxg::cloud::agent::proto, 53
A_INVALID
    vxg::cloud::agent::proto, 53
A_LEFT
    vxg::cloud::agent::proto, 53
A_RIGHT
    vxg::cloud::agent::proto, 53
A_STOP
    vxg::cloud::agent::proto, 53
A_TOP
    vxg::cloud::agent::proto, 53
A_ZOOM_IN
    vxg::cloud::agent::proto, 53
A_ZOOM_OUT
    vxg::cloud::agent::proto, 53
AC_AAC
    vxg::media::Streamer::StreamInfo, 260
AC_G711_A
    vxg::media::Streamer::StreamInfo, 260
AC_G711_U
    vxg::media::Streamer::StreamInfo, 260
AC_G726
    vxg::media::Streamer::StreamInfo, 260
AC_LPCM
    vxg::media::Streamer::StreamInfo, 260
AC_OPUS
    vxg::media::Streamer::StreamInfo, 260

AC_UNKNOWN
vxg::media::Streamer::StreamInfo, 260
action
vxg::cloud::agent::ptz_command, 199
vxg::cloud::agent::ptz_preset, 202
actions
vxg::cloud::agent::ptz_config, 200
active
vxg::cloud::agent::event_config, 115
vxg::cloud::agent::event_state, 122
AF_AAC
vxg::cloud::agent::proto, 51
AF_ADPCM
vxg::cloud::agent::proto, 51
AF_G711A
vxg::cloud::agent::proto, 51
AF_G711U
vxg::cloud::agent::proto, 51
AF_INVALID
vxg::cloud::agent::proto, 51
AF_MP3
vxg::cloud::agent::proto, 51
AF_NELLY
vxg::cloud::agent::proto, 51
AF_NELLY16
vxg::cloud::agent::proto, 51
AF_NELLY8
vxg::cloud::agent::proto, 51
AF_OPUS
vxg::cloud::agent::proto, 51
AF_RAW
vxg::cloud::agent::proto, 51
AF_SPEEX
vxg::cloud::agent::proto, 51
AFF_AU_G711U
vxg::cloud::agent::proto, 50
AFF_INVALID
vxg::cloud::agent::proto, 50
AFF_MP3
vxg::cloud::agent::proto, 50
AFF_WAV_PCM
vxg::cloud::agent::proto, 50
agent_config
cloud-agent-minimal.cc, 306
cloud-agent.cc, 309
alignment
vxg::cloud::agent::osd_config, 191
vxg::cloud::agent::proto::osd_caps, 187
alter_bool, 73
alter_bool, 74
B_FALSE, 74
B_INVALID, 74
B_TRUE, 74
from_json, 75
n_alter_bool, 73
operator bool, 74
operator=, 74
to_json, 75
val, 75
api_uri
vxg::cloud::agent::access_token, 72
app-dev.md, 299
arm-example.txt, 299
async_ready
vxg::cloud::timed_storage::item, 152
async_store_finished_cb
vxg::cloud::sync::timeline, 274
vxg::cloud::timed_storage, 270
async_store_is_canceled_cb
vxg::cloud::sync::timeline, 274
vxg::cloud::timed_storage, 270
ASYNC_TCP
vxg::media::rtsp_source, 214
attach_qos_report_to_motion
vxg::cloud::agent::event_manager::config, 108
AUDIO
vxg::media::Streamer, 68
audio
vxg::cloud::agent::proto::stream_config, 255
vxg::cloud::agent::supported_stream_config, 262
vxg::media::Streamer::StreamInfo, 261
audio_es
vxg::cloud::agent::supported_streams_config, 264
audio_file_format
vxg::cloud::agent::proto, 50
audio_file_formats
vxg::cloud::agent::proto::audio_caps, 76
audio_format
vxg::cloud::agent::proto, 50
AUDIO_SEQ_HDR
vxg::media::Streamer, 68
AudioCodec
vxg::media::Streamer::StreamInfo, 259

B_FALSE
alter_bool, 74
B_INVALID
alter_bool, 74
B_TRUE
alter_bool, 74
backward
vxg::cloud::agent::proto::audio_caps, 77
backward_formats
vxg::cloud::agent::proto::audio_caps, 77
base_streamer.h, 299
__BASE_STREAMER_H, 301
begin
vxg::cloud::period, 196
bitrate
vxg::media::Streamer::StreamInfo::AudioInfo, 86
vxg::media::Streamer::StreamInfo::VideoInfo, 294
bkg_color
vxg::cloud::agent::osd_config, 191
vxg::cloud::agent::proto::osd_caps, 187
bkg_transp
vxg::cloud::agent::osd_config, 191
vxg::cloud::agent::proto::osd_caps, 187

brightness
vxg::cloud::agent::proto::video_caps, 280
vxg::cloud::agent::proto::video_config, 287
brt
vxg::cloud::agent::proto::audio_stream_config, 85
vxg::cloud::agent::proto::stream_caps::caps_audio_object, 101
vxg::cloud::agent::proto::stream_caps::caps_video_object, 103
vxg::cloud::agent::proto::video_stream_config, 291
build-system.md, 301

callback.h, 301
cam_base_uri
vxg::cloud::agent::access_token, 72
CANCELED
vxg::cloud::agent::synchronizer, 267
canceled
vxg::cloud::agent::synchronizer::segmenter, 221
caps
vxg::cloud::agent::audio_config, 79
vxg::cloud::agent::audio_detection_config, 83
vxg::cloud::agent::event_config, 115
vxg::cloud::agent::osd_config, 191
vxg::cloud::agent::proto::motion_detection_config, 180
vxg::cloud::agent::proto::video_config, 287
caps.h, 302
ignore_exception, 304
json, 305
caps_audio
vxg::cloud::agent::proto::stream_caps, 253
caps_eq
vxg::cloud::agent::event_config, 114
caps_video
vxg::cloud::agent::proto::stream_caps, 254
category
vxg::cloud::timed_storage::item, 153
channels
vxg::media::Streamer::StreamInfo::AudioInfo, 87
chunks_done
vxg::cloud::agent::synchronizer::segmenter, 221
chunks_failed
vxg::cloud::agent::synchronizer::segmenter, 221
chunks_planned
vxg::cloud::agent::synchronizer::segmenter, 221
clear
vxg::cloud::period, 195
vxg::cloud::timed_storage::item, 153
cloud-agent-minimal.cc, 305
agent_config, 306
main, 306
parse_args, 306
props, 306
quit, 307
rtsp_url, 307
signal_handler, 306
vxg_cloud_token, 307
cloud-agent.cc, 307
agent_config, 309
main, 308
parse_args, 308
props, 309
quit, 309
rtsp_url, 309
signal_handler, 308
vxg_cloud_token, 309
cloud_storage
vxg::cloud::cloud_storage, 107
code
vxg::media::stream_error::report, 205
codec
vxg::media::Streamer::StreamInfo::AudioInfo, 87
vxg::media::Streamer::StreamInfo::VideoInfo, 294
columns
vxg::cloud::agent::proto::motion_detection_config, 180
compile.md, 310
config
vxg::cloud::agent::event_state, 122
config.h, 310
contrast
vxg::cloud::agent::proto::video_caps, 280
vxg::cloud::agent::proto::video_config, 287
crash_logfile_path
vxg::logger::options, 184
create
vxg::cloud::agent::manager, 164
vxg::cloud::agent::synchronizer, 267
critical
vxg::logger, 156
cur_seg_start
vxg::cloud::agent::synchronizer::segmenter, 222
cur_seg_stop
vxg::cloud::agent::synchronizer::segmenter, 222
custom_event_name
vxg::cloud::agent::event_config, 116

DATA
vxg::media::Streamer, 68
data
vxg::cloud::agent::proto::video_clip_info, 284
vxg::cloud::timed_storage::item, 153
vxg::media::Streamer::MediaFrame, 176
data_state
vxg::cloud::timed_storage::item, 152
DataCodec
vxg::media::Streamer::StreamInfo, 260
date
vxg::cloud::agent::osd_config, 191
vxg::cloud::agent::proto::osd_caps, 187
date_format
vxg::cloud::agent::osd_config, 192
vxg::cloud::agent::proto::osd_caps, 188
DC_ONVIF
vxg::media::Streamer::StreamInfo, 260
DC_UNKNOWN
vxg::media::Streamer::StreamInfo, 260

debug
vxg::logger, 156
default_loglevel
vxg::logger::options, 184
delay
vxg::cloud::agent::synchronizer::segmenter, 222
demangle
vxg::cloud::utils::gcc_abi, 61
direct_upload_payload_map
vxg::cloud::agent::manager, 163
direct_upload_payload_map_ptr
vxg::cloud::agent::manager, 163
dirname
vxg::cloud::utils, 58
DONE
vxg::cloud::agent::synchronizer, 267
DROP_BACK
vxg::media::Streamer, 68
DROP_FRONT
vxg::media::Streamer, 68
DropDirection
vxg::media::Streamer, 67
droppable
vxg::media::ffmpeg::Sink, 226
vxg::media::rtmp_sink, 207
vxg::media::Streamer::ISink, 139
dts
vxg::media::Streamer::MediaFrame, 176
duration
vxg::cloud, 44
vxg::cloud::period, 195
vxg::cloud::time_spec, 56
vxg::media::ffmpeg::Sink, 226
vxg::media::Streamer::ISink, 139
vxg::media::Streamer::MediaFrame, 177

E_CONNECT
vxg::media::stream_error, 66
E_EOS
vxg::media::Streamer, 68
E_FATAL
vxg::media::Streamer, 68
E_NONE
vxg::media::Streamer, 68
E_PROCESS
vxg::media::stream_error, 66
E_UNKNOWN
vxg::media::stream_error, 66
echo_cancel
vxg::cloud::agent::audio_config, 79
vxg::cloud::agent::proto::audio_caps, 77
empty
vxg::cloud::timed_storage::item, 152, 153
enabled
vxg::cloud::agent::events_config, 136
vxg::cloud::agent::proto::motion_region, 182
encryption
vxg::cloud::agent::proto::wifi_network, 297
encryption_caps
vxg::cloud::agent::proto::wifi_network, 298
end
vxg::cloud::period, 196
epoch
vxg::cloud::utils::time, 62
erase
vxg::cloud::cloud_storage, 107
vxg::cloud::stream_storage, 257
vxg::cloud::timed_storage, 271
ERROR
vxg::cloud::agent::synchronizer, 267
error
vxg::logger, 157
vxg::media::ffmpeg::Sink, 226
vxg::media::stream_error, 66
vxg::media::Streamer::ISink, 140
vxg::media::Streamer::ISource, 147
ES_ERROR
vxg::cloud::agent::proto, 51
ES_INVALID
vxg::cloud::agent::proto, 51
ES_OK
vxg::cloud::agent::proto, 51
ET_CUSTOM
vxg::cloud::agent::proto, 51
ET_INVALID
vxg::cloud::agent::proto, 51
ET_MEMORYCARD
vxg::cloud::agent::proto, 51
ET_MOTION
vxg::cloud::agent::proto, 51
ET_NET
vxg::cloud::agent::proto, 51
ET_RECORD
vxg::cloud::agent::proto, 51
ET_SOUND
vxg::cloud::agent::proto, 51
ET_WIFI
vxg::cloud::agent::proto, 51
event
vxg::cloud::agent::event_config, 116
event-manager.h, 313
event-state.h, 314
event-stream.h, 315
event_manager
vxg::cloud::agent::event_manager, 118
event_manager_ptr
vxg::cloud::agent, 47
event_state
vxg::cloud::agent::event_state, 121
event_state_changed_cb
vxg::cloud::agent::event_state::event_state_changed_cb, 124
event_state_changed_cb_ptr
vxg::cloud::agent::event_state, 120
event_state_ptr
vxg::cloud::agent, 47
event_state_report_cb

vxg::cloud::agent::event_manager::event_state_report_cb, 126
event_state_report_cb_ptr
vxg::cloud::agent::event_manager, 117
event_status
vxg::cloud::agent::proto, 51
event_stream
vxg::cloud::agent::event_stream, 130
event_type
vxg::cloud::agent::proto, 51
events
vxg::cloud::agent::events_config, 136
extradata
vxg::media::Streamer::StreamInfo::AudioInfo, 87
vxg::media::Streamer::StreamInfo::VideoInfo, 294

ffmpeg_opts_
vxg::media::rtsp_source, 216
ffmpeg_sink.h, 316
ffmpeg_source.cc, 317
ffmpeg_source.h, 317
final_sync_status_reported
vxg::cloud::agent::synchronizer::segmenter, 222
finished
vxg::cloud::agent::synchronizer::segmenter, 222
finit
vxg::cloud::agent::event_stream, 131
vxg::cloud::sync::timeline, 275
vxg::cloud::timed_storage, 271
vxg::media::ffmpeg::Sink, 227
vxg::media::ffmpeg::Source, 231
vxg::media::Streamer::ISink, 140
vxg::media::Streamer::ISource, 148
finit_sink
vxg::media::stream, 237
finit_source
vxg::media::stream, 237
FLV
vxg::media::Streamer, 68
font_color
vxg::cloud::agent::osd_config, 192
vxg::cloud::agent::proto::osd_caps, 188
font_size
vxg::cloud::agent::osd_config, 192
vxg::cloud::agent::proto::osd_caps, 188
format
vxg::cloud::agent::proto::audio_stream_config, 85
vxg::cloud::agent::proto::video_stream_config, 291
formats
vxg::cloud::agent::proto::stream_caps::caps_audio_object, 101
vxg::cloud::agent::proto::stream_caps::caps_video_object, 103
fps
vxg::cloud::agent::proto::stream_caps::caps_video_object, 104
vxg::cloud::agent::proto::video_stream_config, 291
fragment
vxg::cloud::utils::uri, 278
framerate
vxg::media::Streamer::StreamInfo::VideoInfo, 295
from
vxg::media::stream_error::report, 205
from_double
vxg::cloud::utils::time, 62
from_iso
vxg::cloud::utils::time, 62
from_iso2
vxg::cloud::utils::time, 62
from_iso_packed
vxg::cloud::utils::time, 62
from_json
alter_bool, 75

get_event_config
vxg::cloud::agent::events_config, 135
get_events
vxg::cloud::agent::event_manager, 118
vxg::cloud::agent::event_stream, 131
get_handler
vxg::cloud::utils::queued_async_handler< T >, 204
get_snapshot
vxg::cloud::agent::media::stream_callbacks, 243
vxg::cloud::agent::media::stream_callbacks_stub, 249
get_stream_caps
vxg::cloud::agent::media::stream_callbacks, 243
vxg::cloud::agent::media::stream_callbacks_stub, 249
get_stream_config
vxg::cloud::agent::media::stream_callbacks, 244
vxg::cloud::agent::media::stream_callbacks_stub, 250
get_supported_stream
vxg::cloud::agent::media::stream_callbacks, 244
vxg::cloud::agent::media::stream_callbacks_stub, 250
gop
vxg::cloud::agent::proto::stream_caps::caps_video_object, 104
vxg::cloud::agent::proto::video_stream_config, 291

handle_event
vxg::cloud::agent::manager, 165
handle_event_meta_file
vxg::cloud::agent::manager, 165
handle_event_payload_cb
vxg::cloud::agent::event_manager, 118
handle_event_snapshot
vxg::cloud::agent::manager, 165
handler_func
vxg::cloud::utils::queued_async_handler< T >, 203
height
vxg::media::Streamer::StreamInfo::VideoInfo, 295
horz
vxg::cloud::agent::proto::video_stream_config, 291

horz_flip
vxg::cloud::agent::proto::video_caps, 281
vxg::cloud::agent::proto::video_config, 287
host
vxg::cloud::utils::uri, 278
HTTP
vxg::media::rtsp_source, 214
HTTPS
vxg::media::rtsp_source, 214

id
vxg::cloud::agent::supported_stream_config, 262
ignore_exception
caps.h, 304
info
vxg::logger, 157, 158
init
vxg::cloud::agent::event_stream, 132
vxg::cloud::sync::timeline, 275
vxg::cloud::timed_storage, 271
vxg::media::ffmpeg::Sink, 227
vxg::media::ffmpeg::Source, 231, 232
vxg::media::rtmp_sink, 207
vxg::media::rtmp_source, 211
vxg::media::rtsp_source, 215
vxg::media::Streamer::ISink, 140
vxg::media::Streamer::ISource, 148
init_sink
vxg::media::stream, 237
init_source
vxg::media::stream, 238
instance
vxg::logger, 158
internal_hidden
vxg::cloud::agent::proto::event_caps, 111
intersects
vxg::cloud::agent::synchronizer::segmenter, 221
vxg::cloud::period, 195
ir_light
vxg::cloud::agent::proto::video_caps, 281
vxg::cloud::agent::proto::video_config, 288
is_iso
vxg::cloud::utils::time, 62
is_iso_packed
vxg::cloud::utils::time, 62
is_key
vxg::media::Streamer::MediaFrame, 177
is_null
vxg::cloud::period, 195
is_open
vxg::cloud::period, 196
is_valid
vxg::cloud::period, 196
ISink
vxg::media::Streamer::ISink, 139
iso_time_valid
vxg::cloud::utils::time, 63
ISource
vxg::media::Streamer::ISource, 147

item
vxg::cloud::timed_storage::item, 152
item_ptr
vxg::cloud::timed_storage, 270

json
caps.h, 305
JSON_DEFINE_TYPE_INTRUSIVE
vxg::cloud::agent::audio_detection_config, 83
vxg::cloud::agent::audio_detection_config::audio_detection_conf_cap
81

last_processed_time
vxg::cloud::agent::synchronizer::segmenter, 222
len
vxg::media::Streamer::MediaFrame, 177
length
vxg::cloud::agent::audio_detection_config, 83
level
vxg::cloud::agent::audio_detection_config, 83
vxg::cloud::agent::audio_detection_config::audio_detection_conf_cap
81
list
vxg::cloud::cloud_storage, 107
vxg::cloud::stream_storage, 257
vxg::cloud::sync::timeline, 275
vxg::cloud::timed_storage, 271
load
vxg::cloud::cloud_storage, 107
vxg::cloud::stream_storage, 257
vxg::cloud::sync::timeline, 276
vxg::cloud::timed_storage, 271
loaded
vxg::cloud::timed_storage::item, 152
local_start
vxg::cloud::agent::proto::video_clip_info, 284
local_stop
vxg::cloud::agent::proto::video_clip_info, 284
log_pattern
vxg::logger::options, 184
logfile_max_files
vxg::logger::options, 184
logfile_max_size
vxg::logger::options, 185
logfile_path
vxg::logger::options, 185
logger_ptr
vxg::logger, 155
logging.h, 318
loglevel
vxg::logger, 156
lvl_crit
vxg::logger, 156
lvl_debug
vxg::logger, 156
lvl_error
vxg::logger, 156
lvl_info
vxg::logger, 156

lvl_off
vxg::logger, 156
lvl_trace
vxg::logger, 156
lvl_warn
vxg::logger, 156

M_AUTO
vxg::cloud::agent::proto, 52
M_INVALID
vxg::cloud::agent::proto, 52
M_OFF
vxg::cloud::agent::proto, 52
M_ON
vxg::cloud::agent::proto, 52
mac
vxg::cloud::agent::proto::wifi_network, 298
main
cloud-agent-minimal.cc, 306
cloud-agent.cc, 308
mainpage.md, 319
make_unique
std, 43
manager.h, 319
map
vxg::cloud::agent::proto::motion_region, 182
vxg::cloud::utils::motion::map, 174
MAX
vxg::media::Streamer, 68
max
vxg::cloud::utils::time, 63
max_regions
vxg::cloud::agent::proto::motion_detection_caps, 179
maximum_number_of_presets
vxg::cloud::agent::ptz_config, 200
MCS_FORMATTING
vxg::cloud::agent::proto, 52
MCS_INITIALIZATION
vxg::cloud::agent::proto, 52
MCS_INVALID
vxg::cloud::agent::proto, 52
MCS_NEED_FORMAT
vxg::cloud::agent::proto, 52
MCS_NONE
vxg::cloud::agent::proto, 52
MCS_NORMAL
vxg::cloud::agent::proto, 52
media_type
vxg::cloud::timed_storage::item, 153
MediaType
vxg::media::Streamer, 68
memorycard_status
vxg::cloud::agent::proto, 52
meson.build, 320
mic
vxg::cloud::agent::proto::audio_caps, 77
mic_gain
vxg::cloud::agent::audio_config, 79
mic_mute
vxg::cloud::agent::audio_config, 79
Mode
vxg::media::Streamer::ISource, 146
mode
vxg::cloud::agent::proto, 52
mode_
vxg::media::Streamer::ISource, 150
motion_region_shape
vxg::cloud::agent::proto, 52
motion_sensitivity
vxg::cloud::agent::proto, 53
MR_ANY
vxg::cloud::agent::proto, 52
MR_INVALID
vxg::cloud::agent::proto, 52
MR_RECTANGLE
vxg::cloud::agent::proto, 52
MS_FRAME
vxg::cloud::agent::proto, 53
MS_INVALID
vxg::cloud::agent::proto, 53
MS_REGION
vxg::cloud::agent::proto, 53

n_alter_bool
alter_bool, 73
name
vxg::cloud::agent::event_config, 115
vxg::cloud::agent::proto, 55
vxg::cloud::agent::ptz_preset, 202
vxg::media::ffmpeg::Sink, 228
vxg::media::ffmpeg::Source, 233
vxg::media::rtmp_sink, 209
vxg::media::rtsp_source, 215
vxg::media::Streamer::ISink, 142
vxg::media::Streamer::ISource, 148
name_eq
vxg::cloud::agent::event_config, 115
need_record
vxg::cloud::agent::event_state, 122
negotiate
vxg::media::ffmpeg::Sink, 228
vxg::media::ffmpeg::Source, 233
vxg::media::rtmp_sink, 209
vxg::media::Streamer::ISink, 142
vxg::media::Streamer::ISource, 148
networks
vxg::cloud::agent::proto::wifi_config, 296
nlohmann, 25
NO_PTS
vxg::media::Streamer::MediaFrame, 177
notify
vxg::cloud::agent::event_stream, 132
notify_event
vxg::cloud::agent::event_manager, 118
now
vxg::cloud::utils::time, 63
now_ISO8601_UTC

vxg::cloud::utils::time, 63
now_ISO8601_UTC_packed
vxg::cloud::utils::time, 63
nr_level
vxg::cloud::agent::proto::video_caps, 281
vxg::cloud::agent::proto::video_config, 288
nr_type
vxg::cloud::agent::proto::video_caps, 281
vxg::cloud::agent::proto::video_config, 288
null
vxg::cloud::utils::time, 63

O_SINK
vxg::media::stream_error, 66
O_SOURCE
vxg::media::stream_error, 66
O_UNKNOWN
vxg::media::stream_error, 66
on_audio_file_play
vxg::cloud::agent::callback, 90
vxg::cloud::agent::manager, 165
on_bye
vxg::cloud::agent::callback, 90
on_cam_memorycard_recording
vxg::cloud::agent::manager, 165
on_cam_memorycard_synchronize
vxg::cloud::agent::manager, 165
on_cam_memorycard_synchronize_cancel
vxg::cloud::agent::manager, 165
on_cam_ptz
vxg::cloud::agent::callback, 90
vxg::cloud::agent::manager, 166
on_cam_ptz_preset
vxg::cloud::agent::callback, 91
vxg::cloud::agent::manager, 166
on_cam_upgrade_firmware
vxg::cloud::agent::callback, 91
vxg::cloud::agent::manager, 166
on_closed
vxg::cloud::agent::manager, 166
on_direct_upload_url
vxg::cloud::agent::manager, 166
on_error_cb
vxg::media::stream, 236
vxg::media::Streamer, 67
on_error_cb_
vxg::media::Streamer::ISink, 143
vxg::media::Streamer::ISource, 150
on_event_continue
vxg::cloud::agent::event_manager::event_state_report_cb, 127
on_event_start
vxg::cloud::agent::event_manager::event_state_report_cb, 127
on_event_stop
vxg::cloud::agent::event_manager::event_state_report_cb, 127
on_event_trigger
vxg::cloud::agent::event_manager::event_state_report_cb, 127
on_get_audio_detection
vxg::cloud::agent::callback, 92
vxg::cloud::agent::manager, 166
on_get_cam_audio_config
vxg::cloud::agent::callback, 92
vxg::cloud::agent::manager, 167
on_get_cam_events_config
vxg::cloud::agent::manager, 167
on_get_cam_memorycard_timeline
vxg::cloud::agent::manager, 167
on_get_cam_video_config
vxg::cloud::agent::callback, 92
vxg::cloud::agent::manager, 167
on_get_log
vxg::cloud::agent::callback, 93
vxg::cloud::agent::manager, 167
on_get_memorycard_info
vxg::cloud::agent::callback, 93
on_get_motion_detection_config
vxg::cloud::agent::callback, 93
vxg::cloud::agent::manager, 167
on_get_osd_config
vxg::cloud::agent::callback, 94
vxg::cloud::agent::manager, 167
on_get_ptz_config
vxg::cloud::agent::callback, 94
vxg::cloud::agent::manager, 168
on_get_stream_by_event
vxg::cloud::agent::manager, 168
on_get_stream_caps
vxg::cloud::agent::manager, 168
on_get_stream_config
vxg::cloud::agent::manager, 168
on_get_supported_streams
vxg::cloud::agent::manager, 168
on_get_timezone
vxg::cloud::agent::callback, 95
vxg::cloud::agent::manager, 168
on_get_wifi_config
vxg::cloud::agent::callback, 95
vxg::cloud::agent::manager, 168
on_need_stream_sync_continue
vxg::cloud::agent::event_manager::event_state_report_cb, 128
on_need_stream_sync_start
vxg::cloud::agent::event_manager::event_state_report_cb, 128
on_need_stream_sync_stop
vxg::cloud::agent::event_manager::event_state_report_cb, 128
on_ongoing
vxg::cloud::agent::event_state::event_state_changed_cb, 124
on_prepared
vxg::cloud::agent::manager, 169
on_raw_message

vxg::cloud::agent::manager, 169
on_raw_msg
vxg::cloud::agent::callback, 96
on_registered
vxg::cloud::agent::callback, 96
vxg::cloud::agent::manager, 169
on_set_activity
vxg::cloud::agent::manager, 169
on_set_audio_detection
vxg::cloud::agent::callback, 96
vxg::cloud::agent::manager, 169
on_set_cam_audio_config
vxg::cloud::agent::callback, 97
vxg::cloud::agent::manager, 169
on_set_cam_events_config
vxg::cloud::agent::manager, 169
on_set_cam_video_config
vxg::cloud::agent::callback, 97
vxg::cloud::agent::manager, 170
on_set_log_enable
vxg::cloud::agent::manager, 170
on_set_motion_detection_config
vxg::cloud::agent::callback, 97
vxg::cloud::agent::manager, 170
on_set_osd_config
vxg::cloud::agent::callback, 98
vxg::cloud::agent::manager, 170
on_set_periodic_events
vxg::cloud::agent::manager, 170
on_set_stream_by_event
vxg::cloud::agent::manager, 170
on_set_stream_config
vxg::cloud::agent::manager, 170
on_set_timezone
vxg::cloud::agent::callback, 98
vxg::cloud::agent::manager, 171
on_set_wifi_config
vxg::cloud::agent::callback, 99
vxg::cloud::agent::manager, 171
on_start_backward
vxg::cloud::agent::manager, 171
on_start_backward_audio
vxg::cloud::agent::callback, 99
on_started
vxg::cloud::agent::event_state::event_state_changed_cb, 125
on_stop_backward
vxg::cloud::agent::manager, 171
on_stop_backward_audio
vxg::cloud::agent::callback, 99
on_stopped
vxg::cloud::agent::event_state::event_state_changed_cb, 125
on_stream_start
vxg::cloud::agent::manager, 171
on_stream_stop
vxg::cloud::agent::manager, 171
on_trigger_event
vxg::cloud::agent::callback, 100
vxg::cloud::agent::manager, 172
on_triggered
vxg::cloud::agent::event_state::event_state_changed_cb, 125
on_update_preview
vxg::cloud::agent::manager, 172
operator bool
alter_bool, 74
operator<
vxg::cloud, 45
vxg::cloud::agent::synchronizer::segmenter, 221
vxg::cloud::period, 196
vxg::cloud::timed_storage::item, 153
vxg::media::Streamer::MediaFrame, 176
operator=
alter_bool, 74
vxg::cloud::agent::event_state, 122
vxg::cloud::utils::motion::map, 174
origin
vxg::media::stream_error, 66

PA_CREATE
vxg::cloud::agent::proto, 54
PA_DELETE
vxg::cloud::agent::proto, 54
PA_GOTO
vxg::cloud::agent::proto, 54
PA_INVALID
vxg::cloud::agent::proto, 54
PA_UPDATE
vxg::cloud::agent::proto, 54
pack
vxg::cloud::agent::access_token, 72
vxg::cloud::utils::motion::map, 174
parse
vxg::cloud::agent::access_token, 72
vxg::cloud::utils::uri, 277
parse_args
cloud-agent-minimal.cc, 306
cloud-agent.cc, 308
password
vxg::cloud::agent::proto::wifi_network, 298
vxg::cloud::utils::uri, 278
path
vxg::cloud::utils::uri, 278
PENDING
vxg::cloud::agent::synchronizer, 267
period
vxg::cloud::agent::event_config, 116
vxg::cloud::period, 194, 195
periodic
vxg::cloud::agent::proto::event_caps, 112
port
vxg::cloud::utils::uri, 278
precision
vxg::cloud::time_spec, 56
precision_ratio
vxg::cloud::time_spec, 57

presets
vxg::cloud::agent::ptz_config, 200
process
vxg::media::Streamer::ISink, 142
processed
vxg::cloud::agent::synchronizer::segmenter, 223
profile
vxg::cloud::agent::proto::video_stream_config, 292
profiles
vxg::cloud::agent::proto::stream_caps::caps_video_object, 104
props
cloud-agent-minimal.cc, 306
cloud-agent.cc, 309
ptr
vxg::cloud::agent::access_token, 72
vxg::cloud::agent::callback, 89
vxg::cloud::agent::event_stream, 129
vxg::cloud::agent::manager, 163
vxg::cloud::agent::media::rtsp_stream, 217
vxg::cloud::agent::media::stream, 240
vxg::cloud::agent::synchronizer, 266
vxg::cloud::agent::synchronizer::segmenter, 220
vxg::cloud::stream_storage, 256
vxg::media::stream, 236
vxg::media::Streamer::ISink, 138
vxg::media::Streamer::ISource, 145
PtrU
vxg::media::Streamer::ISink, 138
pts
vxg::media::Streamer::MediaFrame, 177
ptz_action
vxg::cloud::agent::proto, 53
ptz_preset_action
vxg::cloud::agent::proto, 53
PULL
vxg::media::Streamer::ISource, 147
pullFrame
vxg::media::ffmpeg::Source, 233
vxg::media::Streamer::ISource, 149
PUSH
vxg::media::Streamer::ISource, 147
push
vxg::cloud::utils::queued_async_handler< T >, 204
pushFrame
vxg::media::Streamer::ISource, 149
pwr_frequency
vxg::cloud::agent::proto::video_caps, 281
vxg::cloud::agent::proto::video_config, 288

quality
vxg::cloud::agent::proto::stream_caps::caps_video_object, 104
vxg::cloud::agent::proto::video_stream_config, 292
query
vxg::cloud::utils::uri, 279
queued-handler.h, 320
queued_async_handler
vxg::cloud::utils::queued_async_handler< T >, 203
queued_async_handler_ptr
vxg::cloud::utils, 58
quit
cloud-agent-minimal.cc, 307
cloud-agent.cc, 309

random_string
vxg::cloud::utils, 58
realtime
vxg::cloud::agent::synchronizer::segmenter, 223
record_by_event_upload_step
vxg::cloud::agent::synchronizer::config, 110
record_export
vxg::cloud::agent::media::stream_callbacks, 244
vxg::cloud::agent::media::stream_callbacks_stub, 250
record_get_list
vxg::cloud::agent::media::stream_callbacks, 245
vxg::cloud::agent::media::stream_callbacks_stub, 251
record_needs_source
vxg::cloud::agent::media::stream_callbacks, 245
region
vxg::cloud::agent::proto::motion_region, 182
region_shape
vxg::cloud::agent::proto::motion_detection_caps, 179
regions
vxg::cloud::agent::proto::motion_detection_config, 181
reset
vxg::logger, 158
resolutions
vxg::cloud::agent::proto::stream_caps::caps_video_object, 104
rows
vxg::cloud::agent::proto::motion_detection_config, 181
rtmp_sink
vxg::media::rtmp_sink, 207
rtmp_sink.h, 322
rtmp_source.h, 323
rtsp-stream.h, 323
rtsp_source
vxg::media::rtsp_source, 214
rtsp_source.h, 324
rtsp_source_ptr
vxg::media, 65
rtsp_stream
vxg::cloud::agent::media::rtsp_stream, 217
rtsp_url
cloud-agent-minimal.cc, 307
cloud-agent.cc, 309

samplerate
vxg::media::Streamer::StreamInfo::AudioInfo, 87
saturation

vxg::cloud::agent::proto::video_caps, 282
vxg::cloud::agent::proto::video_config, 288
scheme
vxg::cloud::utils::uri, 279
SDM_NONE
vxg::cloud::agent::event_state, 121
SDM_STREAM
vxg::cloud::agent::event_state, 121
SDM_UPLOAD
vxg::cloud::agent::event_state, 121
segmenter
vxg::cloud::agent::synchronizer::sync_request, 265
segmenter_ptr
vxg::cloud::agent::synchronizer, 266
send_qos_report_as_separate_event
vxg::cloud::agent::event_manager::config, 109
send_qos_report_period_sec
vxg::cloud::agent::event_manager::config, 109
sensitivity
vxg::cloud::agent::proto::motion_detection_caps, 179
vxg::cloud::agent::proto::motion_region, 183
set_eos
vxg::media::Streamer::ISink, 143
set_eos_cb
vxg::media::Streamer::ISink, 143
set_error_cb
vxg::media::Streamer::ISink, 143
vxg::media::Streamer::ISource, 149
set_events
vxg::cloud::agent::event_manager, 119
vxg::cloud::agent::event_stream, 132
set_handler
vxg::cloud::utils::queued_async_handler< T >, 204
set_level
vxg::logger, 159
set_on_error_cb
vxg::media::stream, 238
set_stream_config
vxg::cloud::agent::media::stream_callbacks, 246
vxg::cloud::agent::media::stream_callbacks_stub, 251
set_thread_name
vxg::cloud::utils, 58
set_trigger_recording
vxg::cloud::agent::event_stream, 133
sharpness
vxg::cloud::agent::proto::video_caps, 282
vxg::cloud::agent::proto::video_config, 289
signal
vxg::cloud::agent::proto::wifi_network, 298
signal_handler
cloud-agent-minimal.cc, 306
cloud-agent.cc, 308
Sink
vxg::media::ffmpeg::Sink, 225
sink_
vxg::media::stream, 239
SINK_THREAD_PRIO
vxg::media::Streamer, 69
slices
vxg::cloud::sync::timeline, 276
vxg::cloud::timeline< T >, 273
smoothing
vxg::cloud::agent::proto::stream_caps::caps_video_object, 105
vxg::cloud::agent::proto::video_stream_config, 292
snapshot
vxg::cloud::agent::event_config, 116
vxg::cloud::agent::proto::event_caps, 112
socks4
vxg::cloud::agent::access_token::proxy_config, 198
socks5
vxg::cloud::agent::access_token::proxy_config, 198
Source
vxg::media::ffmpeg::Source, 231
source_
vxg::media::stream, 239
spkr
vxg::cloud::agent::proto::audio_caps, 77
spkr_mute
vxg::cloud::agent::audio_config, 79
spkr_vol
vxg::cloud::agent::audio_config, 80
SRC_THREAD_PRIO
vxg::media::Streamer, 69
srt
vxg::cloud::agent::proto::audio_stream_config, 85
vxg::cloud::agent::proto::stream_caps::caps_audio_object, 101
ssid
vxg::cloud::agent::proto::wifi_network, 298
ST_ANY
vxg::media::Streamer::StreamInfo, 260
ST_AUDIO
vxg::media::Streamer::StreamInfo, 260
ST_DATA
vxg::media::Streamer::StreamInfo, 260
ST_UNKNOWN
vxg::media::Streamer::StreamInfo, 260
ST_VIDEO
vxg::media::Streamer::StreamInfo, 260
start
vxg::cloud::agent::event_manager, 119
vxg::cloud::agent::event_state, 122
vxg::cloud::agent::event_stream, 133
vxg::cloud::agent::manager, 172
vxg::cloud::agent::media::rtsp_stream, 218
vxg::cloud::agent::synchronizer, 268
vxg::cloud::utils::queued_async_handler< T >, 204
start_record
vxg::cloud::agent::media::stream_callbacks, 246

vxg::cloud::agent::media::stream_callbacks_stub, 252
state
vxg::cloud::timed_storage::item, 154
state_emulation
vxg::cloud::agent::proto::event_caps, 112
state_emulation_report_delay
vxg::cloud::agent::proto::event_caps, 112
stateful
vxg::cloud::agent::event_state, 123
vxg::cloud::agent::proto::event_caps, 112
stateful_event_continuation_kick_snapshot
vxg::cloud::agent::event_manager::config, 109
std, 25
make_unique, 43
step
vxg::cloud::agent::synchronizer::segmenter, 223
stop
vxg::cloud::agent::event_manager, 119
vxg::cloud::agent::event_state, 123
vxg::cloud::agent::event_stream, 133
vxg::cloud::agent::manager, 172
vxg::cloud::agent::synchronizer, 268
vxg::cloud::utils::queued_async_handler< T >, 204
vxg::media::ffmpeg::Sink, 229
vxg::media::ffmpeg::Source, 233
stop_record
vxg::cloud::agent::media::stream_callbacks, 246
vxg::cloud::agent::media::stream_callbacks_stub, 252
store
vxg::cloud::cloud_storage, 108
vxg::cloud::stream_storage, 258
vxg::cloud::sync::timeline, 276
vxg::cloud::timed_storage, 271
store_async
vxg::cloud::stream_storage, 258
vxg::cloud::sync::timeline, 276
vxg::cloud::timed_storage, 272
stream
vxg::cloud::agent::event_config, 116
vxg::cloud::agent::media::stream, 240
vxg::cloud::agent::proto::audio_stream_config, 85
vxg::cloud::agent::proto::event_caps, 113
vxg::cloud::agent::proto::video_stream_config, 292
vxg::media::stream, 236
stream-storage.h, 325
stream.h, 326, 327
stream_callbacks
vxg::cloud::agent::media::stream_callbacks, 242
stream_callbacks_stub
vxg::cloud::agent::media::stream_callbacks_stub, 248
stream_delivery_mode
vxg::cloud::agent::event_state, 120
stream_ptr
vxg::cloud::agent::media, 48
stream_storage
vxg::cloud::stream_storage, 257
StreamError
vxg::media::Streamer, 68
streams
vxg::cloud::agent::proto::stream_caps::caps_audio_object, 101
vxg::cloud::agent::proto::stream_caps::caps_video_object, 105
vxg::cloud::agent::supported_streams_config, 264
StreamType
vxg::media::Streamer::StreamInfo, 260
string_contains
vxg::cloud::utils, 58
string_endswith
vxg::cloud::utils, 59
string_format
vxg::cloud::utils, 59
string_replace
vxg::cloud::utils, 59
string_split
vxg::cloud::utils, 59
string_startswith
vxg::cloud::utils, 59
string_tolower
vxg::cloud::utils, 60
string_toupper
vxg::cloud::utils, 60
string_trim
vxg::cloud::utils, 60
string_urldecode
vxg::cloud::utils, 60
string_urlencode
vxg::cloud::utils, 60
swap
vxg::cloud::agent::event_state, 123
sync
vxg::cloud::agent::synchronizer, 268
sync_cancel
vxg::cloud::agent::synchronizer, 268
sync_finalize
vxg::cloud::agent::synchronizer, 268
sync_request_ptr
vxg::cloud::agent::synchronizer, 267
sync_request_status
vxg::cloud::agent::synchronizer, 267
sync_status_cb
vxg::cloud::agent::synchronizer::segmenter, 223
sync_status_report_cb
vxg::cloud::agent::synchronizer, 267
synchronizer_ptr
vxg::cloud::agent, 47
syslog_ident
vxg::logger::options, 185
system_id
vxg::cloud::agent::osd_config, 192
vxg::cloud::agent::proto::osd_caps, 188
system_id_text

vxg::cloud::agent::osd_config, 192
vxg::cloud::agent::proto::osd_caps, 189

TCP
vxg::media::rtsp_source, 214
tcp_logsink_enabled
vxg::logger::options, 185
tcp_logsink_host
vxg::logger::options, 185
tcp_logsink_port
vxg::logger::options, 185
tdn
vxg::cloud::agent::proto::video_caps, 282
vxg::cloud::agent::proto::video_config, 289
TF_12H
vxg::cloud::agent::proto, 54
TF_24H
vxg::cloud::agent::proto, 54
TF_INVALID
vxg::cloud::agent::proto, 54
ticket
vxg::cloud::agent::synchronizer::segmenter, 223
time
vxg::cloud, 44
vxg::cloud::agent::osd_config, 193
vxg::cloud::agent::proto::osd_caps, 189
time_format
vxg::cloud::agent::osd_config, 193
vxg::cloud::agent::proto::osd_caps, 189
time_format_n
vxg::cloud::agent::proto, 54
time_realtime
vxg::media::Streamer::MediaFrame, 178
timebase
vxg::media::Streamer::StreamInfo::AudioInfo, 87
vxg::media::Streamer::StreamInfo::VideoInfo, 295
timed_storage
vxg::cloud::timed_storage, 270
timed_storage_ptr
vxg::cloud, 45
timeline
vxg::cloud::sync::timeline, 274
vxg::cloud::timeline< T >, 272, 273
timeline-synchronizer.h, 328
timeline.h, 330
timeline_ptr
vxg::cloud::sync, 56
timescale
vxg::media::Streamer::MediaFrame, 178
tm
vxg::cloud::agent::ptz_command, 199
to_double
vxg::cloud::utils::time, 63
to_iso
vxg::cloud::utils::time, 64
to_iso2
vxg::cloud::utils::time, 64
to_iso_8601
vxg::cloud::utils::time, 64
to_iso_local
vxg::cloud::utils::time, 64
to_iso_packed
vxg::cloud::utils::time, 64
to_json
alter_bool, 75
token
vxg::cloud::agent::ptz_preset, 202
tp_start
vxg::cloud::agent::proto::video_clip_info, 284
tp_stop
vxg::cloud::agent::proto::video_clip_info, 284
trace
vxg::logger, 159, 160
transport
vxg::media::rtsp_source, 214
trigger
vxg::cloud::agent::proto::event_caps, 113
trigger_event
vxg::cloud::agent::event_manager, 119
vxg::cloud::agent::event_stream, 134
type
vxg::media::Streamer::MediaFrame, 178
vxg::media::Streamer::StreamInfo, 261

UDP
vxg::media::rtsp_source, 214
UDP_MULTICAST
vxg::media::rtsp_source, 214
UKNOWN
vxg::media::Streamer, 68
unpack
vxg::cloud::utils::motion::map, 174
unset-helper.h, 331
__is_unset, 333
__is_unset< alter_bool >, 334
__is_unset< double >, 334
__is_unset< int >, 334
__is_unset< nlohmann::json >, 335
__is_unset< std::nullptr_t >, 335
__is_unset< std::string >, 335
__is_unset< vxg::cloud::duration >, 335
__is_unset< vxg::cloud::time >, 336
unset_value_for, 336
unset_value_for_impl, 336–338
UnsetDouble, 338
UnsetDuration, 338
UnsetFloat, 339
UnsetInt, 339
UnsetInt64, 339
UnsetString, 339
UnsetTime, 339
UnsetUInt64, 339
unset_value_for
unset-helper.h, 336
unset_value_for_impl
unset-helper.h, 336–338
UnsetDouble
unset-helper.h, 338

UnsetDuration
unset-helper.h, 338
UnsetFloat
unset-helper.h, 339
UnsetInt
unset-helper.h, 339
UnsetInt64
unset-helper.h, 339
UnsetString
unset-helper.h, 339
UnsetTime
unset-helper.h, 339
UnsetUInt64
unset-helper.h, 339
user
vxg::cloud::utils::uri, 279
utils.h, 340

val
alter_bool, 75
vbr
vxg::cloud::agent::proto::stream_caps::caps_video_object, 105
vxg::cloud::agent::proto::video_stream_config, 292
vbr_brt
vxg::cloud::agent::proto::stream_caps::caps_video_object, 105
vxg::cloud::agent::proto::video_stream_config, 293
VC_H264
vxg::media::Streamer::StreamInfo, 261
VC_UNKNOWN
vxg::media::Streamer::StreamInfo, 261
version
vxg::cloud::agent, 47
vert
vxg::cloud::agent::proto::video_stream_config, 293
vert_flip
vxg::cloud::agent::proto::video_caps, 282
vxg::cloud::agent::proto::video_config, 289
VF_H264
vxg::cloud::agent::proto, 54
VF_H265
vxg::cloud::agent::proto, 54
VF_INVALID
vxg::cloud::agent::proto, 54
VF_MJPEG
vxg::cloud::agent::proto, 54
VIDEO
vxg::media::Streamer, 68
video
vxg::cloud::agent::proto::stream_config, 255
vxg::cloud::agent::supported_stream_config, 263
vxg::media::Streamer::StreamInfo, 261
VIDEO_AVC_PPS
vxg::media::Streamer, 68
VIDEO_AVC_SPS
vxg::media::Streamer, 68
video_es
vxg::cloud::agent::supported_streams_config, 264
video_format
vxg::cloud::agent::proto, 54
video_height
vxg::cloud::agent::proto::video_clip_info, 285
VIDEO_SEQ_HDR
vxg::media::Streamer, 68
video_width
vxg::cloud::agent::proto::video_clip_info, 285
VideoCodec
vxg::media::Streamer::StreamInfo, 260
vxg, 43
vxg::cloud, 44
duration, 44
operator<, 45
time, 44
timed_storage_ptr, 45
vxg::cloud::agent, 45
event_manager_ptr, 47
event_state_ptr, 47
synchronizer_ptr, 47
version, 47
vxg::cloud::agent::access_token, 71
api_uri, 72
cam_base_uri, 72
pack, 72
parse, 72
ptr, 72
vxg::cloud::agent::access_token::proxy_config, 197
socks4, 198
socks5, 198
vxg::cloud::agent::audio_config, 78
caps, 79
echo_cancel, 79
mic_gain, 79
mic_mute, 79
spkr_mute, 79
spkr_vol, 80
vxg::cloud::agent::audio_detection_config, 82
caps, 83
JSON_DEFINE_TYPE_INTRUSIVE, 83
length, 83
level, 83
vxg::cloud::agent::audio_detection_config::audio_detection_conf_caps, 80
JSON_DEFINE_TYPE_INTRUSIVE, 81
level, 81
vxg::cloud::agent::callback, 88
on_audio_file_play, 90
on_bye, 90
on_cam_ptz, 90
on_cam_ptz_preset, 91
on_cam_upgrade_firmware, 91
on_get_audio_detection, 92
on_get_cam_audio_config, 92
on_get_cam_video_config, 92
on_get_log, 93
on_get_memorycard_info, 93
on_get_motion_detection_config, 93

on_get_osd_config, 94
on_get_ptz_config, 94
on_get_timezone, 95
on_get_wifi_config, 95
on_raw_msg, 96
on_registered, 96
on_set_audio_detection, 96
on_set_cam_audio_config, 97
on_set_cam_video_config, 97
on_set_motion_detection_config, 97
on_set_osd_config, 98
on_set_timezone, 98
on_set_wifi_config, 99
on_start_backward_audio, 99
on_stop_backward_audio, 99
on_trigger_event, 100
ptr, 89
vxg::cloud::agent::event_config, 113
active, 115
caps, 115
caps_eq, 114
custom_event_name, 116
event, 116
name, 115
name_eq, 115
period, 116
snapshot, 116
stream, 116
vxg::cloud::agent::event_manager, 117
~event_manager, 118
event_manager, 118
event_state_report_cb_ptr, 117
get_events, 118
handle_event_payload_cb, 118
notify_event, 118
set_events, 119
start, 119
stop, 119
trigger_event, 119
vxg::cloud::agent::event_manager::config, 108
attach_qos_report_to_motion, 108
send_qos_report_as_separate_event, 109
send_qos_report_period_sec, 109
stateful_event_continuation_kick_snapshot, 109
vxg::cloud::agent::event_manager::event_state_report_cb, 126
~event_state_report_cb, 127
event_state_report_cb, 126
on_event_continue, 127
on_event_start, 127
on_event_stop, 127
on_event_trigger, 127
on_need_stream_sync_continue, 128
on_need_stream_sync_start, 128
on_need_stream_sync_stop, 128
vxg::cloud::agent::event_state, 119
~event_state, 121
active, 122
config, 122
event_state, 121
event_state_changed_cb_ptr, 120
need_record, 122
operator=, 122
SDM_NONE, 121
SDM_STREAM, 121
SDM_UPLOAD, 121
start, 122
stateful, 123
stop, 123
stream_delivery_mode, 120
swap, 123
vxg::cloud::agent::event_state::event_state_changed_cb, 124
~event_state_changed_cb, 124
event_state_changed_cb, 124
on_ongoing, 124
on_started, 125
on_stopped, 125
on_triggered, 125
vxg::cloud::agent::event_stream, 128
~event_stream, 131
event_stream, 130
finit, 131
get_events, 131
init, 132
notify, 132
ptr, 129
set_events, 132
set_trigger_recording, 133
start, 133
stop, 133
trigger_event, 134
vxg::cloud::agent::events_config, 134
enabled, 136
events, 136
get_event_config, 135
vxg::cloud::agent::manager, 161
__notify_record_event, 164
_update_storage_status, 164
create, 164
direct_upload_payload_map, 163
direct_upload_payload_map_ptr, 163
handle_event, 165
handle_event_meta_file, 165
handle_event_snapshot, 165
on_audio_file_play, 165
on_cam_memorycard_recording, 165
on_cam_memorycard_synchronize, 165
on_cam_memorycard_synchronize_cancel, 165
on_cam_ptz, 166
on_cam_ptz_preset, 166
on_cam_upgrade_firmware, 166
on_closed, 166
on_direct_upload_url, 166
on_get_audio_detection, 166
on_get_cam_audio_config, 167

on_get_cam_events_config, 167
on_get_cam_memorycard_timeline, 167
on_get_cam_video_config, 167
on_get_log, 167
on_get_motion_detection_config, 167
on_get_osd_config, 167
on_get_ptz_config, 168
on_get_stream_by_event, 168
on_get_stream_caps, 168
on_get_stream_config, 168
on_get_supported_streams, 168
on_get_timezone, 168
on_get_wifi_config, 168
on_prepared, 169
on_raw_message, 169
on_registered, 169
on_set_activity, 169
on_set_audio_detection, 169
on_set_cam_audio_config, 169
on_set_cam_events_config, 169
on_set_cam_video_config, 170
on_set_log_enable, 170
on_set_motion_detection_config, 170
on_set_osd_config, 170
on_set_periodic_events, 170
on_set_stream_by_event, 170
on_set_stream_config, 170
on_set_timezone, 171
on_set_wifi_config, 171
on_start_backward, 171
on_stop_backward, 171
on_stream_start, 171
on_stream_stop, 171
on_trigger_event, 172
on_update_preview, 172
ptr, 163
start, 172
stop, 172
vxg::cloud::agent::media, 47
stream_ptr, 48
vxg::cloud::agent::media::rtsp_stream, 216
~rtsp_stream, 218
ptr, 217
rtsp_stream, 217
start, 218
vxg::cloud::agent::media::stream, 239
~stream, 241
ptr, 240
stream, 240
vxg::cloud::agent::media::stream_callbacks, 241
~stream_callbacks, 243
get_snapshot, 243
get_stream_caps, 243
get_stream_config, 244
get_supported_stream, 244
record_export, 244
record_get_list, 245
record_needs_source, 245
set_stream_config, 246
start_record, 246
stop_record, 246
stream_callbacks, 242
vxg::cloud::agent::media::stream_callbacks_stub, 247
~stream_callbacks_stub, 249
get_snapshot, 249
get_stream_caps, 249
get_stream_config, 250
get_supported_stream, 250
record_export, 250
record_get_list, 251
set_stream_config, 251
start_record, 252
stop_record, 252
stream_callbacks_stub, 248
vxg::cloud::agent::osd_config, 190
alignment, 191
bkg_color, 191
bkg_transp, 191
caps, 191
date, 191
date_format, 192
font_color, 192
font_size, 192
system_id, 192
system_id_text, 192
time, 193
time_format, 193
vxg::cloud::agent::proto, 48
A_BOTTOM, 53
A_INVALID, 53
A_LEFT, 53
A_RIGHT, 53
A_STOP, 53
A_TOP, 53
A_ZOOM_IN, 53
A_ZOOM_OUT, 53
AF_AAC, 51
AF_ADPCM, 51
AF_G711A, 51
AF_G711U, 51
AF_INVALID, 51
AF_MP3, 51
AF_NELLY, 51
AF_NELLY16, 51
AF_NELLY8, 51
AF_OPUS, 51
AF_RAW, 51
AF_SPEEX, 51
AFF_AU_G711U, 50
AFF_INVALID, 50
AFF_MP3, 50
AFF_WAV_PCM, 50
audio_file_format, 50
audio_format, 50
ES_ERROR, 51
ES_INVALID, 51

ES_OK, 51
ET_CUSTOM, 51
ET_INVALID, 51
ET_MEMORYCARD, 51
ET_MOTION, 51
ET_NET, 51
ET_RECORD, 51
ET_SOUND, 51
ET_WIFI, 51
event_status, 51
event_type, 51
M_AUTO, 52
M_INVALID, 52
M_OFF, 52
M_ON, 52
MCS_FORMATTING, 52
MCS_INITIALIZATION, 52
MCS_INVALID, 52
MCS_NEED_FORMAT, 52
MCS_NONE, 52
MCS_NORMAL, 52
memorycard_status, 52
mode, 52
motion_region_shape, 52
motion_sensitivity, 53
MR_ANY, 52
MR_INVALID, 52
MR_RECTANGLE, 52
MS_FRAME, 53
MS_INVALID, 53
MS_REGION, 53
name, 55
PA_CREATE, 54
PA_DELETE, 54
PA_GOTO, 54
PA_INVALID, 54
PA_UPDATE, 54
ptz_action, 53
ptz_preset_action, 53
TF_12H, 54
TF_24H, 54
TF_INVALID, 54
time_format_n, 54
VF_H264, 54
VF_H265, 54
VF_INVALID, 54
VF_MJPEG, 54
video_format, 54
WFE_INVALID, 55
WFE_OPEN, 55
WFE_WEP, 55
WFE_WPA, 55
WFE_WPA2, 55
WFE_WPA2_ENTERPRISE, 55
WFE_WPA_ENTERPRISE, 55
wifi_encryption, 54
wifi_list, 50
wifi_network_state, 55
WNS_CONNECTED, 55
WNS_INITIALIZE_0, 55
WNS_INITIALIZE_1, 55
WNS_INVALID, 55
WNS_RECEIVING_IP, 55
WNS_TRY_CONNECT, 55
WNS_UNKNOWN, 55
vxg::cloud::agent::proto::audio_caps, 76
audio_file_formats, 76
backward, 77
backward_formats, 77
echo_cancel, 77
mic, 77
spkr, 77
vxg::cloud::agent::proto::audio_stream_config, 84
brt, 85
format, 85
srt, 85
stream, 85
vxg::cloud::agent::proto::event_caps, 111
internal_hidden, 111
periodic, 112
snapshot, 112
state_emulation, 112
state_emulation_report_delay, 112
stateful, 112
stream, 113
trigger, 113
vxg::cloud::agent::proto::motion_detection_caps, 178
max_regions, 179
region_shape, 179
sensitivity, 179
vxg::cloud::agent::proto::motion_detection_config, 180
caps, 180
columns, 180
regions, 181
rows, 181
vxg::cloud::agent::proto::motion_region, 181
enabled, 182
map, 182
region, 182
sensitivity, 183
vxg::cloud::agent::proto::osd_caps, 186
alignment, 187
bkg_color, 187
bkg_transp, 187
date, 187
date_format, 188
font_color, 188
font_size, 188
system_id, 188
system_id_text, 189
time, 189
time_format, 189
vxg::cloud::agent::proto::stream_caps, 253
caps_audio, 253
caps_video, 254

vxg::cloud::agent::proto::stream_caps::caps_audio_object, 100
brt, 101
formats, 101
srt, 101
streams, 101
vxg::cloud::agent::proto::stream_caps::caps_video_object, 102
brt, 103
formats, 103
fps, 104
gop, 104
profiles, 104
quality, 104
resolutions, 104
smoothing, 105
streams, 105
vbr, 105
vbr_brt, 105
vxg::cloud::agent::proto::stream_config, 254
audio, 255
video, 255
vxg::cloud::agent::proto::video_caps, 279
brightness, 280
contrast, 280
horz_flip, 281
ir_light, 281
nr_level, 281
nr_type, 281
pwr_frequency, 281
saturation, 282
sharpness, 282
tdn, 282
vert_flip, 282
wb_type, 282
vxg::cloud::agent::proto::video_clip_info, 283
data, 284
local_start, 284
local_stop, 284
tp_start, 284
tp_stop, 284
video_height, 285
video_width, 285
vxg::cloud::agent::proto::video_config, 285
brightness, 287
caps, 287
contrast, 287
horz_flip, 287
ir_light, 288
nr_level, 288
nr_type, 288
pwr_frequency, 288
saturation, 288
sharpness, 289
tdn, 289
vert_flip, 289
wb_type, 289
vxg::cloud::agent::proto::video_stream_config, 290
brt, 291
format, 291
fps, 291
gop, 291
horz, 291
profile, 292
quality, 292
smoothing, 292
stream, 292
vbr, 292
vbr_brt, 293
vert, 293
vxg::cloud::agent::proto::wifi_config, 296
networks, 296
vxg::cloud::agent::proto::wifi_network, 297
encryption, 297
encryption_caps, 298
mac, 298
password, 298
signal, 298
ssid, 298
vxg::cloud::agent::ptz_command, 198
action, 199
tm, 199
vxg::cloud::agent::ptz_config, 199
actions, 200
maximum_number_of_presets, 200
presets, 200
vxg::cloud::agent::ptz_preset, 201
action, 202
name, 202
token, 202
vxg::cloud::agent::supported_stream_config, 262
audio, 262
id, 262
video, 263
vxg::cloud::agent::supported_streams_config, 263
audio_es, 264
streams, 264
video_es, 264
vxg::cloud::agent::synchronizer, 265
CANCELED, 267
create, 267
DONE, 267
ERROR, 267
PENDING, 267
ptr, 266
segmenter_ptr, 266
start, 268
stop, 268
sync, 268
sync_cancel, 268
sync_finalize, 268
sync_request_ptr, 267
sync_request_status, 267
sync_status_report_cb, 267
vxg::cloud::agent::synchronizer::config, 110
record_by_event_upload_step, 110

vxg::cloud::agent::synchronizer::segmenter, 219
~segmenter, 220
canceled, 221
chunks_done, 221
chunks_failed, 221
chunks_planned, 221
cur_seg_start, 222
cur_seg_stop, 222
delay, 222
final_sync_status_reported, 222
finished, 222
intersects, 221
last_processed_time, 222
operator<, 221
processed, 223
ptr, 220
realtime, 223
step, 223
sync_status_cb, 223
ticket, 223
vxg::cloud::agent::synchronizer::sync_request, 265
segmenter, 265
vxg::cloud::cloud_storage, 106
~cloud_storage, 107
cloud_storage, 107
erase, 107
list, 107
load, 107
store, 108
vxg::cloud::period, 193
begin, 196
clear, 195
duration, 195
end, 196
intersects, 195
is_null, 195
is_open, 196
is_valid, 196
operator<, 196
period, 194, 195
vxg::cloud::stream_storage, 255
~stream_storage, 257
erase, 257
list, 257
load, 257
ptr, 256
store, 258
store_async, 258
stream_storage, 257
vxg::cloud::sync, 55
timeline_ptr, 56
vxg::cloud::sync::timeline, 273
_squash_periods, 275
~timeline, 275
async_store_finished_cb, 274
async_store_is_canceled_cb, 274
finit, 275
init, 275
list, 275
load, 276
slices, 276
store, 276
store_async, 276
timeline, 274
vxg::cloud::time_spec, 56
duration, 56
precision, 56
precision_ratio, 57
vxg::cloud::timed_storage, 269
~timed_storage, 270
async_store_finished_cb, 270
async_store_is_canceled_cb, 270
erase, 271
finit, 271
init, 271
item_ptr, 270
list, 271
load, 271
store, 271
store_async, 272
timed_storage, 270
vxg::cloud::timed_storage::item, 150
async_ready, 152
category, 153
clear, 153
data, 153
data_state, 152
empty, 152, 153
item, 152
loaded, 152
media_type, 153
operator<, 153
state, 154
vxg::cloud::timeline< T >, 272
_squash_periods, 273
slices, 273
timeline, 272, 273
vxg::cloud::utils, 57
dirname, 58
queued_async_handler_ptr, 58
random_string, 58
set_thread_name, 58
string_contains, 58
string_endswith, 59
string_format, 59
string_replace, 59
string_split, 59
string_startswith, 59
string_tolower, 60
string_toupper, 60
string_trim, 60
string_urldecode, 60
string_urlencode, 60
vxg::cloud::utils::gcc_abi, 61
demangle, 61
vxg::cloud::utils::motion, 61

vxg::cloud::utils::motion::map, 173
map, 174
operator=, 174
pack, 174
unpack, 174
vxg::cloud::utils::queued_async_handler< T >, 202
~queued_async_handler, 203
get_handler, 204
handler_func, 203
push, 204
queued_async_handler, 203
set_handler, 204
start, 204
stop, 204
vxg::cloud::utils::time, 61
epoch, 62
from_double, 62
from_iso, 62
from_iso2, 62
from_iso_packed, 62
is_iso, 62
is_iso_packed, 62
iso_time_valid, 63
max, 63
now, 63
now_ISO8601_UTC, 63
now_ISO8601_UTC_packed, 63
null, 63
to_double, 63
to_iso, 64
to_iso2, 64
to_iso_8601, 64
to_iso_local, 64
to_iso_packed, 64
vxg::cloud::utils::uri, 277
fragment, 278
host, 278
parse, 277
password, 278
path, 278
port, 278
query, 279
scheme, 279
user, 279
vxg::logger, 154
critical, 156
debug, 156
error, 157
info, 157, 158
instance, 158
logger_ptr, 155
loglevel, 156
lvl_crit, 156
lvl_debug, 156
lvl_error, 156
lvl_info, 156
lvl_off, 156
lvl_trace, 156
lvl_warn, 156
reset, 158
set_level, 159
trace, 159, 160
warn, 160
vxg::logger::options, 183
crash_logfile_path, 184
default_loglevel, 184
log_pattern, 184
logfile_max_files, 184
logfile_max_size, 185
logfile_path, 185
syslog_ident, 185
tcp_logsink_enabled, 185
tcp_logsink_host, 185
tcp_logsink_port, 185
vxg::media, 64
rtsp_source_ptr, 65
vxg::media::ffmpeg, 65
vxg::media::ffmpeg::Sink, 224
~Sink, 225
droppable, 226
duration, 226
error, 226
finit, 227
init, 227
name, 228
negotiate, 228
Sink, 225
stop, 229
vxg::media::ffmpeg::Source, 229
~Source, 231
finit, 231
init, 231, 232
name, 233
negotiate, 233
pullFrame, 233
Source, 231
stop, 233
vxg::media::rtmp_sink, 206
droppable, 207
init, 207
name, 209
negotiate, 209
rtmp_sink, 207
vxg::media::rtmp_source, 210
init, 211
vxg::media::rtsp_source, 212
__transport_to_ff, 215
ASYNC_TCP, 214
ffmpeg_opts_, 216
HTTP, 214
HTTPS, 214
init, 215
name, 215
rtsp_source, 214
TCP, 214
transport, 214

UDP, 214
UDP_MULTICAST, 214
vxg::media::stream, 234
~stream, 237
finit_sink, 237
finit_source, 237
init_sink, 237
init_source, 238
on_error_cb, 236
ptr, 236
set_on_error_cb, 238
sink_, 239
source_, 239
stream, 236
vxg::media::stream_error, 65
E_CONNECT, 66
E_PROCESS, 66
E_UNKNOWN, 66
error, 66
O_SINK, 66
O_SOURCE, 66
O_UNKNOWN, 66
origin, 66
vxg::media::stream_error::report, 205
code, 205
from, 205
vxg::media::Streamer, 67
AUDIO, 68
AUDIO_SEQ_HDR, 68
DATA, 68
DROP_BACK, 68
DROP_FRONT, 68
DropDirection, 67
E_EOS, 68
E_FATAL, 68
E_NONE, 68
FLV, 68
MAX, 68
MediaType, 68
on_error_cb, 67
SINK_THREAD_PRIO, 69
SRC_THREAD_PRIO, 69
StreamError, 68
UKNOWN, 68
VIDEO, 68
VIDEO_AVC_PPS, 68
VIDEO_AVC_SPS, 68
VIDEO_SEQ_HDR, 68
vxg::media::Streamer::ISink, 137
~ISink, 139
droppable, 139
duration, 139
error, 140
finit, 140
init, 140
ISink, 139
name, 142
negotiate, 142
on_error_cb_, 143
process, 142
ptr, 138
PtrU, 138
set_eos, 143
set_eos_cb, 143
set_error_cb, 143
vxg::media::Streamer::ISource, 144
error, 147
finit, 148
init, 148
ISource, 147
Mode, 146
mode_, 150
name, 148
negotiate, 148
on_error_cb_, 150
ptr, 145
PULL, 147
pullFrame, 149
PUSH, 147
pushFrame, 149
set_error_cb, 149
vxg::media::Streamer::MediaFrame, 175
data, 176
dts, 176
duration, 177
is_key, 177
len, 177
NO_PTS, 177
operator<, 176
pts, 177
time_realtime, 178
timescale, 178
type, 178
vxg::media::Streamer::StreamInfo, 258
AC_AAC, 260
AC_G711_A, 260
AC_G711_U, 260
AC_G726, 260
AC_LPCM, 260
AC_OPUS, 260
AC_UNKNOWN, 260
audio, 261
AudioCodec, 259
DataCodec, 260
DC_ONVIF, 260
DC_UNKNOWN, 260
ST_ANY, 260
ST_AUDIO, 260
ST_DATA, 260
ST_UNKNOWN, 260
ST_VIDEO, 260
StreamType, 260
type, 261
VC_H264, 261
VC_UNKNOWN, 261
video, 261

VideoCodec, 260
vxg::media::Streamer::StreamInfo::AudioInfo, 86
bitrate, 86
channels, 87
codec, 87
extradata, 87
samplerate, 87
timebase, 87
vxg::media::Streamer::StreamInfo::VideoInfo, 293
bitrate, 294
codec, 294
extradata, 294
framerate, 295
height, 295
timebase, 295
width, 295
vxg_cloud_token
cloud-agent-minimal.cc, 307
cloud-agent.cc, 309

warn
vxg::logger, 160
wb_type
vxg::cloud::agent::proto::video_caps, 282
vxg::cloud::agent::proto::video_config, 289
WFE_INVALID
vxg::cloud::agent::proto, 55
WFE_OPEN
vxg::cloud::agent::proto, 55
WFE_WEP
vxg::cloud::agent::proto, 55
WFE_WPA
vxg::cloud::agent::proto, 55
WFE_WPA2
vxg::cloud::agent::proto, 55
WFE_WPA2_ENTERPRISE
vxg::cloud::agent::proto, 55
WFE_WPA_ENTERPRISE
vxg::cloud::agent::proto, 55
width
vxg::media::Streamer::StreamInfo::VideoInfo, 295
wifi_encryption
vxg::cloud::agent::proto, 54
wifi_list
vxg::cloud::agent::proto, 50
wifi_network_state
vxg::cloud::agent::proto, 55
WNS_CONNECTED
vxg::cloud::agent::proto, 55
WNS_INITIALIZE_0
vxg::cloud::agent::proto, 55
WNS_INITIALIZE_1
vxg::cloud::agent::proto, 55
WNS_INVALID
vxg::cloud::agent::proto, 55
WNS_RECEIVING_IP
vxg::cloud::agent::proto, 55
WNS_TRY_CONNECT
vxg::cloud::agent::proto, 55
WNS_UNKNOWN
vxg::cloud::agent::proto, 55