# vxgcloudagent

1.3.1

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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_bye(proto::bye_reason reason) override {
        vxg::logger::error("Error {}", json(reason).dump());
    }
    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) {}
    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 bool stop_record() override {
        vxg::logger::warn("{} not implemented", __func__);
        return true;
    }
};
```

**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:

# Chapter 7

# Data Structure Index

## 7.1 Data Structures

Here are the data structures with brief descriptions:

# Chapter 8

# File Index

## 8.1 File List

Here is a list of all files with brief descriptions:

# 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**
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- class **collate**
- class **collate_byname**
- class **common_type**
- class **complex**
- class **condition_variable**
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- class **csub_match**
- class **ctype**
- class **ctype_base**
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- class **deca**
- class **decay**
- class **deci**
- class **default_delete**
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- class **defer_lock_t**
- class **deque**
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- class **discrete_distribution**
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- class **equal_to**
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- class **error_category**
- class **error_code**
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- class **hecto**
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- class **independent_bits_engine**
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- 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**
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- class **intptr_t**
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- 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**
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- 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**
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- class **is_nothrow_move_assignable**
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- class **is_object**
- class **is_placeholder**
- class **is_pod**
- class **is_pointer**
- class **is_polymorphic**
- class **is_reference**
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- 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**
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- class **is_trivially_default_constructible**
- class **is_trivially_destructible**
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- class **is_trivially_move_constructible**
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- class **istream**
- class **istream_iterator**
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- class **messages_base**
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- class **mt19937**
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- class **sub_match**
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- class **u16streampos**
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- 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**
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- class **wistream**
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- T **atomic_fetch_xor_explicit** (T... args)
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- T **fputs** (T... args)
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- T **rint** (T... args)
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- T **replace_copy_if** (T... args)
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- T **make_exception_ptr** (T... args)
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- T **atomic_exchange_explicit** (T... args)
- T **wprintf** (T... args)
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- T **make_heap** (T... args)
- T **fmod** (T... args)
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- T **log10** (T... args)
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- T **log** (T... args)
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- T **make_tuple** (T... args)
- T **expm1** (T... args)
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- T **remove_copy_if** (T... args)
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- T **wcstoll** (T... args)
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- T **feclearexcept** (T... args)
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- T **strspn** (T... args)
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- T **binary_search** (T... args)
- T **system_category** (T... args)
- T **mbrtowc** (T... args)
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- T **distance** (T... args)
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- T **strcmp** (T... args)
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- T **getenv** (T... args)
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- T **tan** (T... args)
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- T **atomic_store** (T... args)
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- T **unitbuf** (T... args)
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- T **wcstoimax** (T... args)
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- T **isalnum** (T... args)
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- T **wcsncat** (T... args)
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- T **set_difference** (T... args)
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- T **ceil** (T... args)
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- 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.*

### 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 146 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
- 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::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

## 9.16.1 Typedef Documentation

### 9.16.1.1 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.

## 9.16.2 Enumeration Type Documentation

### 9.16.2.1 DropDirection

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

**Enumerator**

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

Definition at line 38 of file base_streamer.h.

#### 9.16.2.2 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.

#### 9.16.2.3 StreamError

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

Stream error.

**Enumerator**

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

Definition at line 44 of file base_streamer.h.

### 9.16.3 Variable Documentation

#### 9.16.3.1 SINK_THREAD_PRIO

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

Definition at line 36 of file base_streamer.h.

#### 9.16.3.2 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:

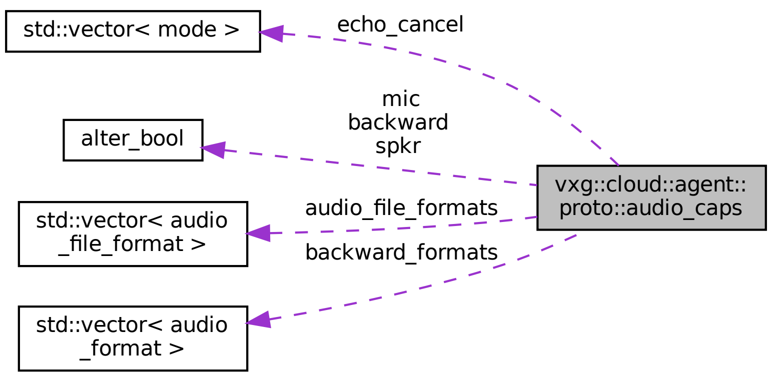
- unset-helper.h

## 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:


std::vector< mode >
echo_cancel
alter_bool
mic
backward
spkr
std::vector< audio _file_format >
audio_file_formats
backward_formats
std::vector< audio _format >
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”, “SPE↩
EX”, “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:

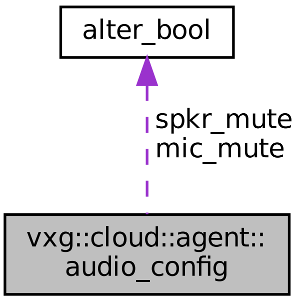
- caps.h

## 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.

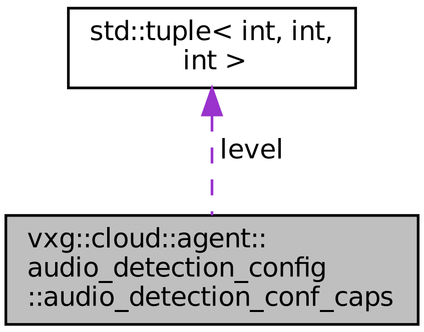
The documentation for this struct was generated from the following file:

- 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:


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

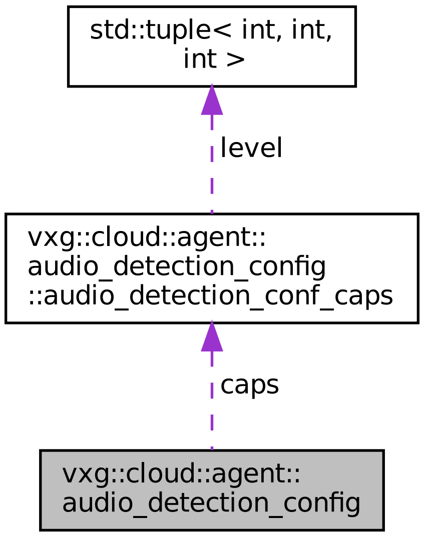
- config.h

## 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:


std::tuple< int, int, int >
level
vxg::cloud::agent:: audio_detection_config ::audio_detection_conf_caps
caps
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:

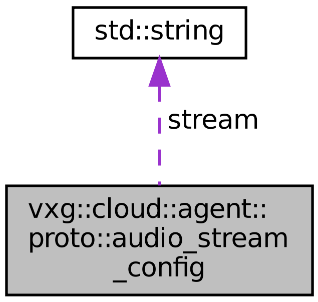
- config.h

## 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:

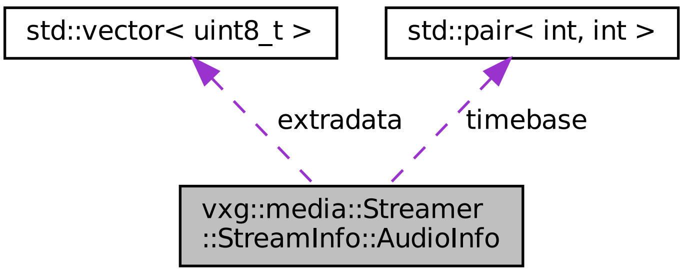
- config.h

## 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:

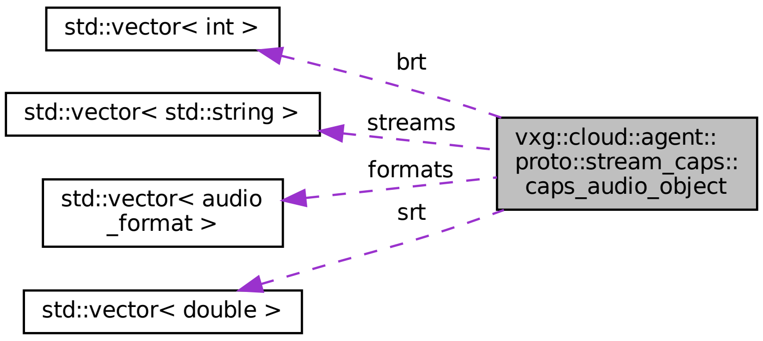
- callback.h

## 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:

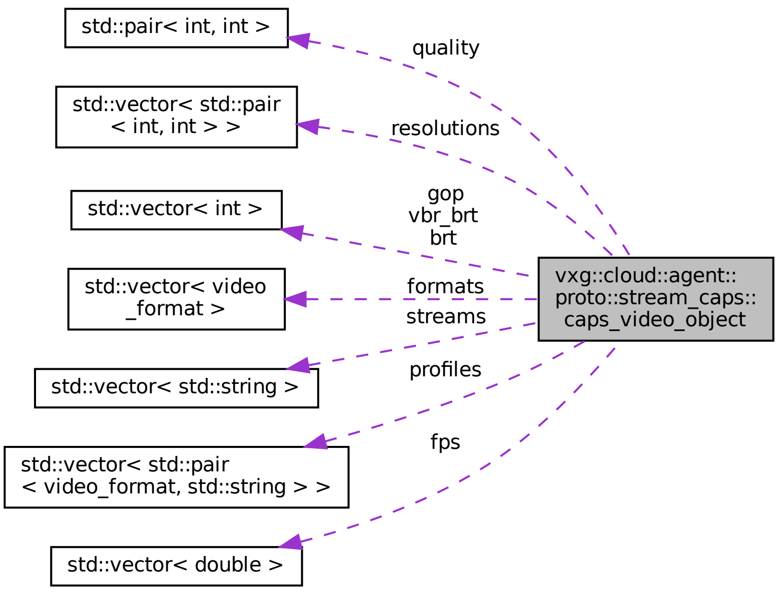
- caps.h

## 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:


std::pair< int, int >
quality
std::vector< std::pair < int, int > >
resolutions
std::vector< int >
gop
vbr_brt
brt
std::vector< video _format >
formats
streams
vxg::cloud::agent:: proto::stream_caps:: caps_video_object
std::vector< std::string >
profiles
std::vector< std::pair < video_format, std::string > >
fps
std::vector< double >

## 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.

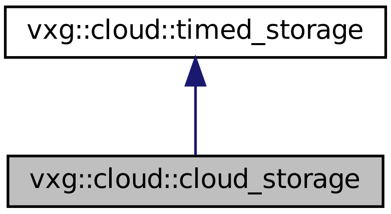
The documentation for this struct was generated from the following file:

- caps.h

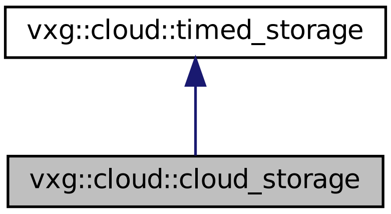
## 10.12 vxg::cloud::cloud_storage Class Reference

```
#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.

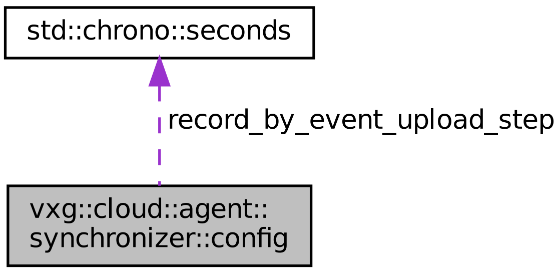
The documentation for this struct was generated from the following file:

- 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:

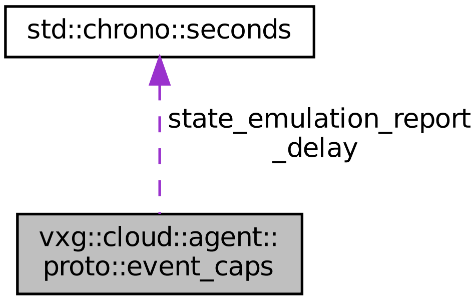
- timeline-synchronizer.h

## 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:

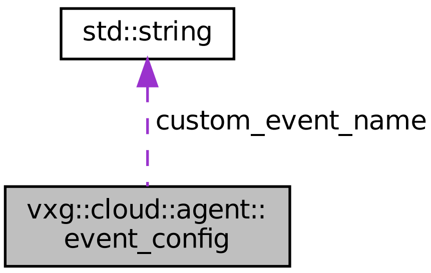
- caps.h

## 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.

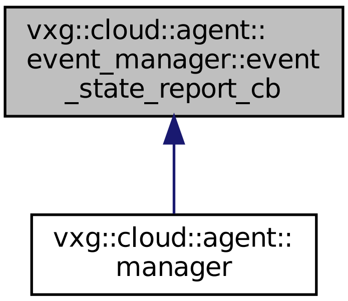
The documentation for this struct was generated from the following file:

- 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:

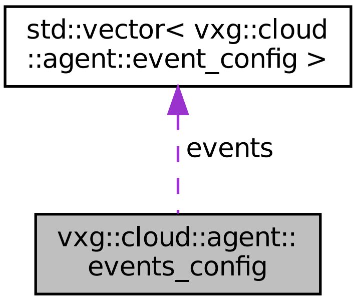
- event-stream.h

## 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:


std::vector< vxg::cloud ::agent::event_config >
events
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.

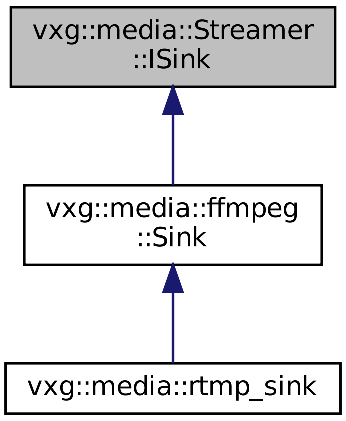
The documentation for this struct was generated from the following file:

- config.h

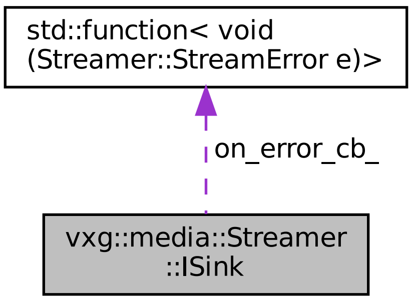
## 10.23 vxg::media::Streamer::ISink Class Reference

```
#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:

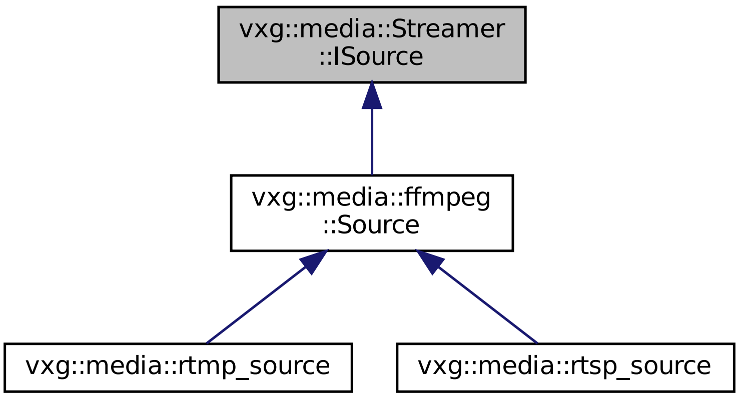
- base_streamer.h

## 10.24 vxg::media::Streamer::ISource Class Reference

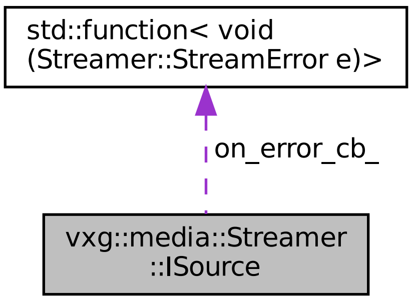
ISource interface class.

```
#include <streamer/base_streamer.h>
```

Inheritance diagram for vxg::media::Streamer::ISource:



Collaboration diagram for vxg::media::Streamer::ISource:


std::function< void (Streamer::StreamError e)>
on_error_cb_
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.

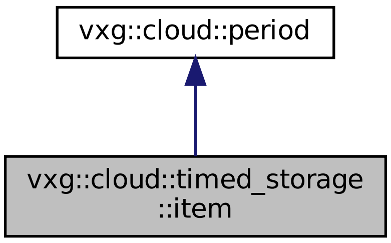
The documentation for this class was generated from the following file:

- base_streamer.h

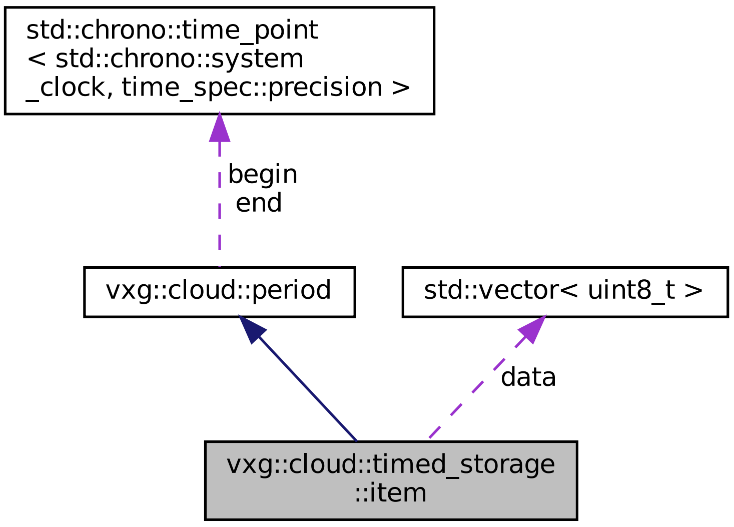
## 10.25 vxg::cloud::timed_storage::item Struct Reference

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

Inheritance diagram for vxg::cloud::timed_storage::item:



Collaboration diagram for vxg::cloud::timed_storage::item:


std::chrono::time_point < std::chrono::system _clock, time_spec::precision >
begin
end
vxg::cloud::period
std::vector< uint8_t >
data
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:

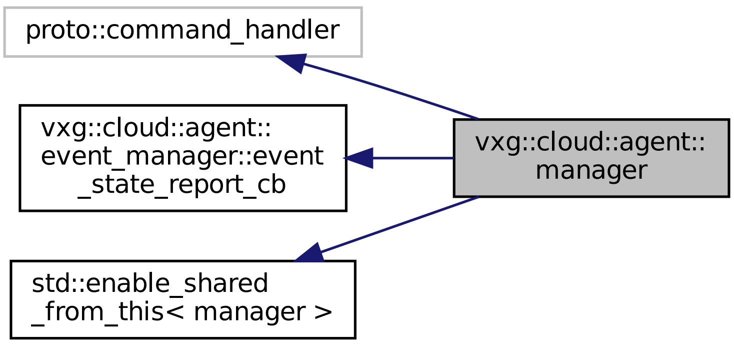
- logging.h

## 10.27 vxg::cloud::agent::manager Class Reference

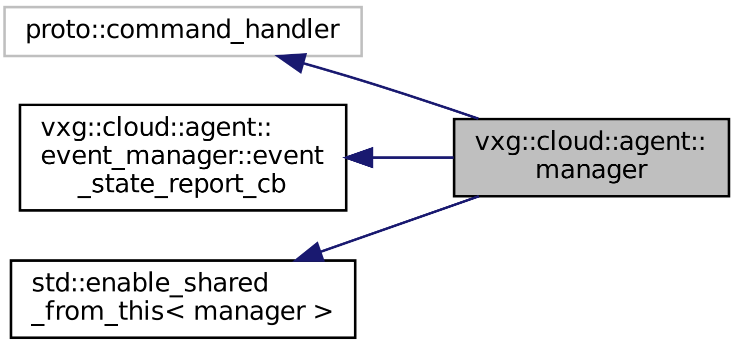
VXG Cloud agent manager class.

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

Inheritance diagram for vxg::cloud::agent::manager:


proto::command_handler
vxg::cloud::agent:: event_manager::event _state_report_cb
vxg::cloud::agent:: manager
std::enable_shared _from_this< manager >

Collaboration diagram for vxg::cloud::agent::manager:


proto::command_handler
vxg::cloud::agent:: event_manager::event _state_report_cb
vxg::cloud::agent:: manager
std::enable_shared _from_this< 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.

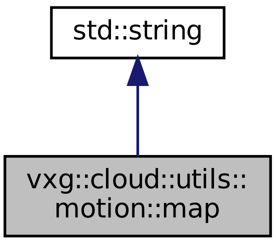
The documentation for this class was generated from the following file:

- manager.h

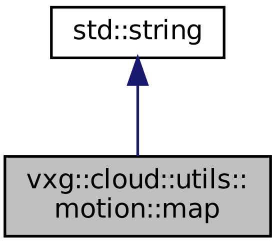
## 10.28 vxg::cloud::utils::motion::map Struct Reference

```
#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:

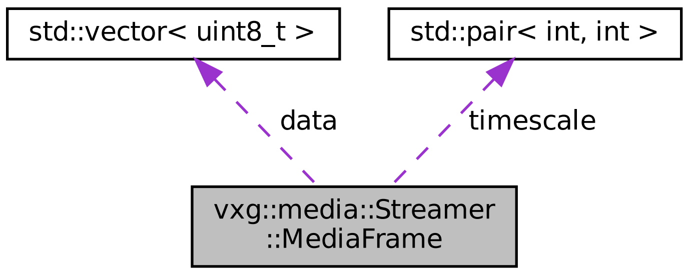
- utils.h

## 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:

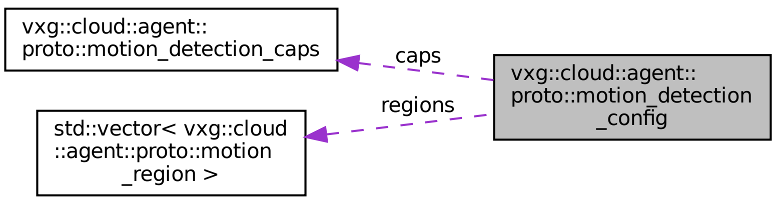
- caps.h

## 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:


vxg::cloud::agent::proto::motion_detection_caps
caps
vxg::cloud::agent::proto::motion_detection_config
regions
std::vector< vxg::cloud::agent::proto::motion_region >

### 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:

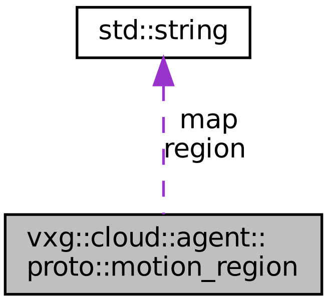
- config.h

## 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.

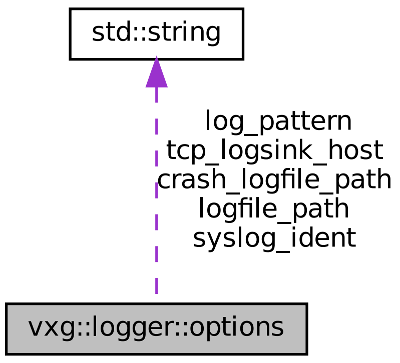
The documentation for this struct was generated from the following file:

- 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:

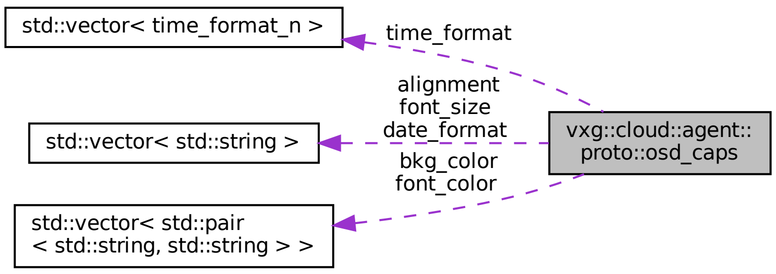
- logging.h

## 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:


std::vector< time_format_n >
time_format
alignment
font_size
date_format
std::vector< std::string >
vxg::cloud::agent::proto::osd_caps
bkg_color
font_color
std::vector< std::pair < std::string, std::string > >

### 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:

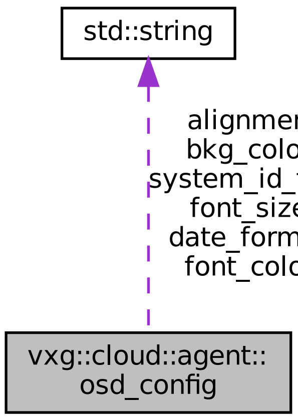
- caps.h

## 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.

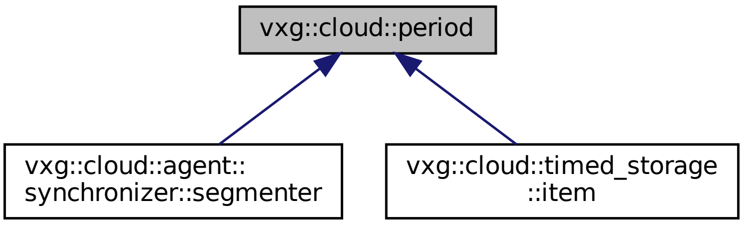
The documentation for this struct was generated from the following file:

- config.h

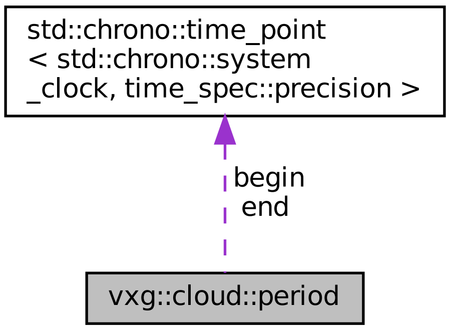
## 10.36 vxg::cloud::period Struct Reference

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

Inheritance diagram for vxg::cloud::period:


vxg::cloud::period
vxg::cloud::agent::synchronizer::segmenter
vxg::cloud::timed_storage::item

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:

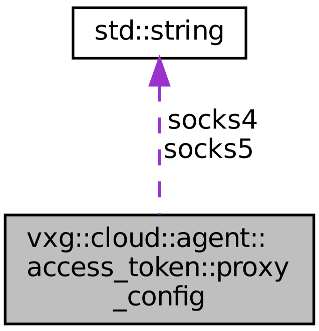
- timeline.h

## 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:

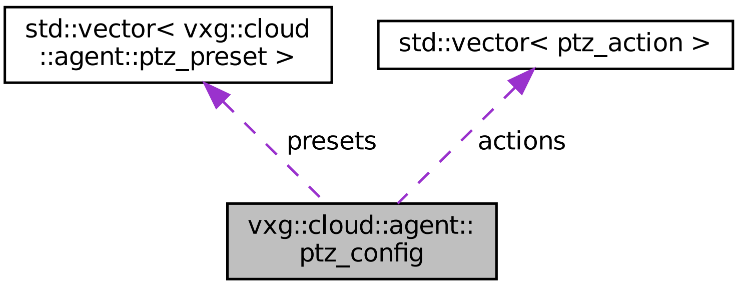
- config.h

## 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:


std::vector< vxg::cloud ::agent::ptz_preset >
std::vector< ptz_action >
presets
actions
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:

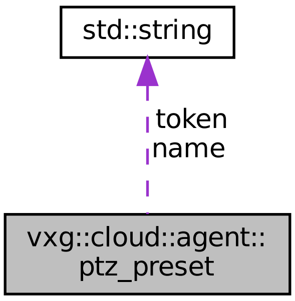
- config.h

## 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:

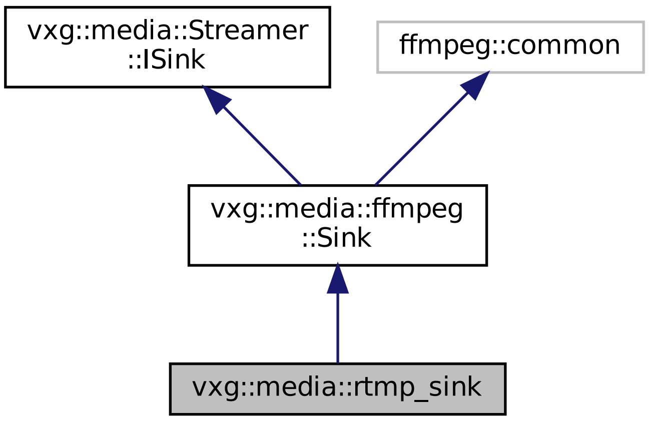
- queued-handler.h

## 10.42 vxg::media::rtmp_sink Class Reference

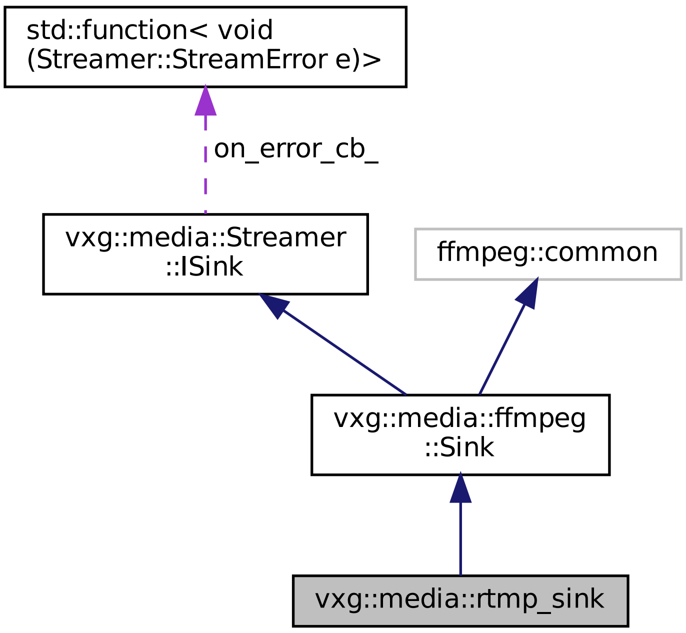
RTMP sink class.

```
#include <streamer/rtmp_sink.h>
```

Inheritance diagram for vxg::media::rtmp_sink:



Collaboration diagram for vxg::media::rtmp_sink:


std::function< void (Streamer::StreamError e)>
on_error_cb_
vxg::media::Streamer ::ISink
ffmpeg::common
vxg::media::ffmpeg ::Sink
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

## 10.42.1 Detailed Description

RTMP sink class.

Definition at line 13 of file rtmp_sink.h.

## 10.42.2 Constructor & Destructor Documentation

### 10.42.2.1 rtmp_sink()

```
vxg::media::rtmp_sink::rtmp_sink ( )  [inline]
```

Construct a new rtmp sink object.

Definition at line 18 of file rtmp_sink.h.

## 10.42.3 Member Function Documentation

### 10.42.3.1 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.

### 10.42.3.2 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.

#### 10.42.3.3 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.

#### 10.42.3.4 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:

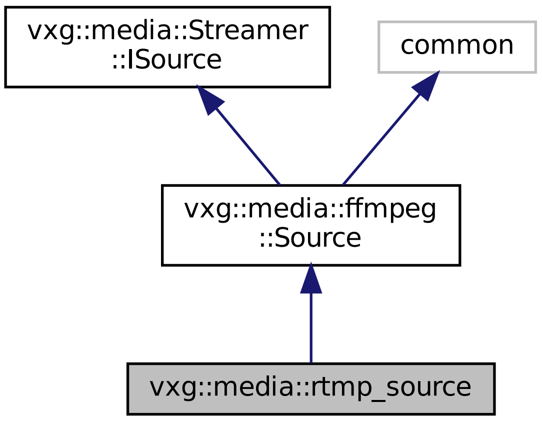
- rtmp_sink.h

## 10.43 vxg::media::rtmp_source Class Reference

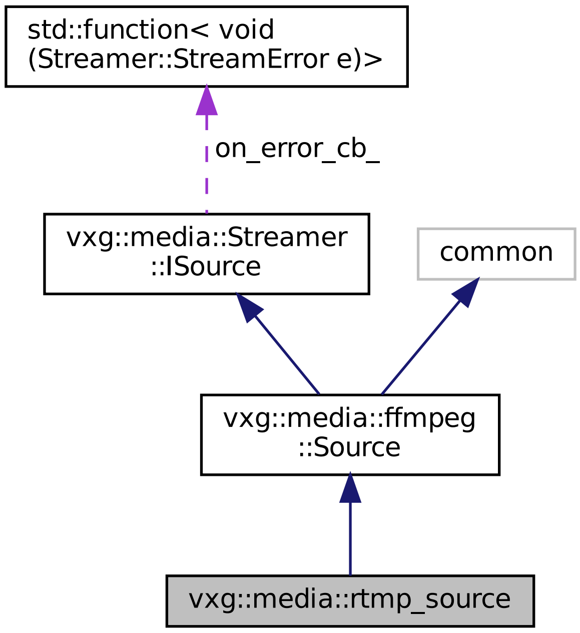
RTMP source class.

```
#include <streamer/rtmp_source.h>
```

Inheritance diagram for vxg::media::rtmp_source:



Collaboration diagram for vxg::media::rtmp_source:


std::function< void (Streamer::StreamError e)>
on_error_cb_
vxg::media::Streamer ::ISource
common
vxg::media::ffmpeg ::Source
vxg::media::rtmp_source

## Public Member Functions

- virtual bool init ( **std::string** url)

  *Init source with url.*

## Additional Inherited Members

### 10.43.1 Detailed Description

RTMP source class.

Definition at line 13 of file rtmp_source.h.

### 10.43.2 Member Function Documentation

#### 10.43.2.1 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:

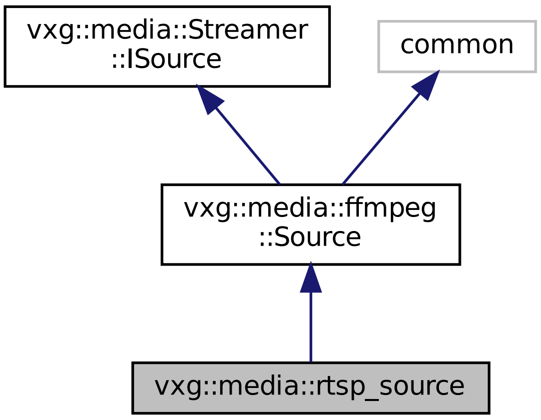
- rtmp_source.h

## 10.44 vxg::media::rtsp_source Class Reference

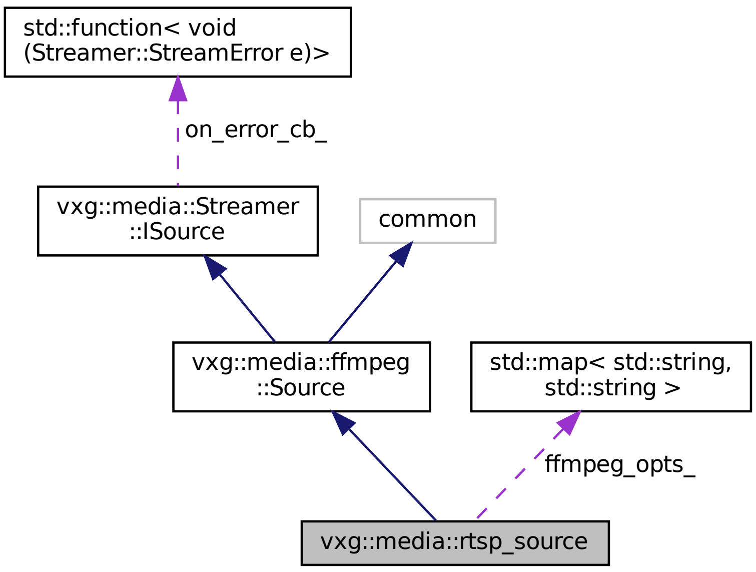
RTSP source class.

```
#include <streamer/rtsp_source.h>
```

Inheritance diagram for vxg::media::rtsp_source:



Collaboration diagram for vxg::media::rtsp_source:


std::function< void (Streamer::StreamError e)>
on_error_cb_
vxg::media::Streamer ::ISource
common
vxg::media::ffmpeg ::Source
std::map< std::string, std::string >
ffmpeg_opts_
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_

### 10.44.1 Detailed Description

RTSP source class.

Definition at line 13 of file rtsp_source.h.

### 10.44.2 Member Enumeration Documentation

#### 10.44.2.1 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.

### 10.44.3 Constructor & Destructor Documentation

#### 10.44.3.1 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.

## 10.44.4 Member Function Documentation

### 10.44.4.1 __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.

### 10.44.4.2 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.

#### 10.44.4.3 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.

### 10.44.5 Field Documentation

#### 10.44.5.1 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:

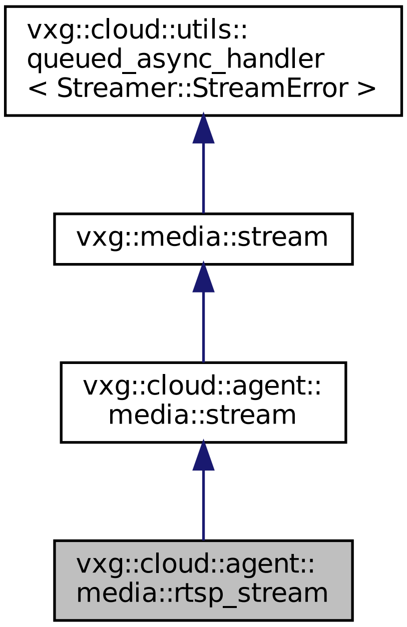
- rtsp_source.h

## 10.45 vxg::cloud::agent::media::rtsp_stream Class Reference

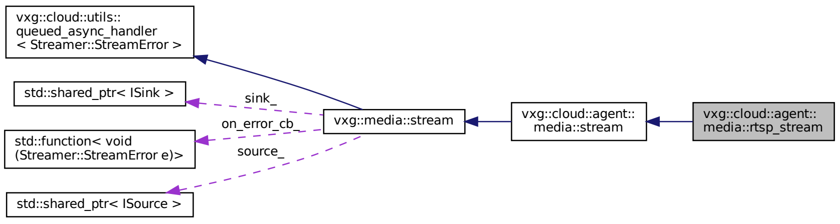
Implementation of the media::stream with RTSP source and NIY stubs.

```
#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 ( **std::string** source_url, **std::string** name, rtsp_source::transport transport=rtsp_source↩ ::transport::ASYNC_TCP, bool recorder_needs_source=false)

  *Construct a new rtsp stream object.*
- rtsp_stream ( **std::string** source_url, **std::string** name, vxg::media::rtsp_source_ptr rtsp_src, bool recorder_needs_source=false)

*Construct a new rtsp stream object using provided rtsp_src.*
- virtual ∼rtsp_stream ()
- virtual bool start ( **std::string** not_used="")
- bool get_supported_stream (proto::supported_stream_config &config)
- virtual bool get_stream_caps (proto::stream_caps &caps) override

  *Get the media stream caps.*
- virtual bool get_stream_config (proto::stream_config &streamConfig)

  *Get the stream config.*
- virtual bool set_stream_config (const proto::stream_config &streamConfig)

  *Set the streams config.*
- virtual bool get_snapshot (proto::event_object::snapshot_info_object &snapshot)
- virtual **std::vector**< proto::video_clip_info > record_get_list (cloud::time begin, cloud::time end, bool align)

  *Get list of the recorded clips for specific time period.*
- virtual proto::video_clip_info record_export (cloud::time begin, cloud::time end)

  *Export recorded clip for specified time.*
- virtual bool start_record ()

  *Start recording of this media stream.*
- virtual bool stop_record ()

  *Stop recording of this stream.*

## Additional Inherited Members

## 10.45.1 Detailed Description

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

Definition at line 17 of file rtsp-stream.h.

## 10.45.2 Member Typedef Documentation

### 10.45.2.1 ptr

```
typedef  std::shared_ptr<rtsp_stream> vxg::cloud::agent::media::rtsp_stream::ptr
```

Definition at line 33 of file rtsp-stream.h.

## 10.45.3 Constructor & Destructor Documentation

### 10.45.3.1 rtsp_stream() [1/2]

```
vxg::cloud::agent::media::rtsp_stream::rtsp_stream (
                std::string source_url,
                std::string name,
               rtsp_source::transport transport = rtsp_source::transport::ASYNC_TCP,
               bool recorder_needs_source = false )  [inline]
```

Construct a new rtsp stream object.

**Parameters**

| | |
|---|---|
| *source_url* | RTSP url |
| *name* | Unique stream name |
| *rtp_transport_tcp* | true - RTP over TCP; false - RTP over UDP |
| *record_needs_source* | Indicates if stream needs source start before calling start_record() virtual method. |

Definition at line 42 of file rtsp-stream.h.

#### 10.45.3.2 rtsp_stream() [2/2]

```
vxg::cloud::agent::media::rtsp_stream::rtsp_stream (
              std::string source_url,
              std::string name,
             vxg::media::rtsp_source_ptr rtsp_src,
             bool recorder_needs_source = false )  [inline]
```

Construct a new rtsp stream object using provided rtsp_src.

**Parameters**

| | |
|---|---|
| *source_url* | RTSP url |
| *name* | Unique stream name |
| *rtsp_src* | rtsp_source object pointer |
| *recorder_needs_source* | Indicates if stream needs source start before calling start_record() virtual method. |

Definition at line 62 of file rtsp-stream.h.

#### 10.45.3.3 ∼rtsp_stream()

```
virtual vxg::cloud::agent::media::rtsp_stream::∼rtsp_stream ( )  [inline], [virtual]
```

Definition at line 72 of file rtsp-stream.h.

### 10.45.4 Member Function Documentation

#### 10.45.4.1 get_snapshot()

```
virtual bool vxg::cloud::agent::media::rtsp_stream::get_snapshot (
             proto::event_object::snapshot_info_object & snapshot )  [inline], [virtual]
```

Definition at line 107 of file rtsp-stream.h.

#### 10.45.4.2 get_stream_caps()

```
virtual bool vxg::cloud::agent::media::rtsp_stream::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.

Definition at line 89 of file rtsp-stream.h.

#### 10.45.4.3 get_stream_config()

```
virtual bool vxg::cloud::agent::media::rtsp_stream::get_stream_config (
             proto::stream_config & config )  [inline], [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.

Definition at line 95 of file rtsp-stream.h.

#### 10.45.4.4 get_supported_stream()

```
bool vxg::cloud::agent::media::rtsp_stream::get_supported_stream (
             proto::supported_stream_config & config )  [inline]
```

Definition at line 78 of file rtsp-stream.h.

### 10.45.4.5 record_export()

```
virtual proto::video_clip_info vxg::cloud::agent::media::rtsp_stream::record_export (
            cloud::time begin,
            cloud::time end )  [inline], [virtual]
```

Export recorded clip for specified time.

**Parameters**

| | |
|---|---|
| *begin* | |
| *end* | |

**Returns**

proto::video_clip_info

Implements vxg::cloud::agent::media::stream.

Definition at line 122 of file rtsp-stream.h.

### 10.45.4.6 record_get_list()

```
virtual  std::vector<proto::video_clip_info> vxg::cloud::agent::media::rtsp_stream::record_↩
get_list (
            cloud::time begin,
            cloud::time end,
            bool align )  [inline], [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.

Definition at line 115 of file rtsp-stream.h.

#### 10.45.4.7 set_stream_config()

```
virtual bool vxg::cloud::agent::media::rtsp_stream::set_stream_config (
             const proto::stream_config & config )  [inline], [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.

Definition at line 101 of file rtsp-stream.h.

#### 10.45.4.8 start()

```
virtual bool vxg::cloud::agent::media::rtsp_stream::start (
              std::string not_used = "" )  [inline], [virtual]
```

Reimplemented from vxg::media::stream.

Definition at line 74 of file rtsp-stream.h.

#### 10.45.4.9 start_record()

```
virtual bool vxg::cloud::agent::media::rtsp_stream::start_record ( )  [inline], [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.

Definition at line 130 of file rtsp-stream.h.

#### 10.45.4.10 stop_record()

```
virtual bool vxg::cloud::agent::media::rtsp_stream::stop_record ( )  [inline], [virtual]
```

Stop recording of this stream.

**Returns**

true Stopped

false Failed to stop

Implements vxg::cloud::agent::media::stream.

Definition at line 136 of file rtsp-stream.h.

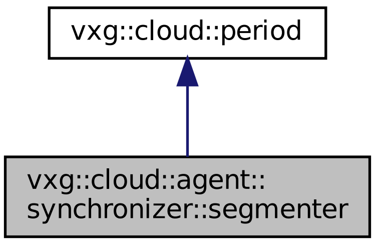
The documentation for this class was generated from the following file:

- rtsp-stream.h

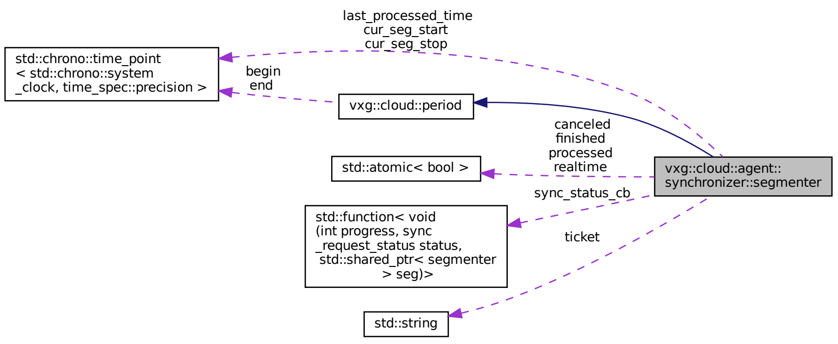
## 10.46 vxg::cloud::agent::synchronizer::segmenter Struct Reference

```
#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

### 10.46.1 Detailed Description

Definition at line 32 of file timeline-synchronizer.h.

### 10.46.2 Member Typedef Documentation

#### 10.46.2.1 ptr

```
typedef std::shared_ptr<segmenter> vxg::cloud::agent::synchronizer::segmenter::ptr
```

Definition at line 72 of file timeline-synchronizer.h.

## 10.46.3 Constructor & Destructor Documentation

### 10.46.3.1 ∼segmenter()

```
virtual vxg::cloud::agent::synchronizer::segmenter::∼segmenter ( )  [inline], [virtual]
```

Definition at line 55 of file timeline-synchronizer.h.

## 10.46.4 Member Function Documentation

### 10.46.4.1 intersects()

```
bool vxg::cloud::agent::synchronizer::segmenter::intersects (
            const segmenter & r )  [inline]
```

Definition at line 61 of file timeline-synchronizer.h.

### 10.46.4.2 operator<()

```
bool vxg::cloud::agent::synchronizer::segmenter::operator< (
            const segmenter & r )  [inline]
```

Definition at line 57 of file timeline-synchronizer.h.

## 10.46.5 Field Documentation

### 10.46.5.1 canceled

```
std::atomic<bool> vxg::cloud::agent::synchronizer::segmenter::canceled
```

Canceled.

Definition at line 42 of file timeline-synchronizer.h.

#### 10.46.5.2 chunks_done

```
size_t vxg::cloud::agent::synchronizer::segmenter::chunks_done
```

Definition at line 50 of file timeline-synchronizer.h.

#### 10.46.5.3 chunks_failed

```
size_t vxg::cloud::agent::synchronizer::segmenter::chunks_failed
```

Definition at line 51 of file timeline-synchronizer.h.

#### 10.46.5.4 chunks_planned

```
size_t vxg::cloud::agent::synchronizer::segmenter::chunks_planned
```

Definition at line 49 of file timeline-synchronizer.h.

#### 10.46.5.5 cur_seg_start

```
cloud::time vxg::cloud::agent::synchronizer::segmenter::cur_seg_start
```

Definition at line 33 of file timeline-synchronizer.h.

#### 10.46.5.6 cur_seg_stop

```
cloud::time vxg::cloud::agent::synchronizer::segmenter::cur_seg_stop
```

Definition at line 34 of file timeline-synchronizer.h.

#### 10.46.5.7 delay

```
cloud::duration vxg::cloud::agent::synchronizer::segmenter::delay
```

Definition at line 37 of file timeline-synchronizer.h.

#### 10.46.5.8 final_sync_status_reported

```
bool vxg::cloud::agent::synchronizer::segmenter::final_sync_status_reported
```

Definition at line 53 of file timeline-synchronizer.h.

#### 10.46.5.9 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.

#### 10.46.5.10 last_processed_time

```
cloud::time vxg::cloud::agent::synchronizer::segmenter::last_processed_time
```

Definition at line 35 of file timeline-synchronizer.h.

#### 10.46.5.11 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.

#### 10.46.5.12 realtime

```
std::atomic<bool> vxg::cloud::agent::synchronizer::segmenter::realtime
```

Realtime delay between chunks processing.

Definition at line 47 of file timeline-synchronizer.h.

#### 10.46.5.13 step

```
cloud::duration vxg::cloud::agent::synchronizer::segmenter::step
```

Definition at line 36 of file timeline-synchronizer.h.

#### 10.46.5.14 sync_status_cb

```
sync_status_report_cb vxg::cloud::agent::synchronizer::segmenter::sync_status_cb
```

Definition at line 52 of file timeline-synchronizer.h.

#### 10.46.5.15 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:

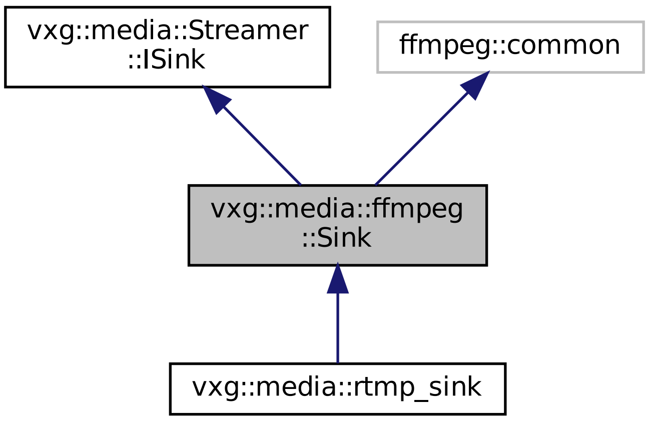
- timeline-synchronizer.h

## 10.47 vxg::media::ffmpeg::Sink Class Reference

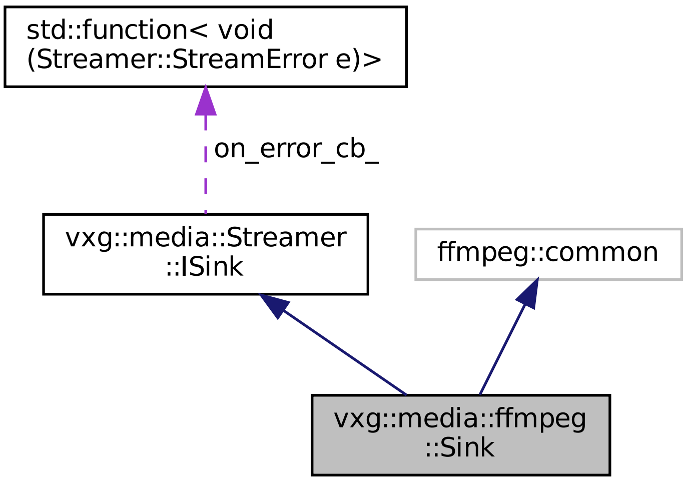
Base ffmpeg sink class.

```
#include <streamer/ffmpeg_sink.h>
```

Inheritance diagram for vxg::media::ffmpeg::Sink:



Collaboration diagram for vxg::media::ffmpeg::Sink:


std::function< void (Streamer::StreamError e)>
on_error_cb_
vxg::media::Streamer ::ISink
ffmpeg::common
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

### 10.47.1 Detailed Description

Base ffmpeg sink class.

Definition at line 12 of file ffmpeg_sink.h.

## 10.47.2 Constructor & Destructor Documentation

#### 10.47.2.1 Sink()

```
vxg::media::ffmpeg::Sink::Sink ( )
```

#### 10.47.2.2 ∼Sink()

```
virtual vxg::media::ffmpeg::Sink::∼Sink ( )  [virtual]
```

## 10.47.3 Member Function Documentation

#### 10.47.3.1 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.

#### 10.47.3.2 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.

#### 10.47.3.3 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.

#### 10.47.3.4 finit()

```
virtual bool vxg::media::ffmpeg::Sink::finit ( )  [virtual]
```

Deinit sink.

**Returns**

true finit success.

false finit failed.

Implements vxg::media::Streamer::ISink.

#### 10.47.3.5 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

#### 10.47.3.6 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.

#### 10.47.3.7 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.

#### 10.47.3.8 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.

#### 10.47.3.9 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:

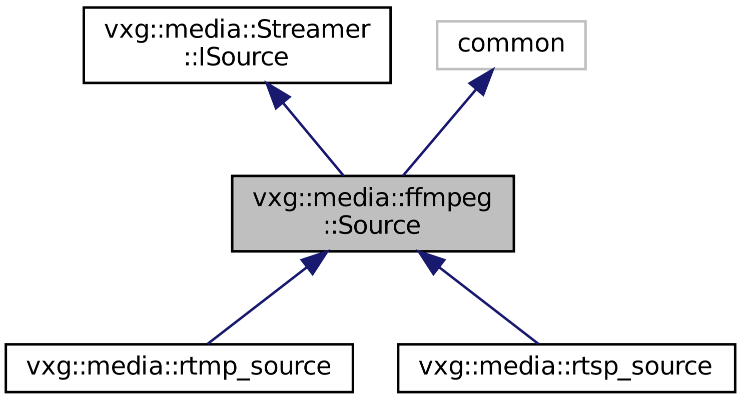
- ffmpeg_sink.h

## 10.48 vxg::media::ffmpeg::Source Class Reference

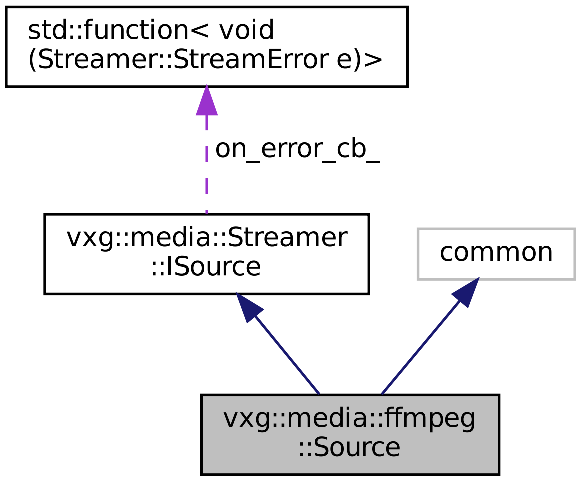
Base ffmpeg source class.

```
#include <streamer/ffmpeg_source.h>
```

Inheritance diagram for vxg::media::ffmpeg::Source:



Collaboration diagram for vxg::media::ffmpeg::Source:


std::function< void (Streamer::StreamError e)>
on_error_cb_
vxg::media::Streamer ::ISource
common
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

## 10.48.1 Detailed Description

Base ffmpeg source class.

Definition at line 10 of file ffmpeg_source.h.

### 10.48.2 Constructor & Destructor Documentation

#### 10.48.2.1 Source()

```
vxg::media::ffmpeg::Source::Source (
              std::vector< Streamer::StreamInfo > suggested_input_streams = {} )
```

Definition at line 9 of file ffmpeg_source.cc.

#### 10.48.2.2 ∼Source()

```
vxg::media::ffmpeg::Source::∼Source ( )  [virtual]
```

Definition at line 14 of file ffmpeg_source.cc.

### 10.48.3 Member Function Documentation

#### 10.48.3.1 finit()

```
void vxg::media::ffmpeg::Source::finit ( )  [virtual]
```

Finit souce.

Implements vxg::media::Streamer::ISource.

Definition at line 32 of file ffmpeg_source.cc.

#### 10.48.3.2 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.

### 10.48.3.3 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.

### 10.48.3.4 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.

#### 10.48.3.5 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.

#### 10.48.3.6 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.

#### 10.48.3.7 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.

#### 10.48.3.8 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:

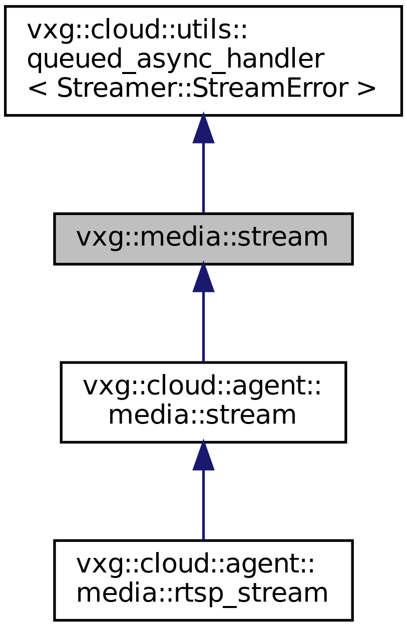
- ffmpeg_source.h
- ffmpeg_source.cc

## 10.49 vxg::media::stream Class Reference

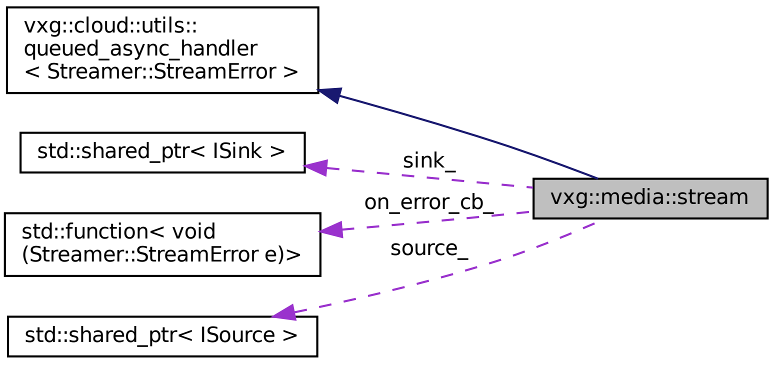
base media stream abstract class

```
#include <streamer/stream.h>
```

Inheritance diagram for vxg::media::stream:



Collaboration diagram for vxg::media::stream:



## Public Types

- 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.*

## Protected Attributes

- Streamer::on_error_cb on_error_cb_
- Streamer::ISource::ptr source_

    *media source*

- Streamer::ISink::ptr sink_

    *media sink*

### 10.49.1 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 23 of file streamer/stream.h.

### 10.49.2 Member Typedef Documentation

#### 10.49.2.1 ptr

```
typedef  std::shared_ptr<stream> vxg::media::stream::ptr
```

**std::shared_ptr** to the base_stream

Definition at line 44 of file streamer/stream.h.

### 10.49.3 Constructor & Destructor Documentation

#### 10.49.3.1 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 51 of file streamer/stream.h.

#### 10.49.3.2 ∼stream()

```
virtual vxg::media::stream::∼stream ( )  [inline], [virtual]
```

Reimplemented in vxg::cloud::agent::media::stream.

Definition at line 67 of file streamer/stream.h.

## 10.49.4 Member Function Documentation

### 10.49.4.1 finit_sink()

```
virtual void vxg::media::stream::finit_sink ( )  [inline], [virtual]
```

Deinitialize sink.

Derived class deinitialize and deallocates base_stream::sink_

Definition at line 118 of file streamer/stream.h.

### 10.49.4.2 finit_source()

```
virtual void vxg::media::stream::finit_source ( )  [inline], [virtual]
```

Deinitialize source.

Definition at line 90 of file streamer/stream.h.

### 10.49.4.3 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 105 of file streamer/stream.h.

#### 10.49.4.4 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 79 of file streamer/stream.h.

### 10.49.5 Field Documentation

#### 10.49.5.1 on_error_cb_

```
Streamer::on_error_cb vxg::media::stream::on_error_cb_  [protected]
```

Definition at line 40 of file streamer/stream.h.

#### 10.49.5.2 sink_

```
Streamer::ISink::ptr vxg::media::stream::sink_  [protected]
```

media sink

Definition at line 231 of file streamer/stream.h.

#### 10.49.5.3 source_

```
Streamer::ISource::ptr vxg::media::stream::source_  [protected]
```

media source

Definition at line 229 of file streamer/stream.h.

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

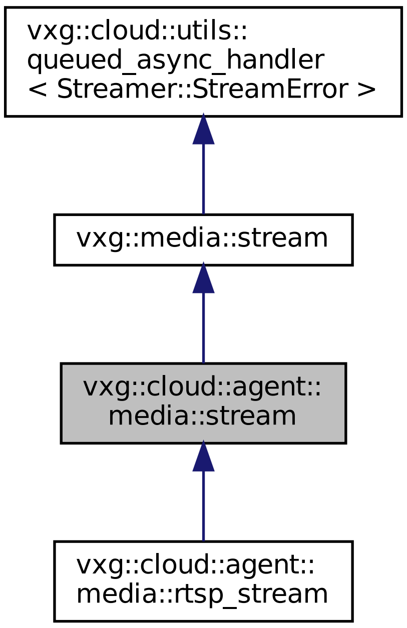
- streamer/stream.h

## 10.50 vxg::cloud::agent::media::stream Class Reference

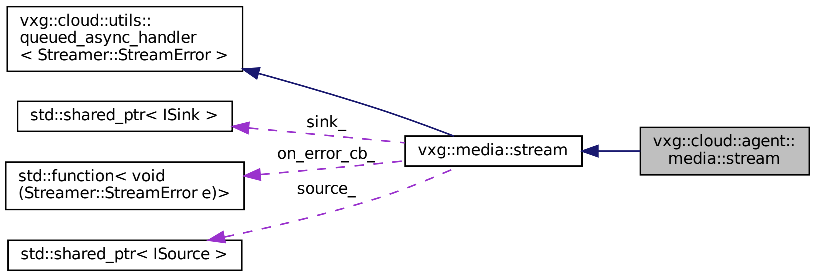
Cloud agent media stream abstract class.

```
#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)

    *Construct a new agent media stream object.*
- virtual ∼stream ()
- 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 bool 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.*

## Additional Inherited Members

### 10.50.1 Detailed Description

Cloud agent media stream abstract class.

vxg::media::stream derived class with VXG Cloud proto callbacks

Definition at line 20 of file agent/stream.h.

### 10.50.2 Member Typedef Documentation

#### 10.50.2.1 ptr

```
typedef std::shared_ptr<stream> vxg::cloud::agent::media::stream::ptr
```

**std::shared_ptr** to the base_stream

Definition at line 28 of file agent/stream.h.

### 10.50.3 Constructor & Destructor Documentation

#### 10.50.3.1 stream()

```
vxg::cloud::agent::media::stream::stream (
                std::string name,
               vxg::media::Streamer::ISource::ptr source,
               bool recorder_needs_source = false )  [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 | *sink_error_cb* | Callback which will be called on sink error |
| in | *recorder_needs_source* | Indicates if stream needs source start before calling start_record() virtual method. |

Definition at line 38 of file agent/stream.h.

#### 10.50.3.2 ∼stream()

```
virtual vxg::cloud::agent::media::stream::∼stream ( )  [inline], [virtual]
```

Reimplemented from vxg::media::stream.

Definition at line 45 of file agent/stream.h.

### 10.50.4 Member Function Documentation

#### 10.50.4.1 get_snapshot()

```
virtual bool vxg::cloud::agent::media::stream::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

#### 10.50.4.2 get_stream_caps()

```
virtual bool vxg::cloud::agent::media::stream::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::rtsp_stream.

#### 10.50.4.3 get_stream_config()

```
virtual bool vxg::cloud::agent::media::stream::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::rtsp_stream.

#### 10.50.4.4 get_supported_stream()

```
virtual bool vxg::cloud::agent::media::stream::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

#### 10.50.4.5 record_export()

```
virtual cloud::agent::proto::video_clip_info vxg::cloud::agent::media::stream::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::rtsp_stream.

### 10.50.4.6 record_get_list()

```
virtual  std::vector<cloud::agent::proto::video_clip_info> vxg::cloud::agent::media::stream↩
::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::rtsp_stream.

### 10.50.4.7 record_needs_source()

```
virtual bool vxg::cloud::agent::media::stream::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 101 of file agent/stream.h.

#### 10.50.4.8 set_stream_config()

```
virtual bool vxg::cloud::agent::media::stream::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::rtsp_stream.

#### 10.50.4.9 start_record()

```
virtual bool vxg::cloud::agent::media::stream::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::rtsp_stream.

#### 10.50.4.10 stop_record()

```
virtual bool vxg::cloud::agent::media::stream::stop_record ( )  [pure virtual]
```

Stop recording of this stream.

**Returns**

true Stopped

false Failed to stop

Implemented in vxg::cloud::agent::media::rtsp_stream.

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

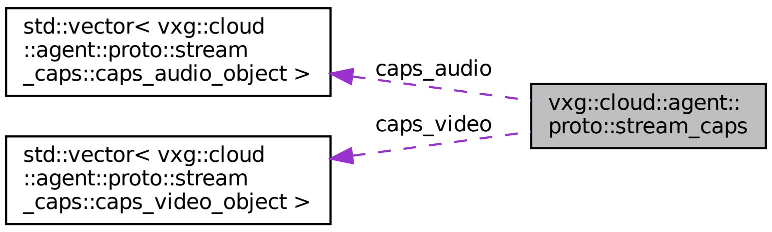
- agent/stream.h

## 10.51 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:


std::vector< vxg::cloud ::agent::proto::stream _caps::caps_audio_object >
caps_audio
std::vector< vxg::cloud ::agent::proto::stream _caps::caps_video_object >
caps_video
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.*

### 10.51.1 Detailed Description

Media stream capabilites.

Definition at line 175 of file caps.h.

### 10.51.2 Field Documentation

#### 10.51.2.1 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.

#### 10.51.2.2 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:

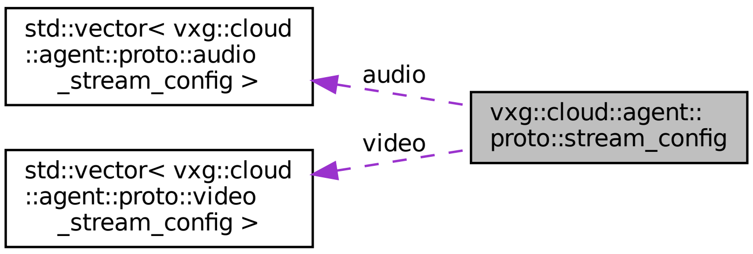
- caps.h

## 10.52 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:


std::vector< vxg::cloud ::agent::proto::audio _stream_config >
audio
vxg::cloud::agent:: proto::stream_config
video
std::vector< vxg::cloud ::agent::proto::video _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.*

### 10.52.1 Detailed Description

Media stream config.

Definition at line 219 of file config.h.

### 10.52.2 Field Documentation

#### 10.52.2.1 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.

#### 10.52.2.2 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.

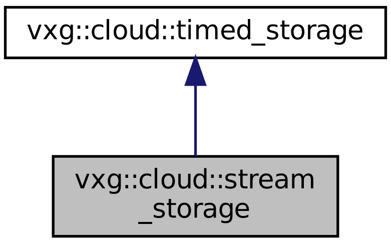
The documentation for this struct was generated from the following file:

- config.h

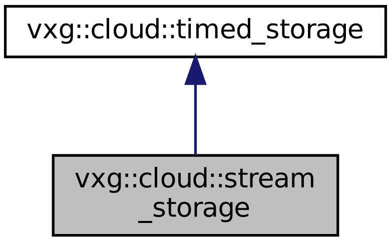
## 10.53 vxg::cloud::stream_storage Class Reference

```
#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)

## 10.53.1 Detailed Description

Definition at line 10 of file stream-storage.h.

## 10.53.2 Member Typedef Documentation

### 10.53.2.1 ptr

```
using vxg::cloud::stream_storage::ptr = shared_ptr<stream_storage>
```

Definition at line 25 of file stream-storage.h.

## 10.53.3 Constructor & Destructor Documentation

### 10.53.3.1 stream_storage()

```
vxg::cloud::stream_storage::stream_storage (
            agent::media::stream::ptr stream )  [inline]
```

Definition at line 26 of file stream-storage.h.

### 10.53.3.2 ∼stream_storage()

```
virtual vxg::cloud::stream_storage::∼stream_storage ( )  [inline], [virtual]
```

Definition at line 27 of file stream-storage.h.

## 10.53.4 Member Function Documentation

### 10.53.4.1 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.

### 10.53.4.2 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.

### 10.53.4.3 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.

### 10.53.4.4 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.

### 10.53.4.5 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:

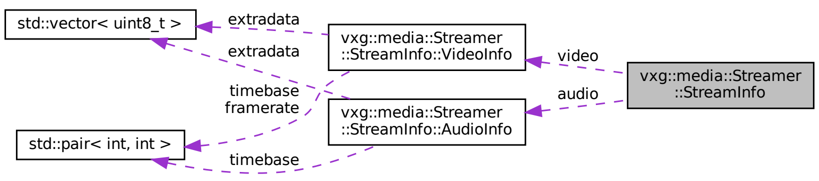
- stream-storage.h

## 10.54 vxg::media::Streamer::StreamInfo Struct Reference

Stream info descriotion.

`#include <streamer/base_streamer.h>`

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


std::vector< uint8_t >
extradata
extradata
vxg::media::Streamer ::StreamInfo::VideoInfo
video
vxg::media::Streamer ::StreamInfo
audio
timebase
framerate
vxg::media::Streamer ::StreamInfo::AudioInfo
std::pair< int, int >
timebase

## 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.*

### 10.54.1 Detailed Description

Stream info descriotion.

Definition at line 311 of file base_streamer.h.

### 10.54.2 Member Enumeration Documentation

#### 10.54.2.1 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.

#### 10.54.2.2 DataCodec

```
enum vxg::media::Streamer::StreamInfo::DataCodec
```

Data codec.

**Enumerator**

| | |
|---|---|
| DC_UNKNOWN | |
| DC_ONVIF | |

Definition at line 384 of file base_streamer.h.

#### 10.54.2.3 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.

#### 10.54.2.4 VideoCodec

```
enum vxg::media::Streamer::StreamInfo::VideoCodec
```

Video codec type.

**Enumerator**

| | |
|---|---|
| VC_UNKNOWN | |
| VC_H264 | |

Definition at line 316 of file base_streamer.h.

### 10.54.3 Field Documentation

#### 10.54.3.1 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.

#### 10.54.3.2 type

```
StreamType vxg::media::Streamer::StreamInfo::type
```

Stream type.

Definition at line 395 of file base_streamer.h.

#### 10.54.3.3 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:

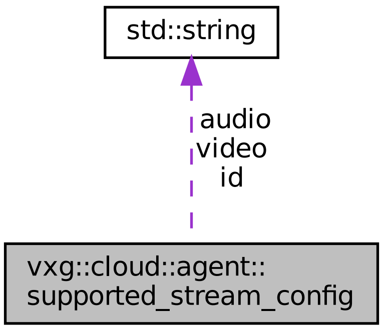
- base_streamer.h

## 10.55 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*

### 10.55.1 Detailed Description

Supported stream config.

Definition at line 1297 of file config.h.

### 10.55.2 Field Documentation

#### 10.55.2.1 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.

#### 10.55.2.2 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.

#### 10.55.2.3 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:

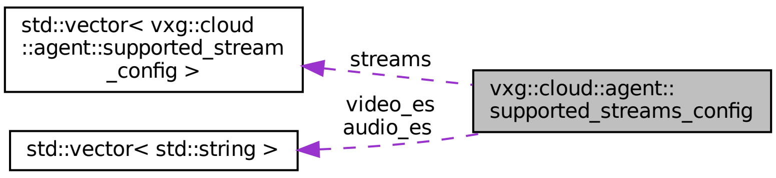
- config.h

## 10.56 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:


std::vector< vxg::cloud ::agent::supported_stream _config >
streams
video_es
audio_es
vxg::cloud::agent:: supported_streams_config
std::vector< std::string >

### 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*

### 10.56.1 Detailed Description

Supported streams config, list of supported_stream_config.

Definition at line 1313 of file config.h.

### 10.56.2 Field Documentation

#### 10.56.2.1 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.

#### 10.56.2.2 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.

#### 10.56.2.3 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.

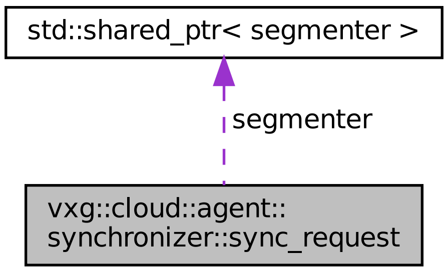
The documentation for this struct was generated from the following file:

- config.h

## 10.57 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

### 10.57.1 Detailed Description

Definition at line 76 of file timeline-synchronizer.h.

### 10.57.2 Field Documentation

#### 10.57.2.1 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

## 10.58 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)

## 10.58.1 Detailed Description

Definition at line 13 of file timeline-synchronizer.h.

## 10.58.2 Member Typedef Documentation

### 10.58.2.1 ptr

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

Definition at line 695 of file timeline-synchronizer.h.

#### 10.58.2.2 segmenter_ptr

```
using vxg::cloud::agent::synchronizer::segmenter_ptr = std::shared_ptr<segmenter>
```

Definition at line 74 of file timeline-synchronizer.h.

#### 10.58.2.3 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.

#### 10.58.2.4 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.

### 10.58.3 Member Enumeration Documentation

#### 10.58.3.1 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.

### 10.58.4 Member Function Documentation

#### 10.58.4.1 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.

#### 10.58.4.2 start()

```
bool vxg::cloud::agent::synchronizer::start ( )  [inline]
```

Definition at line 713 of file timeline-synchronizer.h.

#### 10.58.4.3 stop()

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

Definition at line 731 of file timeline-synchronizer.h.

#### 10.58.4.4 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.

#### 10.58.4.5 sync_cancel()

```
void vxg::cloud::agent::synchronizer::sync_cancel (
             const  std::string & ticket )  [inline]
```

Definition at line 801 of file timeline-synchronizer.h.

#### 10.58.4.6 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.

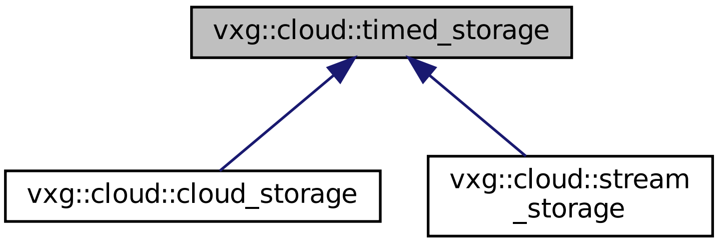
The documentation for this class was generated from the following file:

- timeline-synchronizer.h

## 10.59 vxg::cloud::timed_storage Class Reference

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

Inheritance diagram for vxg::cloud::timed_storage:


vxg::cloud::timed_storage
vxg::cloud::cloud_storage
vxg::cloud::stream_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 ()

### 10.59.1 Detailed Description

Definition at line 67 of file timeline.h.

### 10.59.2 Member Typedef Documentation

#### 10.59.2.1 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.

#### 10.59.2.2 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.

#### 10.59.2.3 item_ptr

```
typedef std::shared_ptr<struct item> vxg::cloud::timed_storage::item_ptr
```

Definition at line 108 of file timeline.h.

### 10.59.3 Constructor & Destructor Documentation

#### 10.59.3.1 timed_storage()

```
vxg::cloud::timed_storage::timed_storage ( ) [inline]
```

Definition at line 69 of file timeline.h.

#### 10.59.3.2 ∼timed_storage()

```
virtual vxg::cloud::timed_storage::∼timed_storage ( ) [inline], [virtual]
```

Definition at line 70 of file timeline.h.

### 10.59.4 Member Function Documentation

#### 10.59.4.1 erase()

```
virtual void vxg::cloud::timed_storage::erase (
            item_ptr  )  [pure virtual]
```

Implemented in vxg::cloud::cloud_storage, and vxg::cloud::stream_storage.

#### 10.59.4.2 finit()

```
virtual void vxg::cloud::timed_storage::finit ( )  [inline], [virtual]
```

Definition at line 125 of file timeline.h.

#### 10.59.4.3 init()

```
virtual bool vxg::cloud::timed_storage::init ( )  [inline], [virtual]
```

Definition at line 124 of file timeline.h.

#### 10.59.4.4 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.

#### 10.59.4.5 load()

```
virtual bool vxg::cloud::timed_storage::load (
            item_ptr  )  [pure virtual]
```

Implemented in vxg::cloud::cloud_storage, and vxg::cloud::stream_storage.

#### 10.59.4.6 store()

```
virtual bool vxg::cloud::timed_storage::store (
            item_ptr  )  [pure virtual]
```

Implemented in vxg::cloud::stream_storage, and vxg::cloud::cloud_storage.

#### 10.59.4.7 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

## 10.60 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)

### 10.60.1 Detailed Description

**template<class T>**
**class vxg::cloud::timeline< T >**

Definition at line 457 of file timeline.h.

### 10.60.2 Constructor & Destructor Documentation

#### 10.60.2.1 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.

#### 10.60.2.2 timeline() [2/2]

```
template<class T >
vxg::cloud::timeline< T >::timeline (
             std::string path )  [inline]
```

Definition at line 464 of file timeline.h.

### 10.60.3 Member Function Documentation

#### 10.60.3.1 _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.

#### 10.60.3.2 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

## 10.61 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)

### 10.61.1 Detailed Description

Definition at line 503 of file timeline.h.

### 10.61.2 Member Typedef Documentation

#### 10.61.2.1 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.

#### 10.61.2.2 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.

### 10.61.3 Constructor & Destructor Documentation

#### 10.61.3.1 timeline()

```
vxg::cloud::sync::timeline::timeline (
            timed_storage_ptr storage )  [inline]
```

Definition at line 508 of file timeline.h.

#### 10.61.3.2 ∼timeline()

```
virtual vxg::cloud::sync::timeline::∼timeline ( )  [inline], [virtual]
```

Definition at line 509 of file timeline.h.

### 10.61.4 Member Function Documentation

#### 10.61.4.1 _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.

#### 10.61.4.2 finit()

```
virtual void vxg::cloud::sync::timeline::finit ( )  [inline], [virtual]
```

Definition at line 543 of file timeline.h.

#### 10.61.4.3 init()

```
virtual bool vxg::cloud::sync::timeline::init ( )  [inline], [virtual]
```

Definition at line 541 of file timeline.h.

#### 10.61.4.4 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.

#### 10.61.4.5 load()

```
bool vxg::cloud::sync::timeline::load (
            timed_storage::item_ptr item )  [inline]
```

Definition at line 568 of file timeline.h.

#### 10.61.4.6 slices()

```
std::vector<period> vxg::cloud::sync::timeline::slices (
            cloud::time start,
            cloud::time stop )  [inline]
```

Definition at line 546 of file timeline.h.

#### 10.61.4.7 store()

```
bool vxg::cloud::sync::timeline::store (
            timed_storage::item_ptr item )  [inline]
```

Definition at line 561 of file timeline.h.

#### 10.61.4.8 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.

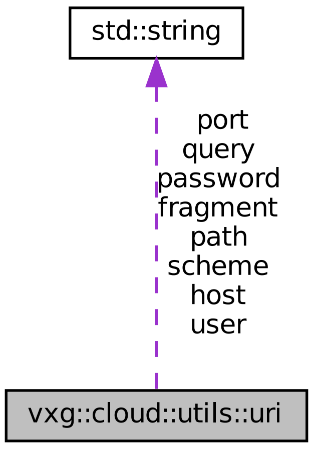
The documentation for this class was generated from the following file:

- timeline.h

## 10.62 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

### 10.62.1 Detailed Description

Definition at line 67 of file utils.h.

### 10.62.2 Member Function Documentation

#### 10.62.2.1 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.

### 10.62.3 Field Documentation

#### 10.62.3.1 fragment

```
std::string vxg::cloud::utils::uri::fragment
```

Definition at line 75 of file utils.h.

#### 10.62.3.2 host

```
std::string vxg::cloud::utils::uri::host
```

Definition at line 71 of file utils.h.

#### 10.62.3.3 password

```
std::string vxg::cloud::utils::uri::password
```

Definition at line 70 of file utils.h.

#### 10.62.3.4 path

```
std::string vxg::cloud::utils::uri::path
```

Definition at line 73 of file utils.h.

#### 10.62.3.5 port

```
std::string vxg::cloud::utils::uri::port
```

Definition at line 72 of file utils.h.

#### 10.62.3.6 query

```
std::string vxg::cloud::utils::uri::query
```

Definition at line 74 of file utils.h.

#### 10.62.3.7 scheme

```
std::string vxg::cloud::utils::uri::scheme
```

Definition at line 68 of file utils.h.

#### 10.62.3.8 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:

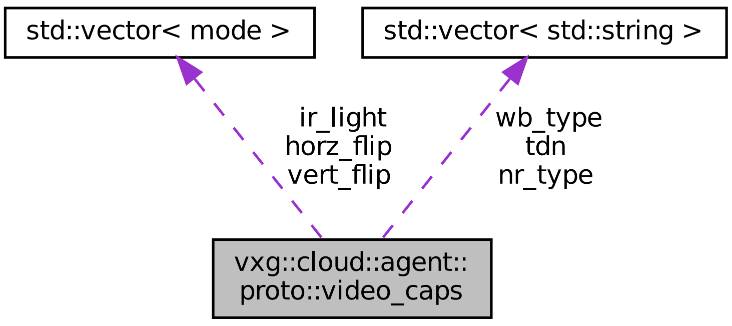
- utils.h

## 10.63 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:


std::vector< mode >
std::vector< std::string >
ir_light
horz_flip
vert_flip
wb_type
tdn
nr_type
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*

## 10.63.1 Detailed Description

Video image capabilities.

Definition at line 366 of file caps.h.

## 10.63.2 Field Documentation

### 10.63.2.1 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.

#### 10.63.2.2 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.

#### 10.63.2.3 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.

#### 10.63.2.4 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.

#### 10.63.2.5 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.

#### 10.63.2.6 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.

### 10.63.2.7 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.

### 10.63.2.8 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.

### 10.63.2.9 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.

### 10.63.2.10 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.

### 10.63.2.11 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.

#### 10.63.2.12 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:

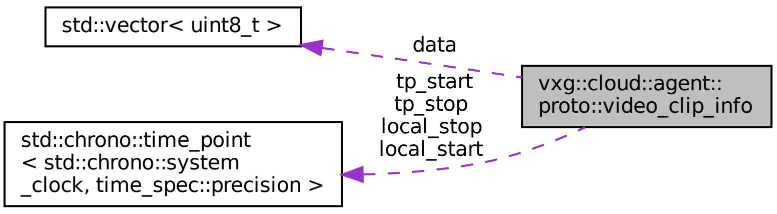
- caps.h

## 10.64 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.*

### 10.64.1 Detailed Description

Video recoding(mp4 file) clip description,.

Definition at line 449 of file config.h.

### 10.64.2 Field Documentation

#### 10.64.2.1 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.

#### 10.64.2.2 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.

#### 10.64.2.3 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.

#### 10.64.2.4 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.

#### 10.64.2.5 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.

#### 10.64.2.6 video_height

```
int vxg::cloud::agent::proto::video_clip_info::video_height
```

Video clip picture height.

Definition at line 471 of file config.h.

#### 10.64.2.7 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:

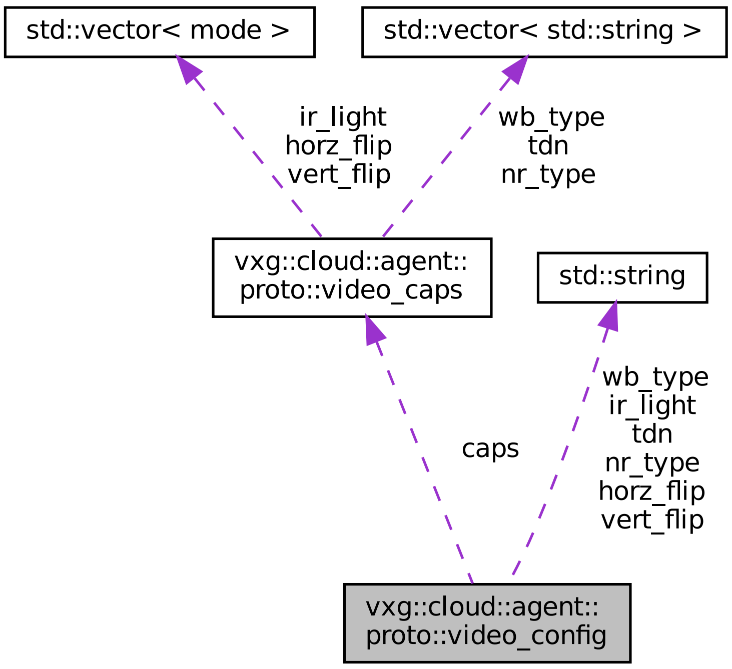
- config.h

## 10.65 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*

## 10.65.1 Detailed Description

Video image config.

Definition at line 306 of file config.h.

## 10.65.2 Field Documentation

### 10.65.2.1 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.

### 10.65.2.2 caps

```
video_caps vxg::cloud::agent::proto::video_config::caps
```

caps

Definition at line 349 of file config.h.

### 10.65.2.3 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.

#### 10.65.2.4 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.

#### 10.65.2.5 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.

#### 10.65.2.6 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.

#### 10.65.2.7 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.

#### 10.65.2.8 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.

#### 10.65.2.9 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.

#### 10.65.2.10 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.

#### 10.65.2.11 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.

#### 10.65.2.12 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.

#### 10.65.2.13 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:

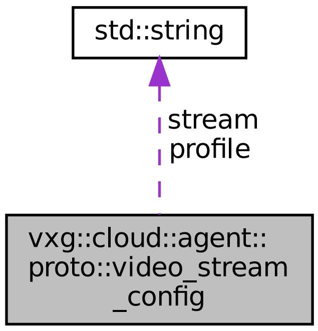
- config.h

## 10.66 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 (%)*

### 10.66.1 Detailed Description

Video stream config.

Definition at line 83 of file config.h.

### 10.66.2 Field Documentation

#### 10.66.2.1 brt

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

Optional: bitrate, kbps.

Definition at line 117 of file config.h.

#### 10.66.2.2 format

```
video_format vxg::cloud::agent::proto::video_stream_config::format
```

Mandatory: video encoding format.

Definition at line 90 of file config.h.

#### 10.66.2.3 fps

```
double vxg::cloud::agent::proto::video_stream_config::fps
```

Mandatory: framerate.

Definition at line 105 of file config.h.

#### 10.66.2.4 gop

```
int vxg::cloud::agent::proto::video_stream_config::gop
```

Mandatory: gop size (I-Frame interval);.

Definition at line 113 of file config.h.

#### 10.66.2.5 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.

#### 10.66.2.6 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.

#### 10.66.2.7 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.

#### 10.66.2.8 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.

#### 10.66.2.9 stream

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

Mandatory: video ES to use.

Definition at line 86 of file config.h.

#### 10.66.2.10 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.

#### 10.66.2.11 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.

#### 10.66.2.12 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:

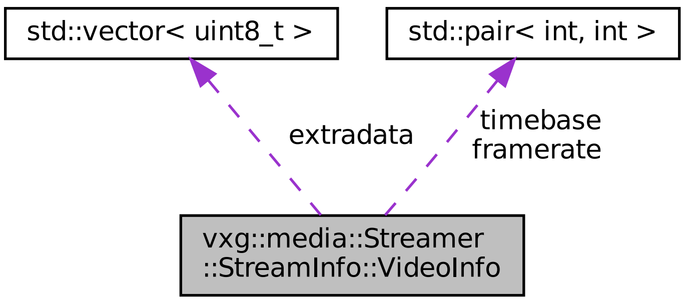
- config.h

## 10.67 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.*

## 10.67.1 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.

## 10.67.2 Field Documentation

### 10.67.2.1 bitrate

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

Video bitrate if needed.

Definition at line 335 of file base_streamer.h.

### 10.67.2.2 codec

```
VideoCodec vxg::media::Streamer::StreamInfo::VideoInfo::codec
```

Video codec type.

Definition at line 327 of file base_streamer.h.

#### 10.67.2.3 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.

#### 10.67.2.4 framerate

```
std::pair<int, int> vxg::media::Streamer::StreamInfo::VideoInfo::framerate
```

Video framerate if needed.

Definition at line 333 of file base_streamer.h.

#### 10.67.2.5 height

```
int vxg::media::Streamer::StreamInfo::VideoInfo::height
```

Video height if needed.

Definition at line 331 of file base_streamer.h.

#### 10.67.2.6 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.

#### 10.67.2.7 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:

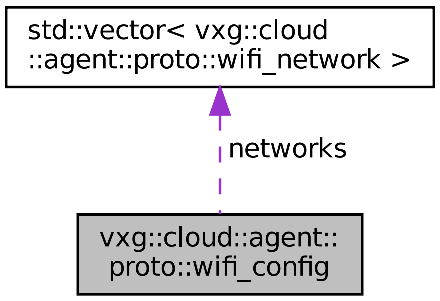
- base_streamer.h

## 10.68 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:


std::vector< vxg::cloud ::agent::proto::wifi_network >
networks
vxg::cloud::agent:: proto::wifi_config

### Data Fields

- **std::vector**< wifi_network > networks

  *List of wifi_network objects.*

### 10.68.1 Detailed Description

WiFi config.

Definition at line 581 of file config.h.

### 10.68.2 Field Documentation

#### 10.68.2.1 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:

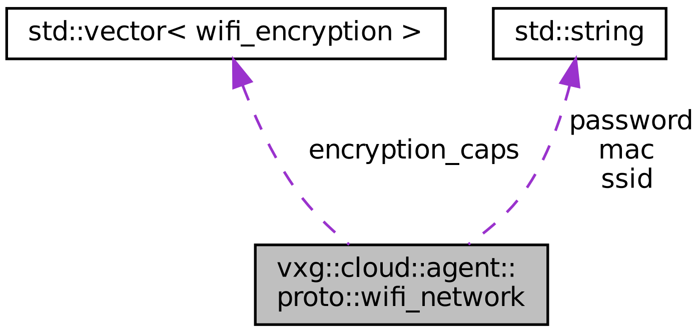
- config.h

## 10.69 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*

### 10.69.1 Detailed Description

WiFi network object.

Definition at line 552 of file config.h.

### 10.69.2 Field Documentation

#### 10.69.2.1 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.

#### 10.69.2.2 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.

#### 10.69.2.3 mac

```
std::string vxg::cloud::agent::proto::wifi_network::mac
```

mac: string, AP MAC address

Definition at line 558 of file config.h.

#### 10.69.2.4 password

```
std::string vxg::cloud::agent::proto::wifi_network::password
```

password: string, network password

Definition at line 565 of file config.h.

#### 10.69.2.5 signal

```
int vxg::cloud::agent::proto::wifi_network::signal
```

signal: int, signal strength, dB

Definition at line 556 of file config.h.

#### 10.69.2.6 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

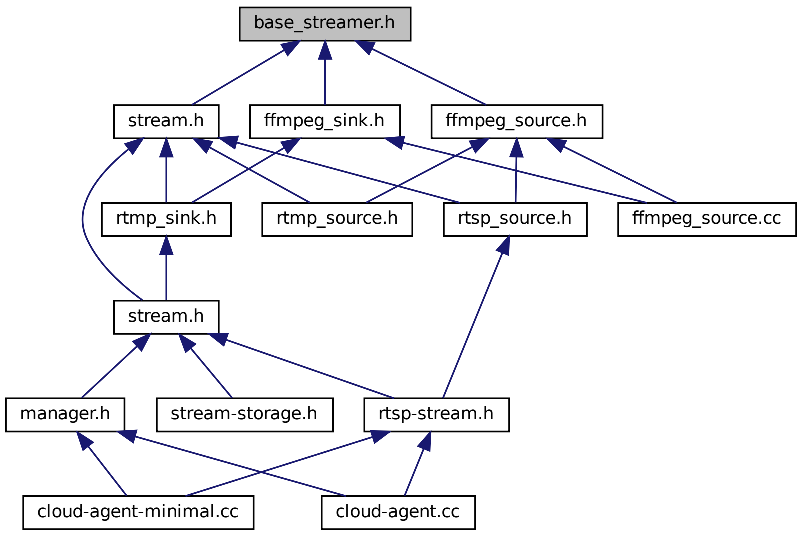
## 11.2 arm-example.txt File Reference

## 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
```

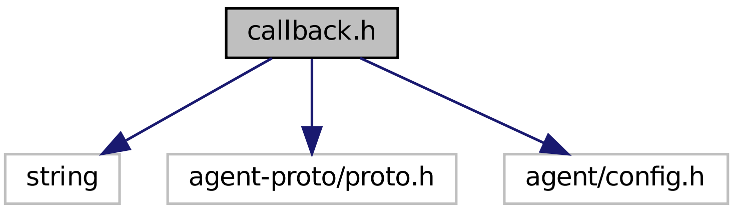
Definition at line 14 of file base_streamer.h.

## 11.4 build-system.md File Reference

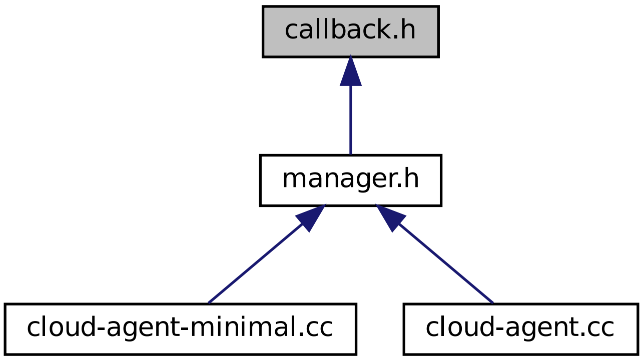
## 11.5 callback.h File Reference

```
#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

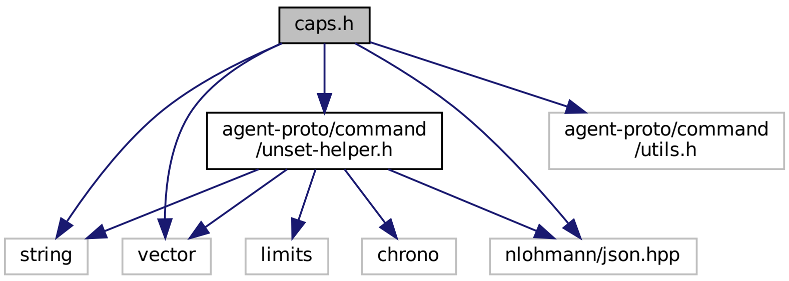
- vxg
- vxg::cloud
- vxg::cloud::agent

  *VXG Cloud Agent namespace.*

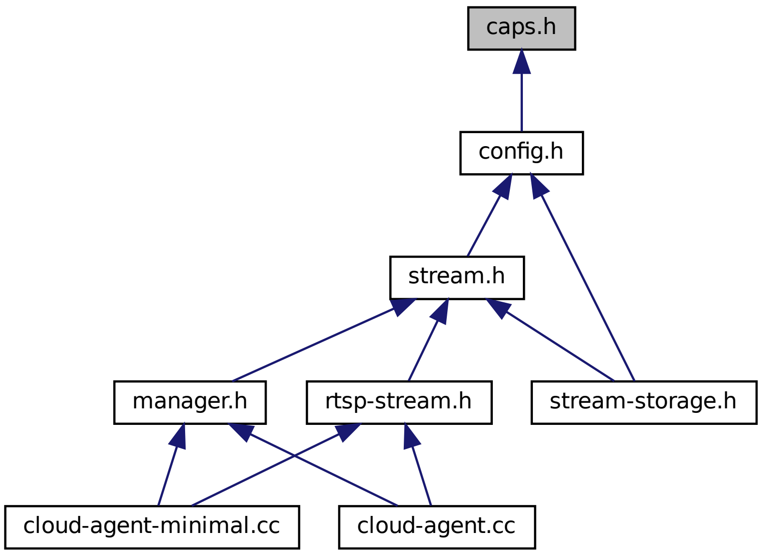
## 11.6 caps.h File Reference

```
#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_MF
  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_FRAMI
  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

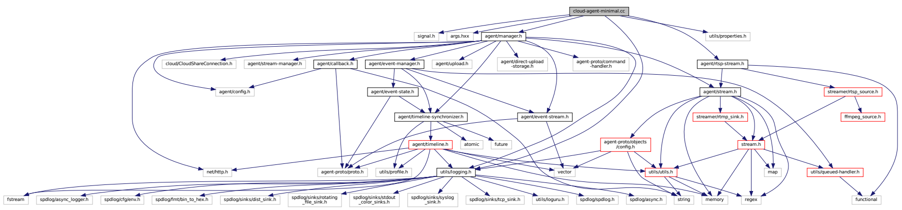
```
using json = nlohmann::json
```

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
```

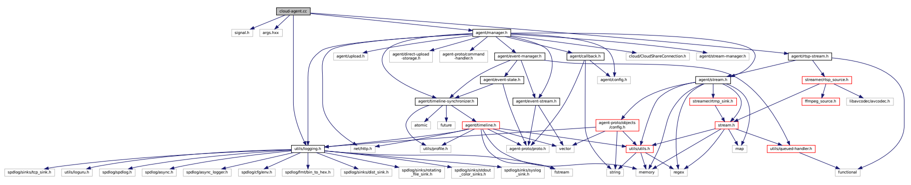
[Minimal callback class implementation]

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 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
- **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 349 of file cloud-agent.cc.

#### 11.8.1.2 parse_args()

```
bool parse_args (
            int argc,
            char ** argv )
```

Definition at line 317 of file cloud-agent.cc.

#### 11.8.1.3 signal_handler()

```
static void signal_handler (
             int sig )  [static]
```

Definition at line 18 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 14 of file cloud-agent.cc.

#### 11.8.2.2 quit

```
bool quit  [static]
```

Definition at line 15 of file cloud-agent.cc.

#### 11.8.2.3 rtsp_url

```
std::string rtsp_url
```

Definition at line 315 of file cloud-agent.cc.

#### 11.8.2.4 vxg_cloud_token

```
std::string vxg_cloud_token
```

[Event stream callback class implementation]

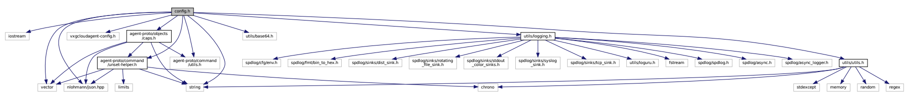
Definition at line 314 of file cloud-agent.cc.

## 11.9 compile.md File Reference

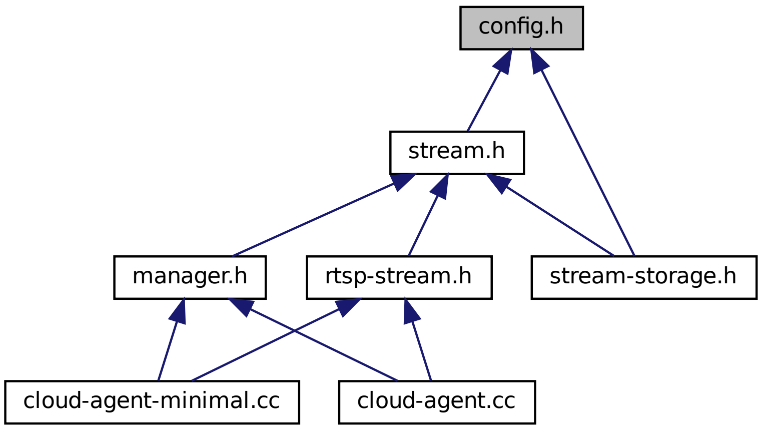
## 11.10 config.h File Reference

```
#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

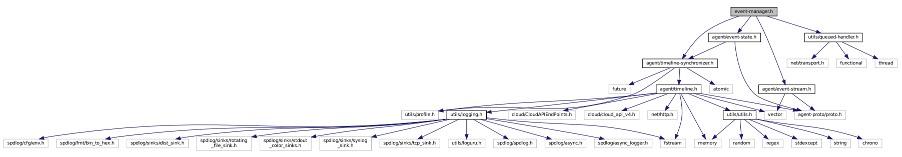
### 11.10.1 Detailed Description

VXG Cloud CM protocol objects

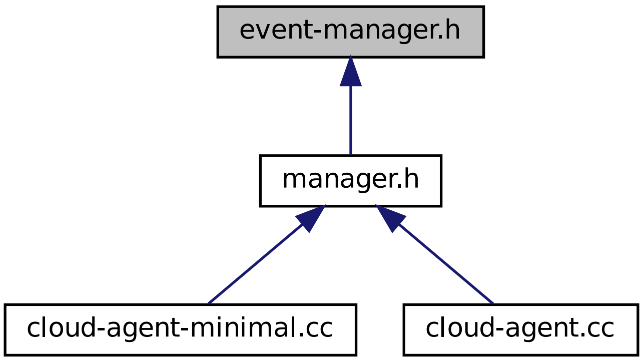
## 11.11 event-manager.h File Reference

```
#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.*

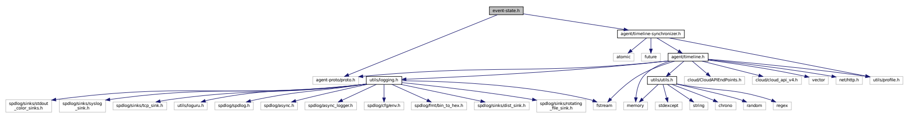
### Typedefs

- using vxg::cloud::agent::event_manager_ptr = **std::shared_ptr**< event_manager >

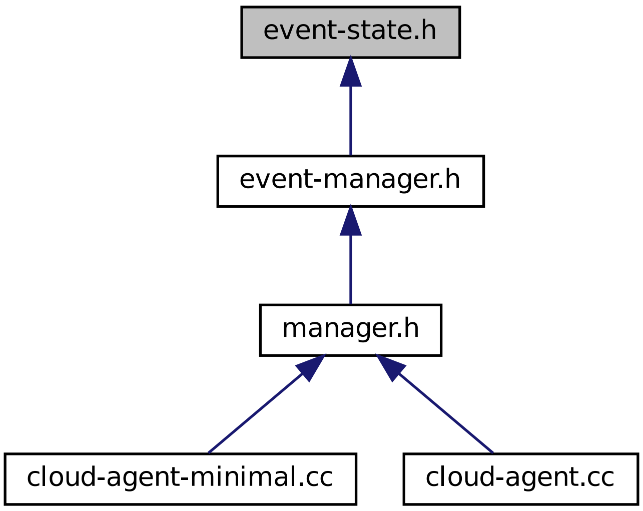
## 11.12 event-state.h File Reference

```
#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.*

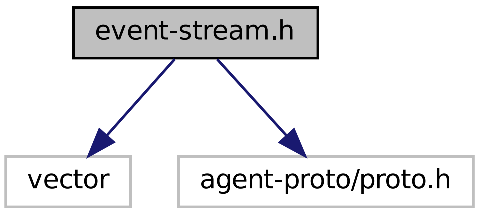
### Typedefs

- using vxg::cloud::agent::event_state_ptr = **std::shared_ptr**< event_state >

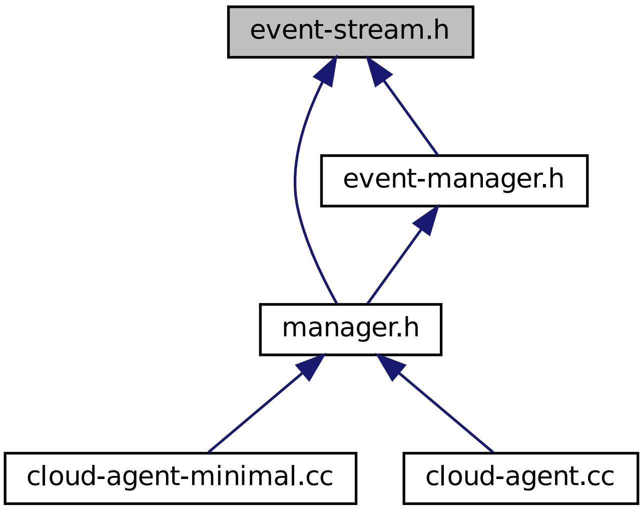
## 11.13 event-stream.h File Reference

```
#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

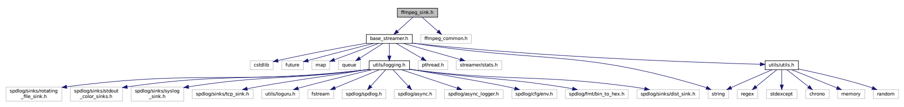
- vxg
- vxg::cloud
- vxg::cloud::agent

    *VXG Cloud Agent namespace.*

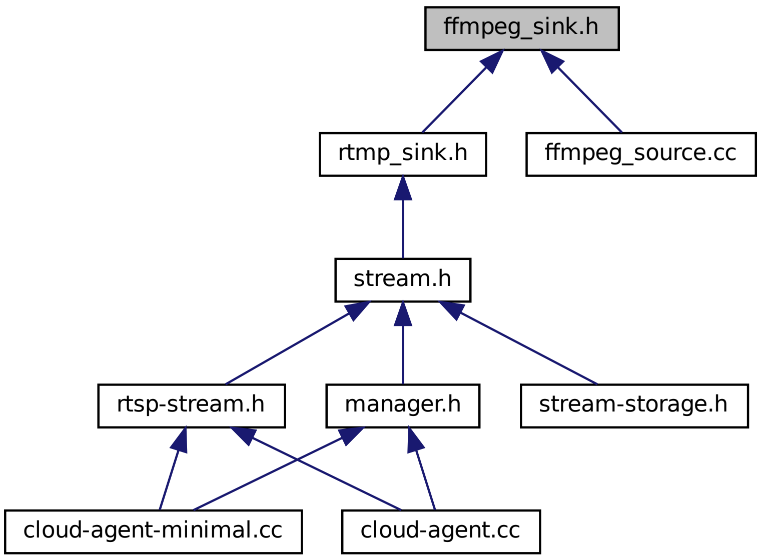
## 11.14 ffmpeg_sink.h File Reference

```
#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.*

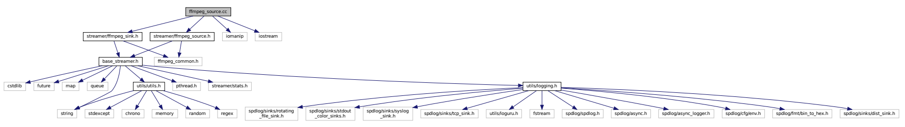
### Namespaces

- 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:



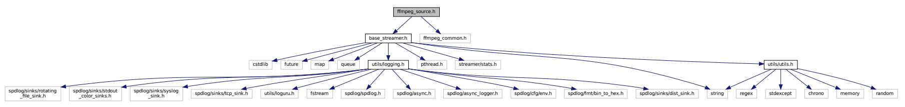
### Namespaces

- vxg
- vxg::media

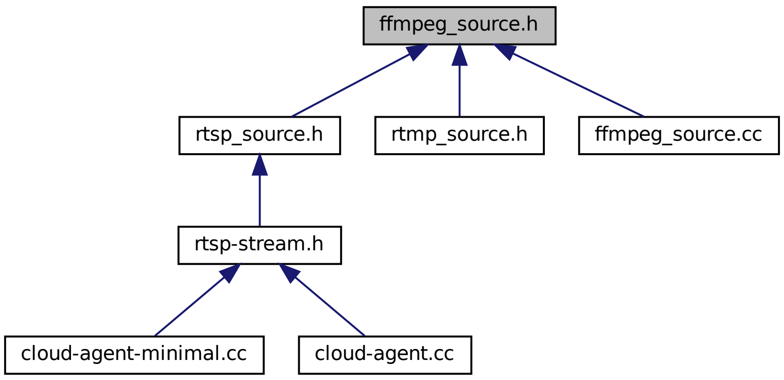
## 11.16 ffmpeg_source.h File Reference

```
#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.*

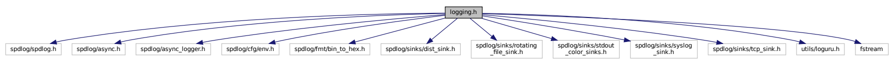
### Namespaces

- vxg
- vxg::media
- vxg::media::ffmpeg

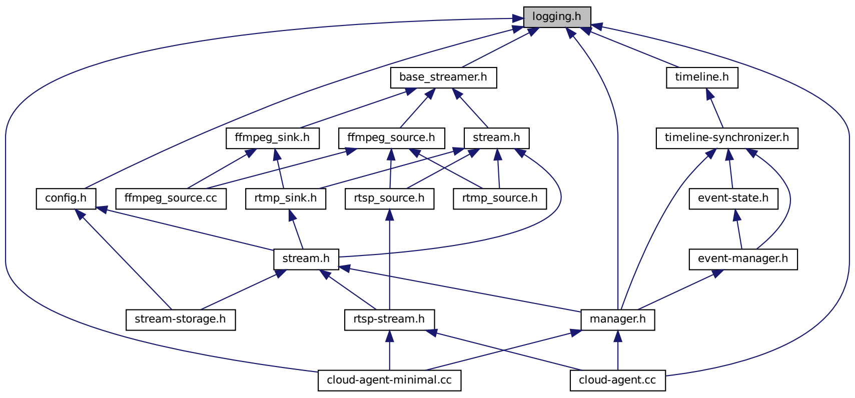
## 11.17 logging.h File Reference

```
#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

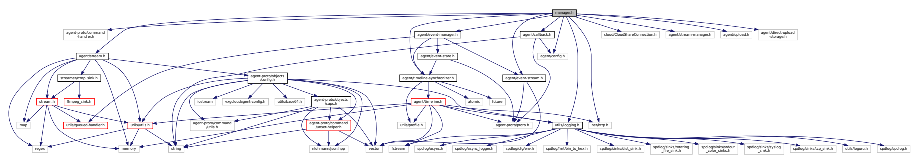
- vxg

## 11.18 mainpage.md File Reference

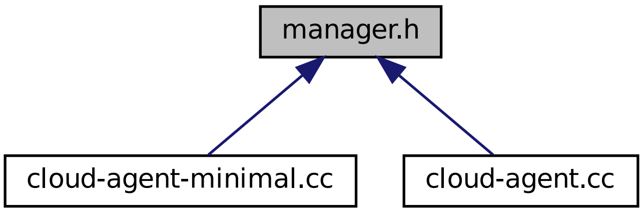
## 11.19 manager.h File Reference

```
#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 ()

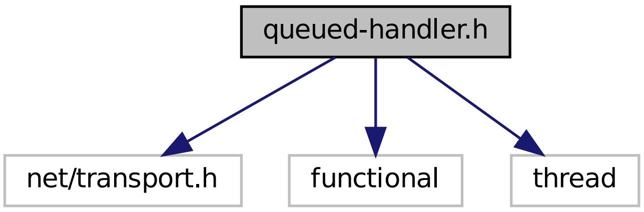
  *VXG Cloud Agent library version.*

## 11.20 meson.build File Reference

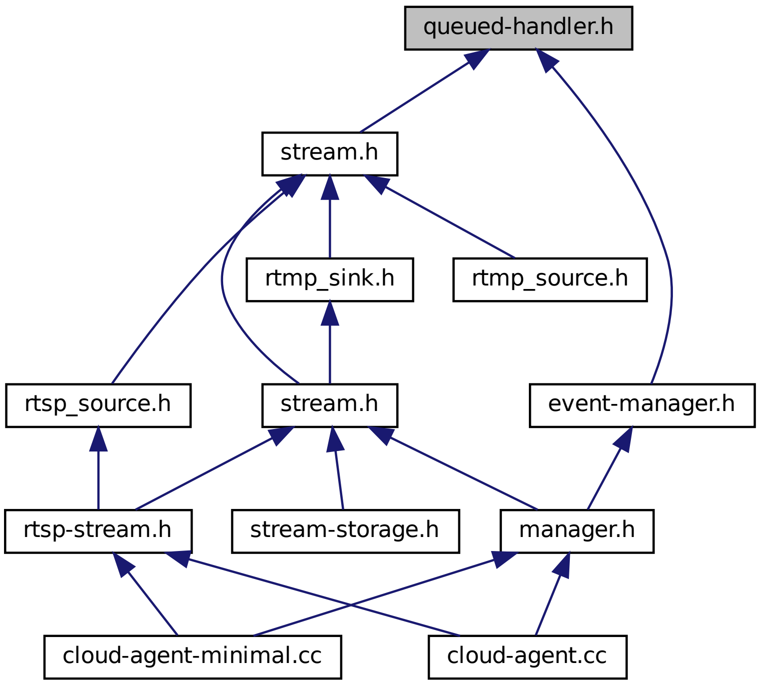
## 11.21 queued-handler.h File Reference

```
#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

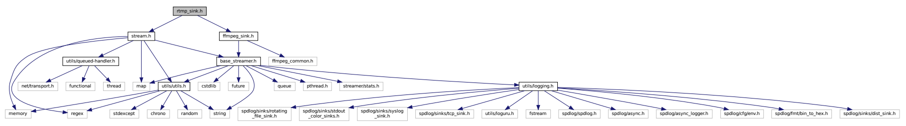
## Typedefs

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

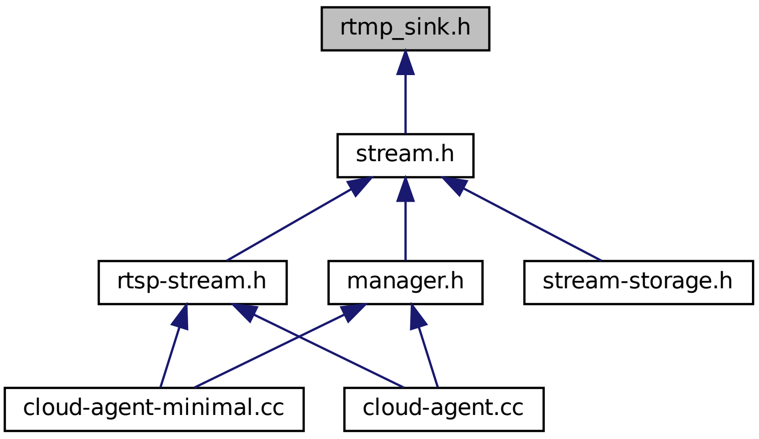
## 11.22 rtmp_sink.h File Reference

```
#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

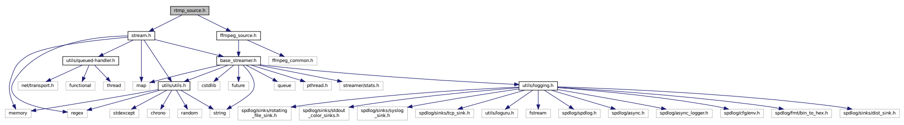
### 11.22.1 Detailed Description

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

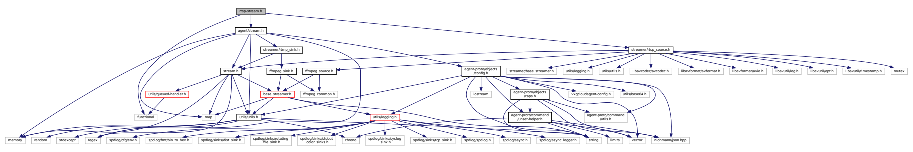
### 11.23.1 Detailed Description

RTMP source

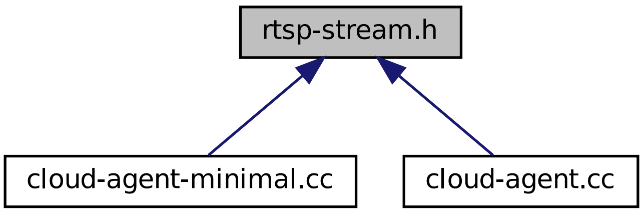
## 11.24 rtsp-stream.h File Reference

```
#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

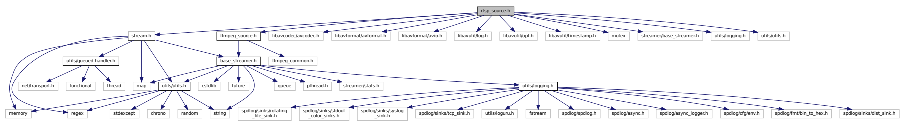
- vxg
- vxg::cloud
- vxg::cloud::agent

    *VXG Cloud Agent namespace.*

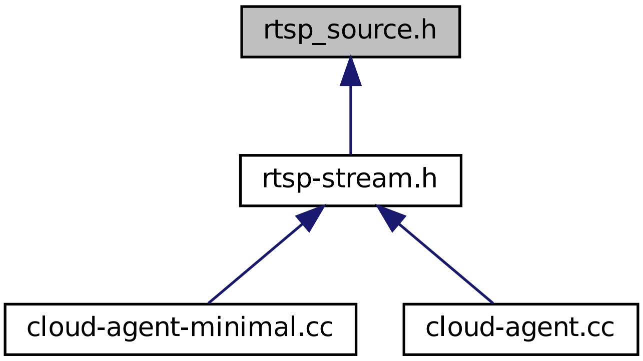
- vxg::cloud::agent::media

## 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 >

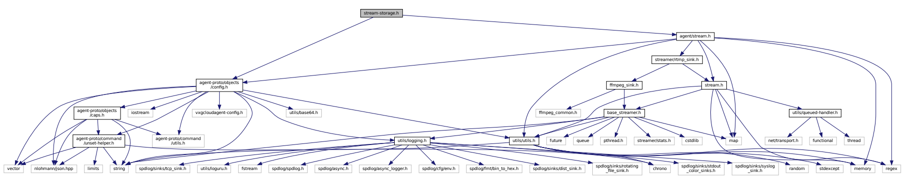
### 11.25.1 Detailed Description

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

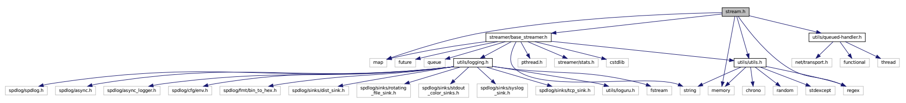
### Namespaces

- vxg
- vxg::cloud

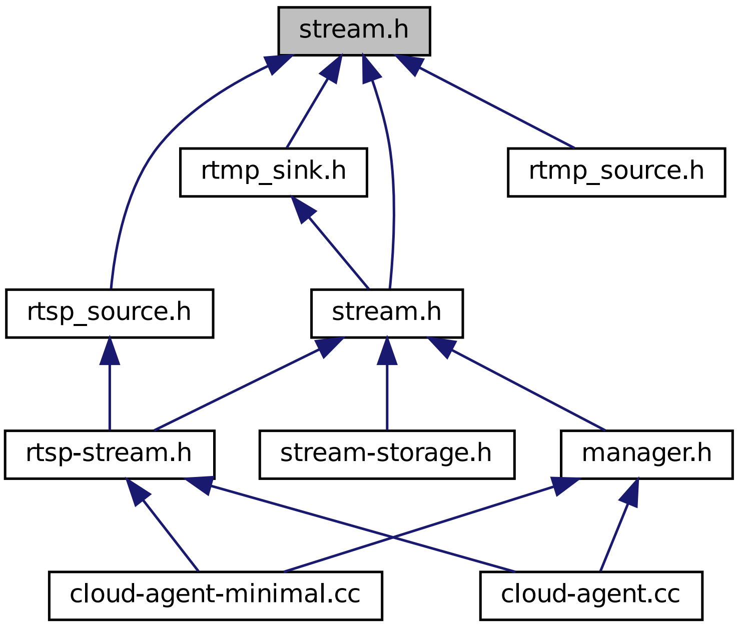
## 11.27 stream.h File Reference

```
#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

- class vxg::media::stream

    *base media stream abstract class*

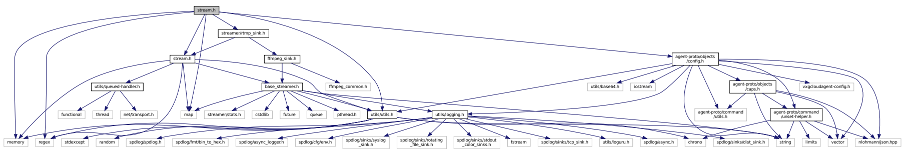
## Namespaces

- vxg
- vxg::media

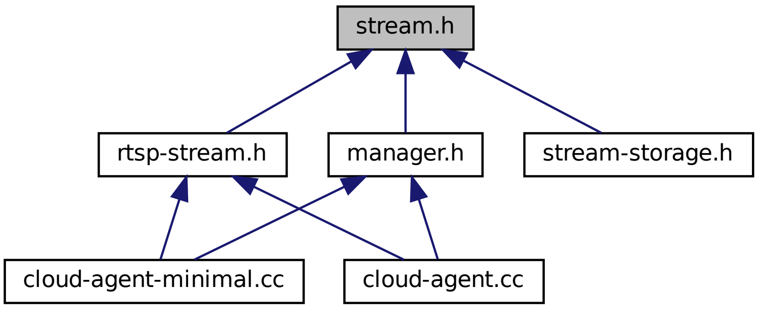
## 11.28 stream.h File Reference

```
#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

    *Cloud agent media stream abstract class.*

## Namespaces

- vxg
- vxg::cloud
- vxg::cloud::agent

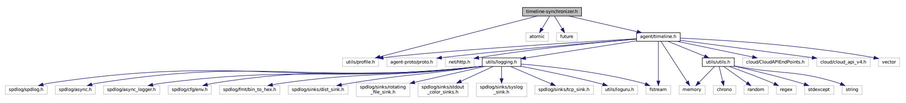
  *VXG Cloud Agent namespace.*
- vxg::cloud::agent::media

## Typedefs

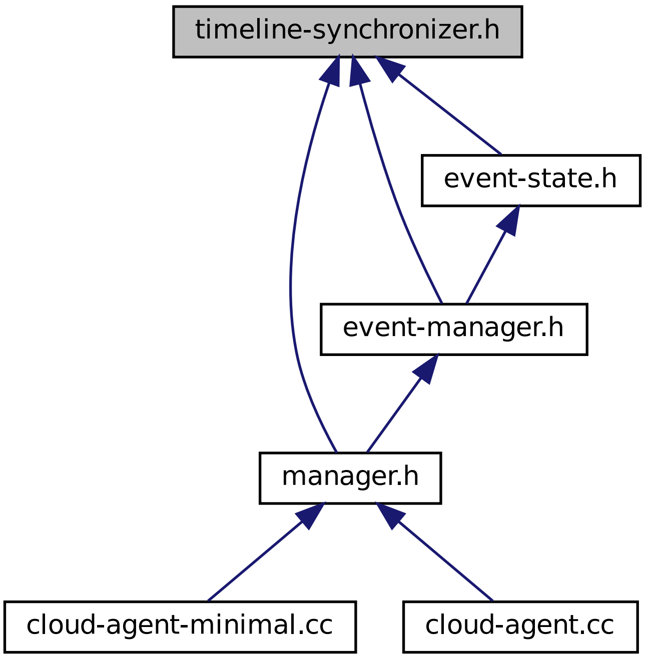
- using vxg::cloud::agent::media::stream_ptr = **std::shared_ptr**< stream >

## 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.*

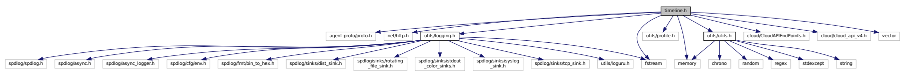
### Typedefs

- using vxg::cloud::agent::synchronizer_ptr = **std::shared_ptr**< synchronizer >

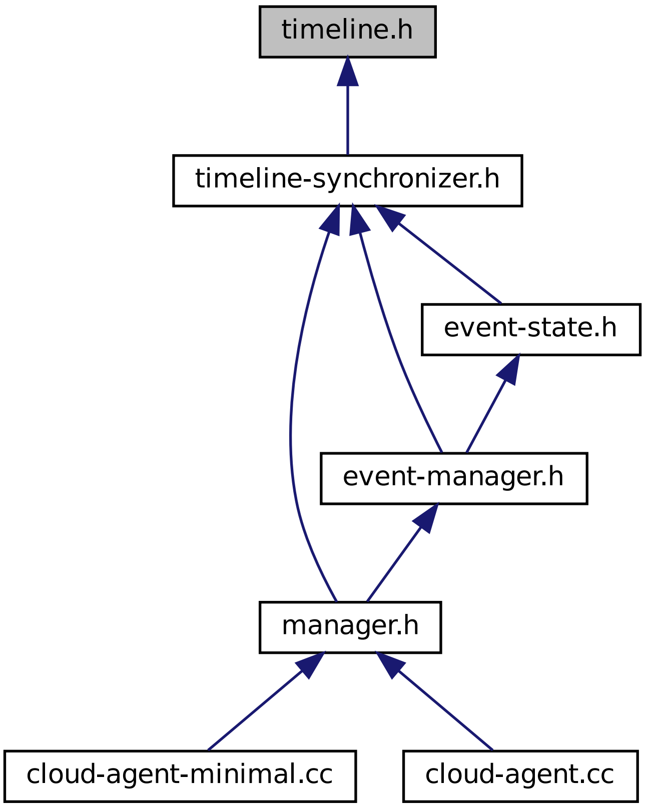
## 11.30 timeline.h File Reference

```
#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 >

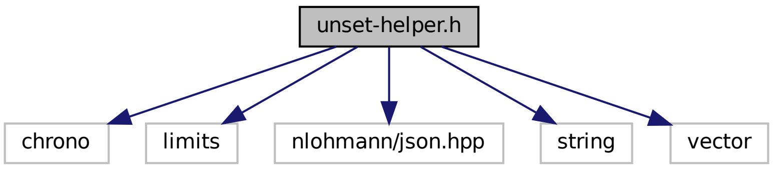
## Functions

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

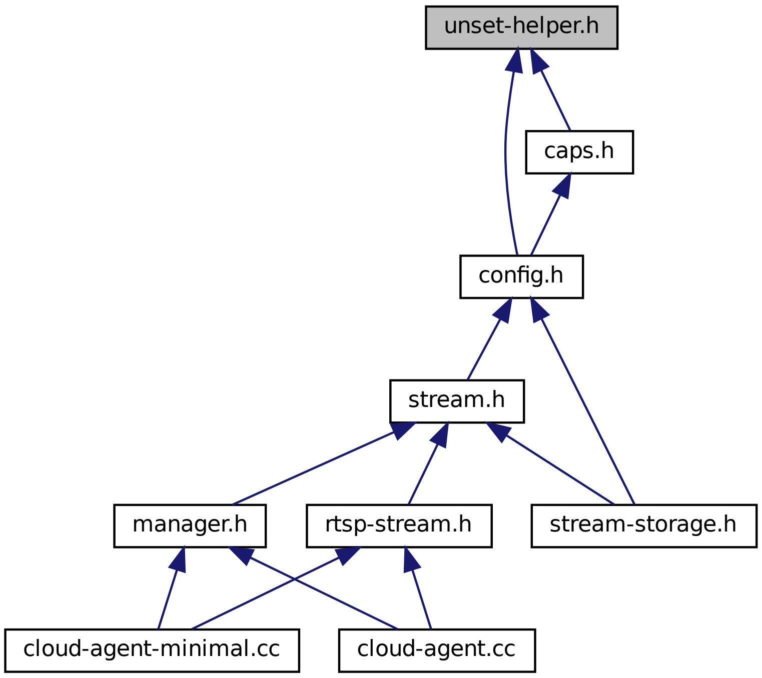
## 11.31 unset-helper.h File Reference

```
#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

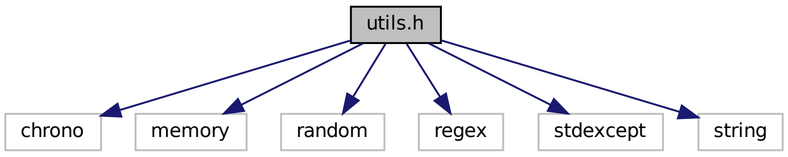
```
const uint64_t UnsetUInt64
```

Definition at line 230 of file unset-helper.h.

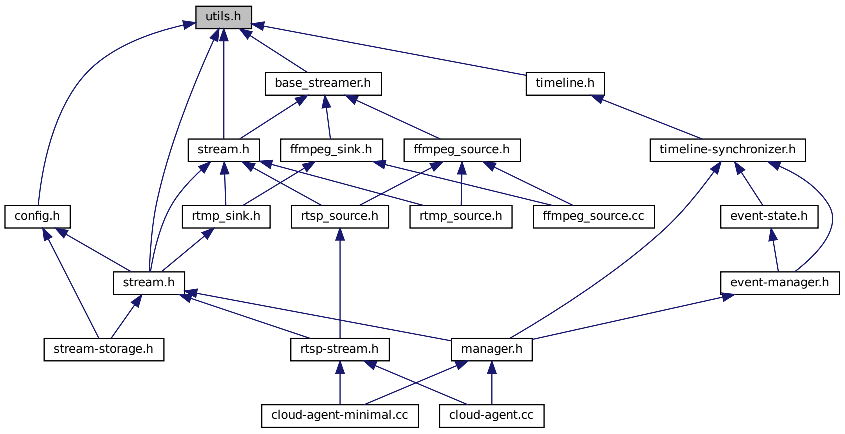
## 11.32 utils.h File Reference

```
#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)

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