YAODAQ

Yet An Other DAQ

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Chapter 1

License

Chapter 2

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Chapter 3

Namespace Index

3.1 Namespace List

Here is a list of all namespaces with brief descriptions:

Chapter 4

Hierarchical Index

4.1 Class Hierarchy

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

Chapter 5

Data Structure Index

5.1 Data Structures

Here are the data structures with brief descriptions:

Chapter 6

File Index

6.1 File List

Here is a list of all files with brief descriptions:

Chapter 7

Namespace Documentation

7.1 spdlog Namespace Reference

Typedefs

- using sink_ptr = std::shared_ptr< spdlog::sinks::sink >

7.1.1 Detailed Description

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7.1.2 Typedef Documentation

7.1.2.1 sink_ptr

```
using spdlog::sink_ptr = typedef std::shared_ptr<spdlog::sinks::sink>
```

Definition at line 15 of file LoggerHandler.hpp.

7.2 yaodaq Namespace Reference

Data Structures

- class ConnectionState
- class Exception
- class Identifier
- class Interrupt
- class Key
- class LoggerHandler
- class Looper
- class Message
- class Open
- class Version
- class WebsocketClient
- class WebsocketServer

Enumerations

- enum class Domain : std::uint_least8_t { Unknown = 0 , Application = 1 , Web = 2 }

- enum class Class : std::uint_least8_t { Unknown = 0 , Server , Client , Module , Board }
- enum class Family : std::uint_least16_t { Unknown = 0 , WebSocketServer , WebSocketClient , Logger , Controller , Configurator , SlowController , Viewer , Analyser , FileWriter }
- enum class MessageType : std::int_least16_t { Open = -1 , Close = -2 , ConnectionError = -3 , Ping = -4 , Pong = -5 , Fragment = -6 , Unknown = 0 }
- enum class Severity : std::int_least16_t { Info = 1 , Warning = 10 , Error = 100 , Critical = 1000 }
- enum class Signal { NO = 0 , ABRT = static_cast<int>(Severity::Critical) + 1 , FPE = static_cast<int>(Severity::Critical) + 2 , ILL = static_cast<int>(Severity::Critical) + 3 , SEGV = static_cast<int>(Severity::Critical) + 4 , INT = static_cast<int>(Severity::Warning) + 1 , TERM = static_cast<int>(Severity::Warning) + 2 }
- enum class StatusCode : std::int_least32_t { SUCCESS = 0 , LISTEN_ERROR , WRONG_NUMBER_PARAMETERS , CLIENT_WITH_SAME_NAME_ALREADY_CONNECTED = 4999 }

Functions

- std::ostream & operator<< (std::ostream &os, const MessageType &messageTypes)

7.2.1 Detailed Description

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7.2.2 Enumeration Type Documentation

7.2.2.1 Class

```
enum class yaodaq::Class :  std::uint_least8_t  [strong]
```

Enumerator

Unknown	
Server	
Client	
Module	
Board	

Definition at line 22 of file Classification.hpp.

```
00023 {
00024   Unknown = 0,
00025   Server,
00026   Client,
00027   // Module is a client with start stop etc...
00028   Module,
00029   // Board is a module with a connector
00030   Board,
00031 };
```

7.2.2.2 Domain

```
enum class yaodaq::Domain :  std::uint_least8_t  [strong]
```

Enumerator

Unknown	
Application	
Web	

Definition at line 14 of file Classification.hpp.

```
00015 {
00016   Unknown     = 0,
00017   Application = 1,
00018   Web         = 2,
00019 };
```

7.2.2.3 Family

```
enum class yaodaq::Family :  std::uint_least16_t  [strong]
```

Enumerator

Unknown	
WebSocketServer	
WebSocketClient	
Logger	
Controller	
Configurator	
SlowController	
Viewer	
Analyser	
FileWriter	

Definition at line 34 of file Classification.hpp.

```
00035 {
00036   Unknown = 0,
00037   WebSocketServer,
00038   WebSocketClient,
00039   Logger,
00040   Controller,
00041   Configurator,
00042   SlowController,
00043   Viewer,
00044   Analyser,
00045   FileWriter,
00046 };
```

7.2.2.4 MessageType

```
enum class yaodaq::MessageType :  std::int_least16_t  [strong]
```

Enumerator

Open	
Close	
ConnectionError	
Ping	
Pong	
Fragment	
Unknown	

Definition at line 15 of file MessageType.hpp.

```
00016 {
00017   // IXWebSocket MessageType (Message is not set here)
00018   Open            = -1,
00019   Close           = -2,
00020   ConnectionError = -3,
00021   Ping            = -4,
00022   Pong            = -5,
00023   Fragment        = -6,
00024   // Unknown should not be used !
00025   Unknown         = 0,
00026 };
```

7.2.2.5 Severity

`enum class yaodaq::Severity : std::int_least16_t [strong]`

Enumerator

Info	
Warning	
Error	
Critical	

Definition at line 13 of file Severity.hpp.

```
00014 {
00015   Info     = 1,
00016   Warning  = 10,
00017   Error    = 100,
00018   Critical = 1000,
00019 };
```

7.2.2.6 Signal

`enum class yaodaq::Signal [strong]`

Enumerator

NO	
ABRT	
FPE	
ILL	
SEGV	
INT	
TERM	

Definition at line 15 of file Signal.hpp.

```
00016 {
00017   NO   = 0,  // No Signal.
00018   // Critical
00019   ABRT = static_cast<int>( Severity::Critical ) + 1,  // (Signal Abort) Abnormal termination, such as
       is initiated by the abort function.
00020   FPE  = static_cast<int>( Severity::Critical ) + 2,  // (Signal Floating-Point Exception) Erroneous
       arithmetic operation, such as zero divide or an operation resulting in overflow (not necessarily with
       a floating-point operation).
00021   ILL  = static_cast<int>( Severity::Critical ) + 3,  // (Signal Illegal Instruction) Invalid function
       image, such as an illegal instruction. This is generally due to a corruption in the code or to an
       attempt to execute data.
00022   SEGV = static_cast<int>( Severity::Critical ) + 4,  // (Signal Segmentation Violation) Invalid
       access to storage: When a program tries to read or write outside the memory it has allocated.
00023   // Warning
00024   INT  = static_cast<int>( Severity::Warning ) + 1,  // (Signal Interrupt) Interactive attention
       signal. Generally generated by the application user.
00025   TERM = static_cast<int>( Severity::Warning ) + 2,  // (Signal Terminate) Termination request sent to
       program.
00026 };
```

7.2.2.7 StatusCode

```
enum class yaodaq::StatusCode :  std::int_least32_t  [strong]
```

Enumerator

SUCCESS	
LISTEN_ERROR	
WRONG_NUMBER_PARAMETERS	
CLIENT_WITH_SAME_NAME_ALREADY_CONNECTED	

Definition at line 13 of file StatusCode.hpp.

```
00014 {
00015   SUCCESS = 0,
00016   LISTEN_ERROR,
00017   WRONG_NUMBER_PARAMETERS,
00018   CLIENT_WITH_SAME_NAME_ALREADY_CONNECTED = 4999,
00019 };
```

7.2.3 Function Documentation

7.2.3.1 operator<<()

```
std::ostream & yaodaq::operator<< (
            std::ostream & os,
            const MessageType & messageTypes )  [inline]
```

Definition at line 28 of file MessageType.hpp.

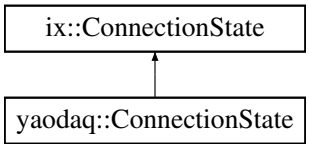
```
00028 { return os « static_cast<std::int_least8_t>( messageTypes ) + 0; }
```

Chapter 8

Data Structure Documentation

8.1 yaodaq::ConnectionState Class Reference

`#include <yaodaq/ConnectionState.hpp>`
Inheritance diagram for yaodaq::ConnectionState:



Public Member Functions

- virtual void computeId (const std::string &host, const Identifier &id) final
- ConnectionState ()
- virtual ~ConnectionState ()

8.1.1 Detailed Description

Definition at line 21 of file ConnectionState.hpp.

8.1.2 Constructor & Destructor Documentation

8.1.2.1 ConnectionState()

`yaodaq::ConnectionState::ConnectionState ( )`
Definition at line 14 of file ConnectionState.cpp.
```
00014 : ix::ConnectionState() {}
```

8.1.2.2 ~ConnectionState()

`yaodaq::ConnectionState::~ConnectionState ( )  [virtual]`
Definition at line 16 of file ConnectionState.cpp.
```
00017 {
00018   std::lock_guard<std::mutex> guard( m_Mutex );
00019   m_Ids.remove( m_Pair );
00020 }
```

8.1.3 Member Function Documentation

8.1.3.1 computeId()

```
void yaodaq::ConnectionState::computeId (
            const std::string & host,
            const Identifier & id )  [final], [virtual]
```

Definition at line 22 of file ConnectionState.cpp.

```
00023 {
00024   std::lock_guard<std::mutex> guard( m_Mutex );
00025   m_Pair = std::pair<std::string, std::string>( host, id.getName() );
00026
00027   if( id.empty() ) { _id = std::to_string( _globalId++ ); }
00028   else
00029   {
00030     std::list<std::pair<std::string, std::string»::iterator found = std::find( m_Ids.begin(),
      m_Ids.end(), m_Pair );
00031     if( found == m_Ids.end() )
00032     {
00033       _id = id.getName();
00034       m_Ids.push_back( m_Pair );
00035     }
00036     else
00037     {
00038       setTerminated();
00039     }
00040   }
00041 }
```

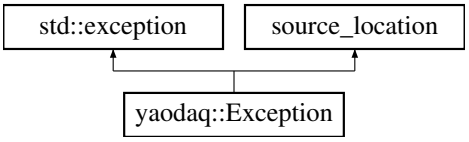
The documentation for this class was generated from the following files:

- yaodaq/ConnectionState.hpp
- yaodaq/ConnectionState.cpp

8.2 yaodaq::Exception Class Reference

`#include <yaodaq/Exception.hpp>`

Inheritance diagram for yaodaq::Exception:



Public Member Functions

- Exception ()=delete
- Exception (const StatusCode &statusCode, const std::string &description, const source_location &location=source_location::current())
- ~Exception () noexcept override=default
- const char * what () const noexcept final
- const char * description () const noexcept
- std::int_least32_t code () const noexcept

Static Public Member Functions

- static void setFormat (const std::string &format)
- static void setStyle (const fmt::text_style &style={})

8.2.1 Detailed Description

Definition at line 19 of file Exception.hpp.

8.2.2 Constructor & Destructor Documentation

8.2.2.1 Exception() [1/2]

```
yaodaq::Exception::Exception ( )  [delete]
```

8.2.2.2 Exception() [2/2]

```
yaodaq::Exception::Exception (
            const StatusCode & statusCode,
            const std::string & description,
            const source_location & location = source_location::current() )
```

Definition at line 14 of file Exception.cpp.

```
00014 : source_location( location ), m_Code( static_cast<std::int_least32_t>( statusCode ) ), m_Description(
      description ) { constructMessage(); }
```

8.2.2.3 ~Exception()

```
yaodaq::Exception::~Exception ( )  [override], [default], [noexcept]
```

8.2.3 Member Function Documentation

8.2.3.1 code()

```
std::int_least32_t yaodaq::Exception::code ( ) const  [noexcept]
```

Definition at line 20 of file Exception.cpp.

```
00020 { return m_Code; }
```

8.2.3.2 description()

```
const char * yaodaq::Exception::description ( ) const  [noexcept]
```

Definition at line 18 of file Exception.cpp.

```
00018 { return m_Description.c_str(); }
```

8.2.3.3 setFormat()

```
static void yaodaq::Exception::setFormat (
            const std::string & format )  [inline], [static]
```

Definition at line 24 of file Exception.hpp.

```
00024 { m_Format = format; }
```

8.2.3.4 setStyle()

```
static void yaodaq::Exception::setStyle (
            const fmt::text_style & style = {} )  [inline], [static]
```

Definition at line 26 of file Exception.hpp.

```
00026 {} ) { m_Style = style; }
```

8.2.3.5 what()

```
const char * yaodaq::Exception::what ( ) const  [final], [noexcept]
```

Definition at line 16 of file Exception.cpp.

```
00016 { return m_Message.c_str(); }
```

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

- yaodaq/Exception.hpp
- yaodaq/Exception.cpp

8.3 yaodaq::Identifier Class Reference

`#include <yaodaq/Identifier.hpp>`

Public Member Functions

- Identifier ()=default
- Identifier (const std::string &type, const std::string &name)
- void generateKey (const Domain &domain=Domain::Unknown, const Class &c_lass=Class::Unknown, const Family &family=Family::Unknown)
- std::string getDomain () const
- std::string getClass () const
- std::string getFamily () const
- std::string getType () const
- std::string getName () const
- Key getKey () const
- std::string get () const
- bool empty () const

Static Public Member Functions

- static Identifier parse (const std::string &)

8.3.1 Detailed Description

Definition at line 16 of file Identifier.hpp.

8.3.2 Constructor & Destructor Documentation

8.3.2.1 Identifier() [1/2]

```
yaodaq::Identifier::Identifier ( )  [default]
```

8.3.2.2 Identifier() [2/2]

```
yaodaq::Identifier::Identifier (
            const std::string & type,
            const std::string & name )
```

Definition at line 26 of file Identifier.cpp.

```
00026 : m_Type( type ), m_Name( name ) {}
```

8.3.3 Member Function Documentation

8.3.3.1 empty()

```
bool yaodaq::Identifier::empty ( ) const
```

Definition at line 19 of file Identifier.cpp.

```
00020 {
00021   if( get() == Identifier().get() ) return true;
00022   else
00023     return false;
00024 }
```

8.3.3.2 generateKey()

```
void yaodaq::Identifier::generateKey (
            const Domain & domain = Domain::Unknown,
            const Class & c_lass = Class::Unknown,
            const Family & family = Family::Unknown )
```

Definition at line 28 of file Identifier.cpp.

```
00028 { m_Key = Key( domain, c_lass, family ); }
```

8.3.3.3 get()

```
std::string yaodaq::Identifier::get ( ) const
```

Definition at line 42 of file Identifier.cpp.

```
00042 { return fmt::format( "{0}/{1}/{2}/{3}/{4}", getDomain(), getClass(), getFamily(), getType(),
      getName() ); }
```

8.3.3.4 getClass()

```
std::string yaodaq::Identifier::getClass ( ) const
```

Definition at line 32 of file Identifier.cpp.

```
00032 { return static_cast<std::string>( magic_enum::enum_name( magic_enum::enum_cast<Class>(
      m_Key.getClass() ).value() ) ); }
```

8.3.3.5 getDomain()

```
std::string yaodaq::Identifier::getDomain ( ) const
```

Definition at line 30 of file Identifier.cpp.

```
00030 { return static_cast<std::string>( magic_enum::enum_name( magic_enum::enum_cast<Domain>(
      m_Key.getDomain() ).value() ) ); }
```

8.3.3.6 getFamily()

```
std::string yaodaq::Identifier::getFamily ( ) const
```

Definition at line 34 of file Identifier.cpp.

```
00034 { return static_cast<std::string>( magic_enum::enum_name( magic_enum::enum_cast<Family>(
      m_Key.getFamily() ).value() ) ); }
```

8.3.3.7 getKey()

```
Key yaodaq::Identifier::getKey ( ) const
```

Definition at line 40 of file Identifier.cpp.

```
00040 { return m_Key; }
```

8.3.3.8 getName()

```
std::string yaodaq::Identifier::getName ( ) const
```

Definition at line 38 of file Identifier.cpp.

```
00038 { return m_Name; }
```

8.3.3.9 getType()

```
std::string yaodaq::Identifier::getType ( ) const
```

Definition at line 36 of file Identifier.cpp.

```
00036 { return m_Type; }
```

8.3.3.10 parse()

```
Identifier yaodaq::Identifier::parse (
            const std::string & id )  [static]
```

Definition at line 44 of file Identifier.cpp.

```
00045 {
00046   std::vector<std::string> result;
00047   std::string              tmp        = id;
00048   std::string              separator  = "/";
00049   std::size_t              second_pos = tmp.find( separator );
00050   while( second_pos != std::string::npos )
00051   {
00052     if( 0 != second_pos )
00053     {
00054       std::string word = tmp.substr( 0, second_pos - 0 );
00055       result.push_back( word );
00056     }
00057     else
00058       result.push_back( "" );
00059     tmp        = tmp.substr( second_pos + separator.length() );
00060     second_pos = tmp.find( separator );
00061     if( second_pos == std::string::npos ) result.push_back( tmp );
00062   }
00063   if( result.size() == 5 )
00064   {
00065     Identifier identifier( result[3], result[4] );
00066     identifier.generateKey( magic_enum::enum_cast<Domain>( result[0] ).value(),
      magic_enum::enum_cast<Class>( result[1] ).value(), magic_enum::enum_cast<Family>( result[2] ).value()
      );
00067     return identifier;
00068   }
00069   else
00070   {
00071     throw Exception( StatusCode::WRONG_NUMBER_PARAMETERS, "Number of parameters in key should be 5
      (Domain/Class/Family/Type/Name) !" );
00072   }
00073 }
```

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

- yaodaq/Identifier.hpp
- yaodaq/Identifier.cpp

8.4 yaodaq::Interrupt Class Reference

`#include <yaodaq/Interrupt.hpp>`

Public Member Functions

- Interrupt ()
- void init ()
- void restore ()
- Signal getSignal ()
- ~Interrupt ()

8.4.1 Detailed Description

Definition at line 19 of file Interrupt.hpp.

8.4.2 Constructor & Destructor Documentation

8.4.2.1 Interrupt()

```
yaodaq::Interrupt::Interrupt ( )
```

Definition at line 19 of file Interrupt.cpp.

```
00019 { init(); }
```

8.4.2.2 ~Interrupt()

```
yaodaq::Interrupt::~Interrupt ( )
```

Definition at line 42 of file Interrupt.cpp.

```
00042 { restore(); }
```

8.4.3 Member Function Documentation

8.4.3.1 getSignal()

```
Signal yaodaq::Interrupt::getSignal ( )
```

Definition at line 44 of file Interrupt.cpp.

```
00045 {
00046   if( m_Signal.load() != Signal::NO )
00047   {
00048     std::lock_guard<std::mutex> guard( m_mutex );
00049     init();
00050   }
00051   return m_Signal.load();
00052 }
```

8.4.3.2 init()

```
void yaodaq::Interrupt::init ( )
```

Definition at line 31 of file Interrupt.cpp.

```
00032 {
00033   setSignal( Signal::TERM );
00034   setSignal( Signal::TERM );
00035   setSignal( Signal::SEGV );
00036   setSignal( Signal::INT );
00037   setSignal( Signal::ILL );
00038   setSignal( Signal::ABRT );
00039   setSignal( Signal::FPE );
00040 }
```

8.4.3.3 restore()

```
void yaodaq::Interrupt::restore ( )
```

Definition at line 21 of file Interrupt.cpp.

```
00022 {
00023   std::signal( SIGTERM, SIG_DFL );
00024   std::signal( SIGSEGV, SIG_DFL );
00025   std::signal( SIGINT, SIG_DFL );
00026   std::signal( SIGILL, SIG_DFL );
00027   std::signal( SIGABRT, SIG_DFL );
00028   std::signal( SIGFPE, SIG_DFL );
00029 }
```

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

- yaodaq/Interrupt.hpp
- yaodaq/Interrupt.cpp

8.5 yaodaq::Key Class Reference

```
#include <yaodaq/Key.hpp>
```

Public Member Functions

- Key ()=default
- Key (const Domain &domain, const Class &c_lass, const Family &family)
- std::int_least8_t getDomain () const
- std::int_least8_t getClass () const
- std::int_least16_t getFamily () const
- std::int_least32_t getKey () const

8.5.1 Detailed Description

Definition at line 15 of file Key.hpp.

8.5.2 Constructor & Destructor Documentation

8.5.2.1 Key() [1/2]

```
yaodaq::Key::Key ( )  [default]
```

8.5.2.2 Key() [2/2]

```
yaodaq::Key::Key (
            const Domain & domain,
            const Class & c_lass,
            const Family & family )  [explicit]
```

Definition at line 11 of file Key.cpp.

```
00011 { m_Key = ( static_cast<std::int_least8_t>( domain ) « 24 ) + ( static_cast<std::int_least8_t>( c_lass
      ) « 16 ) + static_cast<std::int_least16_t>( family ); }
```

8.5.3 Member Function Documentation

8.5.3.1 getClass()

```
std::int_least8_t yaodaq::Key::getClass ( ) const
```

Definition at line 15 of file Key.cpp.

```
00015 { return ( m_Key » 16 ) & 0xFF; }
```

8.5.3.2 getDomain()

```
std::int_least8_t yaodaq::Key::getDomain ( ) const
```

Definition at line 13 of file Key.cpp.

```
00013 { return ( m_Key » 24 ) & 0xFF; }
```

8.5.3.3 getFamily()

```
std::int_least16_t yaodaq::Key::getFamily ( ) const
```

Definition at line 17 of file Key.cpp.

```
00017 { return (m_Key)&0xFFFF; }
```

8.5.3.4 getKey()

```
std::int_least32_t yaodaq::Key::getKey ( ) const
```

Definition at line 19 of file Key.cpp.

```
00019 { return m_Key; }
```

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

- yaodaq/Key.hpp
- yaodaq/Key.cpp

8.6 yaodaq::LoggerHandler Class Reference

```
#include <yaodaq/LoggerHandler.hpp>
```

Public Types

- enum class Verbosity {
  Off , Trace , Debug , Info ,
  Warn , Error , Critical }

Public Member Functions

- LoggerHandler ()
- ~LoggerHandler ()
- void setVerbosity (const Verbosity &verbosity)
- void setName (const std::string &)
- std::shared_ptr< spdlog::logger > logger ()
- void addSink (const spdlog::sink_ptr &)
- void clearSinks ()

8.6.1 Detailed Description

Definition at line 21 of file LoggerHandler.hpp.

8.6.2 Member Enumeration Documentation

8.6.2.1 Verbosity

```
enum class yaodaq::LoggerHandler::Verbosity  [strong]
```

Enumerator

Off	
Trace	
Debug	
Info	
Warn	
Error	
Critical	

Definition at line 24 of file LoggerHandler.hpp.

```
00025   {
00026     Off,
00027     Trace,
00028     Debug,
00029     Info,
00030     Warn,
00031     Error,
00032     Critical
00033   };
```

8.6.3 Constructor & Destructor Documentation

8.6.3.1 LoggerHandler()

```
yaodaq::LoggerHandler::LoggerHandler ( )
```

Definition at line 12 of file LoggerHandler.cpp.

```
00012 { init(); }
```

8.6.3.2 ~LoggerHandler()

```
yaodaq::LoggerHandler::~LoggerHandler ( )
```

Definition at line 20 of file LoggerHandler.cpp.

```
00020 {}
```

8.6.4 Member Function Documentation

8.6.4.1 addSink()

```
void yaodaq::LoggerHandler::addSink (
            const spdlog::sink_ptr & sink )
```

Definition at line 45 of file LoggerHandler.cpp.

```
00046 {
00047   m_Sinks.push_back( sink );
00048   init();
00049 }
```

8.6.4.2 clearSinks()

```
void yaodaq::LoggerHandler::clearSinks ( )
```

Definition at line 51 of file LoggerHandler.cpp.

```
00052 {
00053   m_Sinks.clear();
00054   init();
00055 }
```

8.6.4.3 logger()

```
std::shared_ptr< spdlog::logger > yaodaq::LoggerHandler::logger ( )
```

Definition at line 43 of file LoggerHandler.cpp.

```
00043 { return std::shared_ptr<spdlog::logger>( m_Logger ); }
```

8.6.4.4 setName()

```
void yaodaq::LoggerHandler::setName (
            const std::string & name )
```

Definition at line 14 of file LoggerHandler.cpp.

```
00015 {
00016   m_Name = name;
00017   init();
00018 }
```

8.6.4.5 setVerbosity()

```
void yaodaq::LoggerHandler::setVerbosity (
            const Verbosity & verbosity )
```

Definition at line 22 of file LoggerHandler.cpp.

```
00023 {
00024   m_Verbosity = verbosity;
00025   init();
00026 }
```

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

- yaodaq/LoggerHandler.hpp
- yaodaq/LoggerHandler.cpp

8.7 yaodaq::Looper Class Reference

```
#include <yaodaq/Looper.hpp>
```

Public Member Functions

- Looper ()
- Signal loop ()
- Signal getSignal ()
- void supressInstance ()
- ~Looper ()

Static Public Member Functions

- static int getInstance ()

8.7.1 Detailed Description

Definition at line 15 of file Looper.hpp.

8.7.2 Constructor & Destructor Documentation

8.7.2.1 Looper()

```
yaodaq::Looper::Looper ( )
```

Definition at line 28 of file Looper.cpp.

```
00029 {
00030   if( m_hasBeenAdded == false )
00031   {
00032     m_hasBeenAdded = true;
00033     ++m_instance;
00034   }
00035 }
```

8.7.2.2 ~Looper()

```
yaodaq::Looper::~Looper ( )
```

Definition at line 52 of file Looper.cpp.

```
00053 {
00054   if( m_hasBeenAdded == true && m_hasBeenSupressed == false )
00055   {
00056     m_hasBeenSupressed = true;
00057     --m_instance;
00058   }
00059 }
```

8.7.3 Member Function Documentation

8.7.3.1 getInstance()

```
int yaodaq::Looper::getInstance ( )  [static]
```

Definition at line 17 of file Looper.cpp.

```
00017 { return m_instance; }
```

8.7.3.2 getSignal()

```
Signal yaodaq::Looper::getSignal ( )
```

Definition at line 50 of file Looper.cpp.

```
00050 { return m_Interrupt.getSignal(); }
```

8.7.3.3 loop()

```
Signal yaodaq::Looper::loop ( )
```

Definition at line 37 of file Looper.cpp.

```
00038 {
00039   static Signal signal{ yaodaq::Signal::NO };
00040   if( m_instance == 0 )
00041   {
00042     do {
00043       signal = m_Interrupt.getSignal();
00044       std::this_thread::sleep_for( std::chrono::microseconds( 1 ) );
00045     } while( signal == yaodaq::Signal::NO );
00046   }
00047   return signal;
00048 }
```

8.7.3.4 supressInstance()

```
void yaodaq::Looper::supressInstance ( )
```

Definition at line 19 of file Looper.cpp.

```
00020 {
00021   if( m_hasBeenSupressed == false )
00022   {
00023     m_hasBeenSupressed = true;
00024     m_instance--;
00025   }
00026 }
```

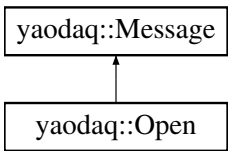
The documentation for this class was generated from the following files:

- yaodaq/Looper.hpp
- yaodaq/Looper.cpp

8.8 yaodaq::Message Class Reference

```
#include <yaodaq/Message.hpp>
```

Inheritance diagram for yaodaq::Message:



Public Member Functions

- Message ()
- Message (const nlohmann::json &content, const MessageType &messageType=MessageType::Unknown)
- Message (const std::string &content, const MessageType &messageType=MessageType::Unknown)
- Message (const char *content, const MessageType &messageType=MessageType::Unknown)
- std::string dump (const int &indent=-1, const char &indent_char=' ', const bool &ensure_ascii=false, const nlohmann::detail::error_handler_t &error_handler=nlohmann::detail::error_handler_t::strict) const
- nlohmann::json get () const
- std::string getContent () const
- std::string getTypeName () const
- MessageType getTypeValue () const
- std::string getTimestamp () const
- std::time_t getTime () const
- Identifier getIdentifier () const
- void setFrom (const Identifier &)

Protected Member Functions

- Message (const MessageType &messageType)
- void setContent (const nlohmann::json &content)
- void setContent (const std::string &content)
- void setContent (const char *content)

8.8.1 Detailed Description

Definition at line 19 of file Message.hpp.

8.8.2 Constructor & Destructor Documentation

8.8.2.1 Message() [1/5]

```
yaodaq::Message::Message ( )
```

Definition at line 23 of file Message.cpp.

```
00024 {
00025     m_JSON["from"];
00026     m_JSON["to"];
00027     m_JSON["type"]      = magic_enum::enum_name( MessageType::Unknown );
00028     m_JSON["content"];
00029     m_JSON["timestamp"] = fmt::format( "{:%F %T %z}", fmt::gmtime(
      std::chrono::system_clock::to_time_t( std::chrono::system_clock::now() ) ) );
00030     m_JSON["meta"]["compiler"]                = nlohmann::json::meta()["compiler"];
00031     m_JSON["meta"]["platform"]                = nlohmann::json::meta()["platform"];
00032     m_JSON["meta"]["versions"]["json"]        = nlohmann::json::meta()["version"]["string"];
00033     m_JSON["meta"]["versions"]["yaodaq"]      = yaodaq_version.to_string();
00034     m_JSON["meta"]["versions"]["ixwebsocket"] = std::string( IX_WEBSOCKET_VERSION );
00035 }
```

8.8.2.2 Message() [2/5]

```
yaodaq::Message::Message (
            const nlohmann::json & content,
            const MessageType & messageType = MessageType::Unknown )  [explicit]
```

Definition at line 50 of file Message.cpp.

```
00050 : Message( messageType ) { setContent( content ); }
```

8.8.2.3 Message() [3/5]

```
yaodaq::Message::Message (
            const std::string & content,
            const MessageType & messageType = MessageType::Unknown )  [explicit]
```

Definition at line 52 of file Message.cpp.

```
00052 : Message( messageType ) { setContent( content ); }
```

8.8.2.4 Message() [4/5]

```
yaodaq::Message::Message (
            const char * content,
            const MessageType & messageType = MessageType::Unknown )  [explicit]
```

Definition at line 54 of file Message.cpp.

```
00054 : Message( messageType ) { setContent( content ); }
```

8.8.2.5 Message() [5/5]

```
yaodaq::Message::Message (
            const MessageType & messageType )  [explicit], [protected]
```

Definition at line 105 of file Message.cpp.

```
00105 : Message() { m_JSON["type"] = magic_enum::enum_name( messageType ); }
```

8.8.3 Member Function Documentation

8.8.3.1 dump()

```
std::string yaodaq::Message::dump (
            const int & indent = -1,
            const char & indent_char = ' ',
            const bool & ensure_ascii = false,
            const nlohmann::detail::error_handler_t & error_handler = nlohmann::detail:↩
:error_handler_t::strict ) const
```

Definition at line 56 of file Message.cpp.

```
00056 { return m_JSON.dump( indent, indent_char, ensure_ascii, error_handler ); }
```

8.8.3.2 get()

```
nlohmann::json yaodaq::Message::get ( ) const
```

Definition at line 58 of file Message.cpp.

```
00058 { return m_JSON; }
```

8.8.3.3 getContent()

```
std::string yaodaq::Message::getContent ( ) const
```

Definition at line 64 of file Message.cpp.

```
00065 {
00066   if( m_JSON["content"].is_null() ) return "";
00067   else if( m_JSON["content"].is_string() )
00068     return m_JSON["content"].get<std::string>();
00069   else
00070     return m_JSON["content"].dump();
00071 }
```

8.8.3.4 getIdentifier()

```
Identifier yaodaq::Message::getIdentifier ( ) const
```

Definition at line 93 of file Message.cpp.

```
00094 {
00095   if( m_JSON["from"].is_null() ) return {};
00096   else
00097   {
00098     Identifier id( m_JSON["from"]["type"].get<std::string>(),
       m_JSON["from"]["name"].get<std::string>() );
00099     id.generateKey( magic_enum::enum_cast<Domain>( m_JSON["from"]["domain"].get<std::string>()
       ).value(), magic_enum::enum_cast<Class>( m_JSON["from"]["class"].get<std::string>() ).value(),
00100                     magic_enum::enum_cast<Family>( m_JSON["from"]["family"].get<std::string>()
       ).value() );
00101     return id;
00102   }
00103 }
```

8.8.3.5 getTime()

```
std::time_t yaodaq::Message::getTime ( ) const
```

Definition at line 75 of file Message.cpp.

```
00076 {
00077   std::tm tm;
```

```
00078   memset( &tm, 0, sizeof( tm ) );
00079   std::istringstream ss( getTimestamp() );
00080   ss » std::get_time( &tm, "%Y-%m-%d %H:%M:%S %z" );
00081   return mktime( &tm );
00082 }
```

8.8.3.6 getTimestamp()

```
std::string yaodaq::Message::getTimestamp ( ) const
```

Definition at line 73 of file Message.cpp.

```
00073 { return m_JSON["timestamp"].get<std::string>(); }
```

8.8.3.7 getTypeName()

```
std::string yaodaq::Message::getTypeName ( ) const
```

Definition at line 60 of file Message.cpp.

```
00060 { return m_JSON["type"].get<std::string>(); }
```

8.8.3.8 getTypeValue()

```
MessageType yaodaq::Message::getTypeValue ( ) const
```

Definition at line 62 of file Message.cpp.

```
00062 { return magic_enum::enum_cast<MessageType>( m_JSON["type"].get<std::string>() ).value(); }
```

8.8.3.9 setContent() [1/3]

```
void yaodaq::Message::setContent (
            const char * content )  [protected]
```

Definition at line 44 of file Message.cpp.

```
00045 {
00046   m_JSON["content"] = nlohmann::json::parse( content, nullptr, false );
00047   if( m_JSON["content"].is_discarded() ) { m_JSON["content"] = static_cast<std::string>( content ); }
00048 }
```

8.8.3.10 setContent() [2/3]

```
void yaodaq::Message::setContent (
            const nlohmann::json & content )  [protected]
```

Definition at line 37 of file Message.cpp.

```
00037 { m_JSON["content"] = static_cast<nlohmann::json>( content ); }
```

8.8.3.11 setContent() [3/3]

```
void yaodaq::Message::setContent (
            const std::string & content )  [protected]
```

Definition at line 39 of file Message.cpp.

```
00040 {
00041   m_JSON["content"] = nlohmann::json::parse( content, nullptr, false );
00042   if( m_JSON["content"].is_discarded() ) { m_JSON["content"] = static_cast<std::string>( content ); }
00043 }
```

8.8.3.12 setFrom()

```
void yaodaq::Message::setFrom (
            const Identifier & identifier )
```

Definition at line 84 of file Message.cpp.

```
00085 {
00086   m_JSON["from"]["name"]   = identifier.getName();
00087   m_JSON["from"]["type"]   = identifier.getType();
```

```
00088   m_JSON["from"]["family"] = identifier.getFamily();
00089   m_JSON["from"]["class"]  = identifier.getClass();
00090   m_JSON["from"]["domain"] = identifier.getDomain();
00091 }
```

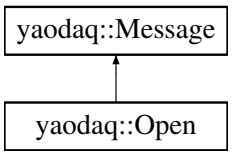
The documentation for this class was generated from the following files:

- yaodaq/Message.hpp
- yaodaq/Message.cpp

8.9 yaodaq::Open Class Reference

`#include <yaodaq/IXWebsocketMessage.hpp>`

Inheritance diagram for yaodaq::Open:



Public Member Functions

- Open (const ix::WebSocketOpenInfo &openInfo)
- Open (const ix::WebSocketOpenInfo &openInfo, std::shared_ptr< ConnectionState > &connectionState)
- std::string getURI () const
- std::map< std::string, std::string > getHeaders () const
- std::string getProtocol () const
- std::string dump (const int &indent=-1, const char &indent_char=' ', const bool &ensure_ascii=false, const nlohmann::detail::error_handler_t &error_handler=nlohmann::detail::error_handler_t::strict) const
- nlohmann::json get () const
- std::string getContent () const
- std::string getTypeName () const
- MessageType getTypeValue () const
- std::string getTimestamp () const
- std::time_t getTime () const
- Identifier getIdentifier () const
- void setFrom (const Identifier &)

Protected Member Functions

- void setContent (const nlohmann::json &content)
- void setContent (const std::string &content)
- void setContent (const char *content)

8.9.1 Detailed Description

Definition at line 19 of file IXWebsocketMessage.hpp.

8.9.2 Constructor & Destructor Documentation

8.9.2.1 Open() [1/2]

```
yaodaq::Open::Open (
            const ix::WebSocketOpenInfo & openInfo )  [explicit]
```

Definition at line 10 of file IXWebsocketMessage.cpp.

```
00010                                                 : Message( MessageType::Open )
00011 {
00012   nlohmann::json j;
00013   j["uri"]      = openInfo.uri;
00014   j["headers"]  = openInfo.headers;
00015   j["protocol"] = openInfo.protocol;
00016   setContent( j );
00017 }
```

8.9.2.2 Open() [2/2]

```
yaodaq::Open::Open (
            const ix::WebSocketOpenInfo & openInfo,
            std::shared_ptr< ConnectionState > & connectionState )
```

Definition at line 19 of file IXWebsocketMessage.cpp.

```
00019                                                                                                 :
      Open( openInfo )
00020 {
00021   nlohmann::json j = get();
00022   j["id"]          = connectionState->getId();
00023   j["remote_ip"]   = connectionState->getRemoteIp();
00024   j["remote_port"] = connectionState->getRemotePort();
00025   setContent( j );
00026 }
```

8.9.3 Member Function Documentation

8.9.3.1 dump()

```
std::string yaodaq::Message::dump (
            const int & indent = -1,
            const char & indent_char = ' ',
            const bool & ensure_ascii = false,
            const nlohmann::detail::error_handler_t & error_handler = nlohmann::detail:↩
:error_handler_t::strict ) const  [inherited]
```

Definition at line 56 of file Message.cpp.

```
00056 { return m_JSON.dump( indent, indent_char, ensure_ascii, error_handler ); }
```

8.9.3.2 get()

```
nlohmann::json yaodaq::Message::get ( ) const  [inherited]
```

Definition at line 58 of file Message.cpp.

```
00058 { return m_JSON; }
```

8.9.3.3 getContent()

```
std::string yaodaq::Message::getContent ( ) const  [inherited]
```

Definition at line 64 of file Message.cpp.

```
00065 {
00066   if( m_JSON["content"].is_null() ) return "";
00067   else if( m_JSON["content"].is_string() )
00068     return m_JSON["content"].get<std::string>();
00069   else
00070     return m_JSON["content"].dump();
00071 }
```

8.9.3.4 getHeaders()

```
std::map< std::string, std::string > yaodaq::Open::getHeaders ( ) const
```

Definition at line 30 of file IXWebsocketMessage.cpp.

```
00031 {
00032   std::map<std::string, std::string> ret = get()["content"]["headers"].get<std::map<std::string,
      std::string»();
00033   return ret;
00034 }
```

8.9.3.5 getIdentifier()

```
Identifier yaodaq::Message::getIdentifier ( ) const  [inherited]
```

Definition at line 93 of file Message.cpp.

```
00094 {
00095   if( m_JSON["from"].is_null() ) return {};
00096   else
00097   {
00098     Identifier id( m_JSON["from"]["type"].get<std::string>(),
      m_JSON["from"]["name"].get<std::string>() );
00099     id.generateKey( magic_enum::enum_cast<Domain>( m_JSON["from"]["domain"].get<std::string>()
      ).value(), magic_enum::enum_cast<Class>( m_JSON["from"]["class"].get<std::string>() ).value(),
00100                     magic_enum::enum_cast<Family>( m_JSON["from"]["family"].get<std::string>()
      ).value() );
00101     return id;
00102   }
00103 }
```

8.9.3.6 getProtocol()

```
std::string yaodaq::Open::getProtocol ( ) const
```

Definition at line 36 of file IXWebsocketMessage.cpp.

```
00036 { return get()["content"]["protocol"].get<std::string>(); }
```

8.9.3.7 getTime()

```
std::time_t yaodaq::Message::getTime ( ) const  [inherited]
```

Definition at line 75 of file Message.cpp.

```
00076 {
00077   std::tm tm;
00078   memset( &tm, 0, sizeof( tm ) );
00079   std::istringstream ss( getTimestamp() );
00080   ss » std::get_time( &tm, "%Y-%m-%d %H:%M:%S %z" );
00081   return mktime( &tm );
00082 }
```

8.9.3.8 getTimestamp()

```
std::string yaodaq::Message::getTimestamp ( ) const  [inherited]
```

Definition at line 73 of file Message.cpp.

```
00073 { return m_JSON["timestamp"].get<std::string>(); }
```

8.9.3.9 getTypeName()

```
std::string yaodaq::Message::getTypeName ( ) const  [inherited]
```

Definition at line 60 of file Message.cpp.

```
00060 { return m_JSON["type"].get<std::string>(); }
```

8.9.3.10 getTypeValue()

```
MessageType yaodaq::Message::getTypeValue ( ) const  [inherited]
```

Definition at line 62 of file Message.cpp.

```
00062 { return magic_enum::enum_cast<MessageType>( m_JSON["type"].get<std::string>() ).value(); }
```

8.9.3.11 getURI()

```
std::string yaodaq::Open::getURI ( ) const
```

Definition at line 28 of file IXWebsocketMessage.cpp.

```
00028 { return get()["content"]["uri"].get<std::string>(); }
```

8.9.3.12 setContent() [1/3]

```
void yaodaq::Message::setContent (
            const char * content )  [protected], [inherited]
```

Definition at line 44 of file Message.cpp.

```
00045 {
00046   m_JSON["content"] = nlohmann::json::parse( content, nullptr, false );
00047   if( m_JSON["content"].is_discarded() ) { m_JSON["content"] = static_cast<std::string>( content ); }
00048 }
```

8.9.3.13 setContent() [2/3]

```
void yaodaq::Message::setContent (
            const nlohmann::json & content )  [protected], [inherited]
```

Definition at line 37 of file Message.cpp.

```
00037 { m_JSON["content"] = static_cast<nlohmann::json>( content ); }
```

8.9.3.14 setContent() [3/3]

```
void yaodaq::Message::setContent (
            const std::string & content )  [protected], [inherited]
```

Definition at line 39 of file Message.cpp.

```
00040 {
00041   m_JSON["content"] = nlohmann::json::parse( content, nullptr, false );
00042   if( m_JSON["content"].is_discarded() ) { m_JSON["content"] = static_cast<std::string>( content ); }
00043 }
```

8.9.3.15 setFrom()

```
void yaodaq::Message::setFrom (
            const Identifier & identifier )  [inherited]
```

Definition at line 84 of file Message.cpp.

```
00085 {
00086   m_JSON["from"]["name"]   = identifier.getName();
00087   m_JSON["from"]["type"]   = identifier.getType();
00088   m_JSON["from"]["family"] = identifier.getFamily();
00089   m_JSON["from"]["class"]  = identifier.getClass();
00090   m_JSON["from"]["domain"] = identifier.getDomain();
00091 }
```

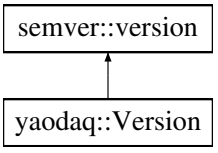
The documentation for this class was generated from the following files:

- yaodaq/IXWebsocketMessage.hpp
- yaodaq/IXWebsocketMessage.cpp

8.10 yaodaq::Version Class Reference

```
#include <yaodaq/Version.hpp>
```

Inheritance diagram for yaodaq::Version:



Public Member Functions

- constexpr Version (const std::uint8_t &mj, const std::uint8_t &mn, const std::uint8_t &pt, const semver↩ ::prerelease &prt=semver::prerelease::none, const std::uint8_t &prn=0) noexcept
- constexpr Version (const std::string_view &str)
- constexpr Version ()=default
- std::uint8_t getMajor ()
- std::uint8_t getMinor ()
- std::uint8_t getPatch ()
- std::string getPreRelease ()
- std::uint8_t getPreReleaseNumber ()

8.10.1 Detailed Description

Definition at line 15 of file Version.hpp.

8.10.2 Constructor & Destructor Documentation

8.10.2.1 Version() [1/3]

```
constexpr yaodaq::Version::Version (
            const std::uint8_t & mj,
            const std::uint8_t & mn,
            const std::uint8_t & pt,
            const semver::prerelease & prt = semver::prerelease::none,
            const std::uint8_t & prn = 0 )  [inline], [constexpr], [noexcept]
```

Definition at line 18 of file Version.hpp.

```
00018 : semver::version( mj, mn, pt, prt, prn ) {}
```

8.10.2.2 Version() [2/3]

```
constexpr yaodaq::Version::Version (
            const std::string_view & str )  [inline], [explicit], [constexpr]
```

Definition at line 19 of file Version.hpp.

```
00019 : semver::version( str ) {}
```

8.10.2.3 Version() [3/3]

```
constexpr yaodaq::Version::Version ( )  [constexpr], [default]
```

8.10.3 Member Function Documentation

8.10.3.1 getMajor()

```
std::uint8_t yaodaq::Version::getMajor ( )
```

Definition at line 12 of file Version.cpp.

```
00012 { return major; }
```

8.10.3.2 getMinor()

```
std::uint8_t yaodaq::Version::getMinor ( )
```

Definition at line 14 of file Version.cpp.

```
00014 { return minor; }
```

8.10.3.3 getPatch()

```
std::uint8_t yaodaq::Version::getPatch ( )
```
Definition at line 16 of file Version.cpp.
```
00016 { return patch; }
```

8.10.3.4 getPreRelease()

```
std::string yaodaq::Version::getPreRelease ( )
```
Definition at line 18 of file Version.cpp.
```
00018 { return std::string( magic_enum::enum_name( prerelease_type ) ); }
```

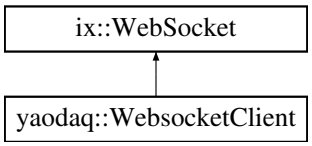
8.10.3.5 getPreReleaseNumber()

```
std::uint8_t yaodaq::Version::getPreReleaseNumber ( )
```
Definition at line 20 of file Version.cpp.
```
00020 { return prerelease_number; }
```
The documentation for this class was generated from the following files:

- yaodaq/Version.hpp
- yaodaq/Version.cpp

8.11 yaodaq::WebsocketClient Class Reference

`#include <yaodaq/WebsocketClient.hpp>`
Inheritance diagram for yaodaq::WebsocketClient:



Public Member Functions

- WebsocketClient (const std::string &name, const std::string &type="YAODAQWebsocketClient")
- virtual ~WebsocketClient ()
- void start ()
- void stop ()
- void loop ()
- std::shared_ptr< spdlog::logger > logger ()

Static Public Member Functions

- static void throwGeneralIfSameName (const bool &)

8.11.1 Detailed Description

Definition at line 20 of file WebsocketClient.hpp.

8.11.2 Constructor & Destructor Documentation

8.11.2.1 WebsocketClient()

```
yaodaq::WebsocketClient::WebsocketClient (
            const std::string & name,
            const std::string & type = "YAODAQWebsocketClient" )  [explicit]
```

Definition at line 24 of file WebsocketClient.cpp.

```
00024                                                                    : m_Identifier( type,
       name )
00025 {
00026   ix::initNetSystem();
00027
00028   m_Identifier.generateKey( Domain::Application, Class::Client, Family::WebSocketClient );
00029   m_Logger.setName( m_Identifier.get() );
00030   m_Logger.addSink( std::make_shared<spdlog::sinks::stdout_color_sink_mt>() );
00031
00032   ix::WebSocketHttpHeaders header{ { "id", m_Identifier.get() } };
00033   setExtraHeaders( header );
00034
00035   setOnMessageCallback(
00036     [this]( const ix::WebSocketMessagePtr& msg )
00037     {
00038       if( msg->type == ix::WebSocketMessageType::Message ) { logger()->error( "{}", msg->str ); }
00039       else if( msg->type == ix::WebSocketMessageType::Error )
00040       {
00041         std::cout << "Connection error: " << msg->errorInfo.reason << std::endl;
00042       }
00043       else if( msg->type == ix::WebSocketMessageType::Close )
00044       {
00045         disableAutomaticReconnection();
00046         std::this_thread::sleep_for( std::chrono::milliseconds( 100 ) );
00047         if( msg->closeInfo.code == magic_enum::enum_integer(
       StatusCode::CLIENT_WITH_SAME_NAME_ALREADY_CONNECTED ) )
00048         {
00049           logger()->critical( fmt::format( fg( fmt::color::red ) | fmt::emphasis::bold,
       msg->closeInfo.reason ) );
00050           if( m_ThrowGeneralIfSameName ) throw Exception(
       StatusCode::CLIENT_WITH_SAME_NAME_ALREADY_CONNECTED, msg->closeInfo.reason );
00051         }
00052       }
00053     }
00054
00055   );
00056 }
```

8.11.2.2 ~WebsocketClient()

```
yaodaq::WebsocketClient::~WebsocketClient ( )  [virtual]
```

Definition at line 58 of file WebsocketClient.cpp.

```
00059 {
00060   stop();
00061   ix::uninitNetSystem();
00062 }
```

8.11.3 Member Function Documentation

8.11.3.1 logger()

```
std::shared_ptr< spdlog::logger > yaodaq::WebsocketClient::logger ( )  [inline]
```

Definition at line 29 of file WebsocketClient.hpp.

```
00029 { return m_Logger.logger(); }
```

8.11.3.2 loop()

```
void yaodaq::WebsocketClient::loop ( )
```

Definition at line 83 of file WebsocketClient.cpp.

```
00084 {
00085   WebsocketClient::start();
00086   m_Looper.supressInstance();
00087   onRaisingSignal();
00088 }
```

8.11.3.3 start()

```
void yaodaq::WebsocketClient::start ( )
```

Definition at line 64 of file WebsocketClient.cpp.

```
00065 {
00066   if( getReadyState() == ix::ReadyState::Closed || getReadyState() == ix::ReadyState::Closing )
00067   {
00068     logger()->trace( "Client started. Connected to {}", getUrl() );
00069     ix::WebSocket::start();
00070   }
00071 }
```

8.11.3.4 stop()

```
void yaodaq::WebsocketClient::stop ( )
```

Definition at line 73 of file WebsocketClient.cpp.

```
00074 {
00075   if( getReadyState() == ix::ReadyState::Open || getReadyState() == ix::ReadyState::Connecting )
00076   {
00077     logger()->trace( "Client stopped" );
00078     ix::WebSocket::stop();
00079     while( getReadyState() != ix::ReadyState::Closed ) { std::this_thread::sleep_for(
       std::chrono::microseconds( 1 ) ); }
00080   }
00081 }
```

8.11.3.5 throwGeneralIfSameName()

```
void yaodaq::WebsocketClient::throwGeneralIfSameName (
            const bool & activate )  [static]
```

Definition at line 22 of file WebsocketClient.cpp.

```
00022 { m_ThrowGeneralIfSameName = activate; }
```

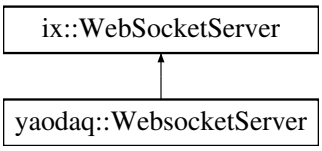
The documentation for this class was generated from the following files:

- yaodaq/WebsocketClient.hpp
- yaodaq/WebsocketClient.cpp

8.12 yaodaq::WebsocketServer Class Reference

```
#include <yaodaq/WebsocketServer.hpp>
```

Inheritance diagram for yaodaq::WebsocketServer:



Public Member Functions

- WebsocketServer (const std::string &name, const int &port=ix::SocketServer::kDefaultPort, const std::string &host=ix::SocketServer::kDefaultHost, const int &backlog=ix::SocketServer::kDefaultTcpBacklog, const std::size_t &maxConnections=ix::SocketServer::kDefaultMaxConnections, const int &handshakeTimeout↩Secs=ix::WebSocketServer::kDefaultHandShakeTimeoutSecs, const int &addressFamily=ix::SocketServer↩::kDefaultAddressFamily, const std::string &type="YAODAQWebsocketServer")
- virtual ~WebsocketServer ()
- void loop ()
- void start ()
- void stop (bool useless=true)
- void listen ()
- void setVerbosity (const yaodaq::LoggerHandler::Verbosity &verbosity)
- std::shared_ptr< spdlog::logger > logger ()

8.12.1 Detailed Description

Definition at line 20 of file WebsocketServer.hpp.

8.12.2 Constructor & Destructor Documentation

8.12.2.1 WebsocketServer()

```
yaodaq::WebsocketServer::WebsocketServer (
            const std::string & name,
            const int & port = ix::SocketServer::kDefaultPort,
            const std::string & host = ix::SocketServer::kDefaultHost,
            const int & backlog = ix::SocketServer::kDefaultTcpBacklog,
            const std::size_t & maxConnections = ix::SocketServer::kDefaultMaxConnections,
            const int & handshakeTimeoutSecs = ix::WebSocketServer::kDefaultHandShakeTimeoutSecs,
            const int & addressFamily = ix::SocketServer::kDefaultAddressFamily,
            const std::string & type = "YAODAQWebsocketServer" )  [explicit]
```

Definition at line 26 of file WebsocketServer.cpp.

```
00026
                                :
00027   ix::WebSocketServer( port, host, backlog, maxConnections, handshakeTimeoutSecs, addressFamily ),
       m_Identifier( type, name )
00028 {
00029   ix::initNetSystem();
00030
00031   m_Identifier.generateKey( Domain::Application, Class::Server, Family::WebSocketServer );
00032   m_Logger.setName( m_Identifier.get() );
00033   m_Logger.addSink( std::make_shared<spdlog::sinks::stdout_color_sink_mt>() );
00034
00035   setConnectionStateFactory( []() { return std::make_shared<ConnectionState>(); } );
00036
00037   setOnClientMessageCallback(
00038     [this]( std::shared_ptr<ix::ConnectionState> connectionState, ix::WebSocket& webSocket, const
       ix::WebSocketMessagePtr& msg )
00039     {
00040       // The ConnectionState object contains information about the connection
00041       std::shared_ptr<ConnectionState> connection = std::static_pointer_cast<ConnectionState>(
       connectionState );
00042
00043       if( msg->type == ix::WebSocketMessageType::Open )
00044       {
00045         // Check if a client with the same name is already connected;
00046         logger()->critical( fmt::format( fg( fmt::color::red ) | fmt::emphasis::bold, getHost() + ":"
       + std::to_string( getPort() ) ) );
00047         connection->computeId( getHost() + ":" + std::to_string( getPort() ), Identifier::parse(
       msg->openInfo.headers["id"] ) );
00048         if( connection->isTerminated() )
00049         {
00050           logger()->error( fmt::format( fg( fmt::color::red ) | fmt::emphasis::bold, "One client with
       the name \"{}\" is already connected !", Identifier::parse( msg->openInfo.headers["id"] ).getName() )
       );
00051           webSocket.stop( magic_enum::enum_integer(
       StatusCode::CLIENT_WITH_SAME_NAME_ALREADY_CONNECTED ),
00052                           fmt::format( "One client with the name \"{}\" is already connected to
       ws{}://{}:{} !", Identifier::parse( msg->openInfo.headers["id"] ).getName(), "", getHost(), getPort()
       ) );
00053           return;
00054         }
00055       }
00056       else if( msg->type == ix::WebSocketMessageType::Message )
00057       {
00058         webSocket.send( msg->str, msg->binary );
00059       }
00060     } );
00061 }
```

8.12.2.2 ~WebsocketServer()

```
yaodaq::WebsocketServer::~WebsocketServer ( )  [virtual]
```

Definition at line 101 of file WebsocketServer.cpp.

```
00102 {
00103   stop();
```

```
00104   ix::uninitNetSystem();
00105 }
```

8.12.3 Member Function Documentation

8.12.3.1 listen()

```
void yaodaq::WebsocketServer::listen ( )
```

Definition at line 63 of file WebsocketServer.cpp.

```
00064 {
00065   if( !m_isListening )
00066   {
00067     std::pair<bool, std::string> ret = ix::WebSocketServer::listen();
00068     if( ret.first )
00069     {
00070       m_isListening = ret.first;
00071       logger()->info( "Server listening on {0}:{1}", getHost(), getPort() );
00072     }
00073     else
00074       throw Exception( StatusCode::LISTEN_ERROR, ret.second );
00075   }
00076 }
```

8.12.3.2 logger()

```
std::shared_ptr< spdlog::logger > yaodaq::WebsocketServer::logger ( )  [inline]
```

Definition at line 34 of file WebsocketServer.hpp.

```
00034 { return m_Logger.logger(); }
```

8.12.3.3 loop()

```
void yaodaq::WebsocketServer::loop ( )
```

Definition at line 107 of file WebsocketServer.cpp.

```
00108 {
00109   listen();
00110   start();
00111   m_Looper.supressInstance();
00112   onRaisingSignal();
00113 }
```

8.12.3.4 setVerbosity()

```
void yaodaq::WebsocketServer::setVerbosity (
            const yaodaq::LoggerHandler::Verbosity & verbosity )
```

Definition at line 99 of file WebsocketServer.cpp.

```
00099 { m_Logger.setVerbosity( verbosity ); }
```

8.12.3.5 start()

```
void yaodaq::WebsocketServer::start ( )
```

Definition at line 78 of file WebsocketServer.cpp.

```
00079 {
00080   if( !m_isStarted )
00081   {
00082     m_isStarted = true;
00083     logger()->trace( "Server started" );
00084     ix::WebSocketServer::start();
00085   }
00086 }
```

8.12.3.6 stop()

```
void yaodaq::WebsocketServer::stop (
            bool useless = true )
```

Definition at line 88 of file WebsocketServer.cpp.

```
00089 {
00090   if( !m_isStopped )
00091   {
00092     m_isStopped = true;
00093     useless     = !useless;
00094     logger()->trace( "Server stopped" );
00095     ix::WebSocketServer::stop();
00096   }
00097 }
```

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

- yaodaq/WebsocketServer.hpp
- yaodaq/WebsocketServer.cpp

Chapter 9

File Documentation

9.1 docs/License.md File Reference

9.2 docs/Third-party licenses.md File Reference

9.3 yaodaq/Classification.hpp File Reference

```
#include <cstdint>
```

Namespaces

- namespace yaodaq

Enumerations

- enum class yaodaq::Domain : std::uint_least8_t { yaodaq::Unknown = 0 , yaodaq::Application = 1 , yaodaq::Web = 2 }
- enum class yaodaq::Class : std::uint_least8_t { yaodaq::Unknown = 0 , yaodaq::Server , yaodaq::Client , yaodaq::Module , yaodaq::Board }
- enum class yaodaq::Family : std::uint_least16_t { yaodaq::Unknown = 0 , yaodaq::WebSocketServer , yaodaq::WebSocketClient , yaodaq::Logger , yaodaq::Controller , yaodaq::Configurator , yaodaq::SlowController , yaodaq::Viewer , yaodaq::Analyser , yaodaq::FileWriter }

9.4 Classification.hpp

Go to the documentation of this file.

```
00001 #ifndef YAODAQ_CLASSIFICATION
00002 #define YAODAQ_CLASSIFICATION
00003
00008 #include <cstdint>
00009
00010 namespace yaodaq
00011 {
00012
00013 /* The domain specify if we are on browser or standalone program */
00014 enum class Domain : std::uint_least8_t
00015 {
00016   Unknown     = 0,
00017   Application = 1,
00018   Web         = 2,
00019 };
00020
00021 /* The class define if we are a server, module, or board */
00022 enum class Class : std::uint_least8_t
00023 {
00024   Unknown = 0,
```

```
00025   Server,
00026   Client,
00027   // Module is a client with start stop etc...
00028   Module,
00029   // Board is a module with a connector
00030   Board,
00031 };
00032
00033 /* the family */
00034 enum class Family : std::uint_least16_t
00035 {
00036   Unknown = 0,
00037   WebSocketServer,
00038   WebSocketClient,
00039   Logger,
00040   Controller,
00041   Configurator,
00042   SlowController,
00043   Viewer,
00044   Analyser,
00045   FileWriter,
00046 };
00047
00048 }  // namespace yaodaq
00049
00050 #endif  // YAODAQ_CLASSIFICATION
```

9.5 yaodaq/ConnectionState.hpp File Reference

```
#include <algorithm>
#include <iostream>
#include <ixwebsocket/IXConnectionState.h>
#include <list>
#include <mutex>
#include <string>
#include <utility>
```

Data Structures

- class yaodaq::ConnectionState

Namespaces

- namespace yaodaq

9.6 ConnectionState.hpp

Go to the documentation of this file.

```
00001 #ifndef YAODAQ_CONNECTIONSTATE
00002 #define YAODAQ_CONNECTIONSTATE
00003
00008 #include <algorithm>
00009 #include <iostream>
00010 #include <ixwebsocket/IXConnectionState.h>
00011 #include <list>
00012 #include <mutex>
00013 #include <string>
00014 #include <utility>
00015
00016 namespace yaodaq
00017 {
00018
00019 class Identifier;
00020
00021 class ConnectionState : public ix::ConnectionState
00022 {
00023 public:
00024   virtual void computeId( const std::string& host, const Identifier& id ) final;
00025   ConnectionState();
00026   virtual ~ConnectionState();
00027
00028 private:
```

```
00029   static std::list<std::pair<std::string, std::string>> m_Ids;
00030   std::pair<std::string, std::string>                   m_Pair;
00031   std::mutex                                            m_Mutex;
00032 };
00033
00034 }  // namespace yaodaq
00035
00036 #endif
```

9.7 yaodaq/Exception.hpp File Reference

```
#include <cstdint>
#include <exception>
#include <fmt/color.h>
#include <source_location/source_location.hpp>
#include <string>
```

Data Structures

- class yaodaq::Exception

Namespaces

- namespace yaodaq

9.8 Exception.hpp

Go to the documentation of this file.

```
00001 #ifndef YAODAQ_EXCEPTION
00002 #define YAODAQ_EXCEPTION
00003
00008 #include <cstdint>
00009 #include <exception>
00010 #include <fmt/color.h>
00011 #include <source_location/source_location.hpp>
00012 #include <string>
00013
00014 namespace yaodaq
00015 {
00016
00017 enum class StatusCode : std::int_least32_t;
00018
00019 class Exception : public std::exception, public source_location
00020 {
00021 public:
00022   Exception() = delete;
00023
00024   static void setFormat( const std::string& format ) { m_Format = format; }
00025
00026   static void setStyle( const fmt::text_style& style = {} ) { m_Style = style; }
00027
00028   Exception( const StatusCode& statusCode, const std::string& description, const source_location&
      location = source_location::current() );
00029   ~Exception() noexcept override = default;
00030   [[nodiscard]] const char*        what() const noexcept final;
00031   [[nodiscard]] const char*        description() const noexcept;
00032   [[nodiscard]] std::int_least32_t code() const noexcept;
00033
00034 private:
00035   static fmt::text_style   m_Style;
00036   static std::string       m_Format;
00037   const std::int_least32_t m_Code{ 0 };
00038   std::string              m_Description;
00039   std::string              m_Message;
00040   void                     constructMessage();
00041 };
00042
00043 }  // namespace yaodaq
00044
00045 #endif
```

9.9 yaodaq/Identifier.hpp File Reference

```
#include "yaodaq/Key.hpp"
#include <cstdint>
#include <string>
```

Data Structures

- class yaodaq::Identifier

Namespaces

- namespace yaodaq

9.10 Identifier.hpp

Go to the documentation of this file.

```
00001 #ifndef YAODAQ_IDENTIFIER
00002 #define YAODAQ_IDENTIFIER
00003
00008 #include "yaodaq/Key.hpp"
00009
00010 #include <cstdint>
00011 #include <string>
00012
00013 namespace yaodaq
00014 {
00015
00016 class Identifier
00017 {
00018 public:
00019   Identifier() = default;
00020   Identifier( const std::string& type, const std::string& name );
00021   void                    generateKey( const Domain& domain = Domain::Unknown, const Class& c_lass =
       Class::Unknown, const Family& family = Family::Unknown );
00022   [[nodiscard]] std::string getDomain() const;
00023   [[nodiscard]] std::string getClass() const;
00024   [[nodiscard]] std::string getFamily() const;
00025   [[nodiscard]] std::string getType() const;
00026   [[nodiscard]] std::string getName() const;
00027   [[nodiscard]] Key         getKey() const;
00028   [[nodiscard]] std::string get() const;
00029   bool                    empty() const;
00030   static Identifier       parse( const std::string& );
00031
00032 private:
00033   std::string m_Type{ "Unknown" };
00034   std::string m_Name{ "Unknown" };
00035   Key         m_Key;
00036 };
00037
00038 }  // namespace yaodaq
00039
00040 #endif  // YAODAQ_IDENTIFIER
```

9.11 yaodaq/Interrupt.hpp File Reference

```
#include "yaodaq/Signal.hpp"
#include <atomic>
#include <csignal>
#include <mutex>
```

Data Structures

- class yaodaq::Interrupt

Namespaces

- namespace yaodaq

9.12 Interrupt.hpp

Go to the documentation of this file.

```
00001 #ifndef YAODAQ_HANDLER
00002 #define YAODAQ_HANDLER
00003
00008 #include "yaodaq/Signal.hpp"
00009
00010 #include <atomic>
00011 #include <csignal>
00012 #include <mutex>
00013
00014 namespace yaodaq
00015 {
00016
00017 enum class Signal;
00018
00019 class Interrupt
00020 {
00021 public:
00022   Interrupt();
00023   void   init();
00024   void   restore();
00025   Signal getSignal();
00026   ~Interrupt();
00027
00028 private:
00029   volatile static std::atomic<Signal> m_Signal;
00030   void                                setSignal( const Signal& signal );
00031   std::mutex                          m_mutex;
00032 };
00033
00034 }  // namespace yaodaq
00035
00036 #endif  // YAODAQ_HANDLER
```

9.13 yaodaq/IXWebsocketMessage.hpp File Reference

```
#include "yaodaq/ConnectionState.hpp"
#include "yaodaq/Message.hpp"
#include <ixwebsocket/IXWebSocketOpenInfo.h>
#include <map>
#include <memory>
#include <string>
```

Data Structures

- class yaodaq::Open

Namespaces

- namespace yaodaq

9.14 IXWebsocketMessage.hpp

Go to the documentation of this file.

```
00001 #ifndef YAODAQ_IXWEBSOCKETMESSAGE
00002 #define YAODAQ_IXWEBSOCKETMESSAGE
00003
00008 #include "yaodaq/ConnectionState.hpp"
00009 #include "yaodaq/Message.hpp"
00010
00011 #include <ixwebsocket/IXWebSocketOpenInfo.h>
00012 #include <map>
00013 #include <memory>
```

```
00014 #include <string>
00015
00016 namespace yaodaq
00017 {
00018
00019 class Open : public Message
00020 {
00021 public:
00022   explicit Open( const ix::WebSocketOpenInfo& openInfo );
00023   Open( const ix::WebSocketOpenInfo& openInfo, std::shared_ptr<ConnectionState>& connectionState );
00024   std::string                        getURI() const;
00025   std::map<std::string, std::string> getHeaders() const;
00026   std::string                        getProtocol() const;
00027 };
00028
00029 }  // namespace yaodaq
00030 #endif
```

9.15 yaodaq/Key.hpp File Reference

```
#include "yaodaq/Classification.hpp"
#include <cstdint>
```

Data Structures

- class yaodaq::Key

Namespaces

- namespace yaodaq

9.16 Key.hpp

Go to the documentation of this file.

```
00001 #ifndef YAODAQ_KEY
00002 #define YAODAQ_KEY
00003
00008 #include "yaodaq/Classification.hpp"
00009
00010 #include <cstdint>
00011
00012 namespace yaodaq
00013 {
00014
00015 class Key
00016 {
00017 private:
00018   std::int_least32_t m_Key{ 0 };
00019
00020 public:
00021   Key() = default;
00022   explicit Key( const Domain& domain, const Class& c_lass, const Family& family );
00023   [[nodiscard]] std::int_least8_t  getDomain() const;
00024   [[nodiscard]] std::int_least8_t  getClass() const;
00025   [[nodiscard]] std::int_least16_t getFamily() const;
00026   [[nodiscard]] std::int_least32_t getKey() const;
00027 };
00028
00029 }  // namespace yaodaq
00030
00031 #endif  // YAODAQ_KEY
```

9.17 yaodaq/LoggerHandler.hpp File Reference

```
#include <memory>
#include <spdlog/fwd.h>
#include <string>
#include <vector>
```

Data Structures

- class yaodaq::LoggerHandler

Namespaces

- namespace spdlog
- namespace yaodaq

Typedefs

- using spdlog::sink_ptr = std::shared_ptr< spdlog::sinks::sink >

9.18 LoggerHandler.hpp

Go to the documentation of this file.

```
00001 #ifndef YAODAQ_LOGGERHANDLER
00002 #define YAODAQ_LOGGERHANDLER
00003
00008 #include <memory>
00009 #include <spdlog/fwd.h>
00010 #include <string>
00011 #include <vector>
00012
00013 namespace spdlog
00014 {
00015 using sink_ptr = std::shared_ptr<spdlog::sinks::sink>;
00016 }
00017
00018 namespace yaodaq
00019 {
00020
00021 class LoggerHandler
00022 {
00023 public:
00024   enum class Verbosity
00025   {
00026     Off,
00027     Trace,
00028     Debug,
00029     Info,
00030     Warn,
00031     Error,
00032     Critical
00033   };
00034   LoggerHandler();
00035   ~LoggerHandler();
00036   void                              setVerbosity( const Verbosity& verbosity );
00037   void                              setName( const std::string& );
00038   std::shared_ptr<spdlog::logger> logger();
00039   void                              addSink( const spdlog::sink_ptr& );
00040   void                              clearSinks();
00041
00042 private:
00043   std::shared_ptr<spdlog::logger> m_Logger{ nullptr };
00044   std::vector<spdlog::sink_ptr>   m_Sinks;
00045   std::string                       m_Name{ "Unknown" };
00046   Verbosity                         m_Verbosity{ Verbosity::Trace };
00047   void                              init();
00048 };
00049
00050 }  // namespace yaodaq
00051
00052 #endif
```

9.19 yaodaq/Looper.hpp File Reference

```
#include "yaodaq/Interrupt.hpp"
```

Data Structures

- class yaodaq::Looper

Namespaces

- namespace yaodaq

9.20 Looper.hpp

Go to the documentation of this file.

```
00001 #ifndef YAODAQ_LOOPER
00002 #define YAODAQ_LOOPER
00003
00008 #include "yaodaq/Interrupt.hpp"
00009
00010 namespace yaodaq
00011 {
00012
00013 enum class Signal;
00014
00015 class Looper
00016 {
00017 public:
00018   Looper();
00019   Signal     loop();
00020   Signal     getSignal();
00021   static int getInstance();
00022   void       supressInstance();
00023   ~Looper();
00024
00025 private:
00026   static int       m_instance;
00027   bool             m_hasBeenAdded{ false };
00028   bool             m_hasBeenSupressed{ false };
00029   static Interrupt m_Interrupt;
00030 };
00031
00032 }  // namespace yaodaq
00033
00034 #endif  // YAODAQ_LOOPER
```

9.21 yaodaq/Message.hpp File Reference

```
#include "nlohmann/json.hpp"
#include "yaodaq/MessageType.hpp"
#include <string>
```

Data Structures

- class yaodaq::Message

Namespaces

- namespace yaodaq

9.22 Message.hpp

Go to the documentation of this file.

```
00001
00002 #ifndef YAODAQ_MESSAGE
00003 #define YAODAQ_MESSAGE
00004
00009 #include "nlohmann/json.hpp"
00010 #include "yaodaq/MessageType.hpp"
00011
00012 #include <string>
00013
00014 namespace yaodaq
00015 {
00016
00017 class Identifier;
00018
00019 class Message
00020 {
```

```
00021 public:
00022   Message();
00023   explicit Message( const nlohmann::json& content, const MessageType& messageType =
      MessageType::Unknown );
00024   explicit Message( const std::string& content, const MessageType& messageType = MessageType::Unknown
      );
00025   explicit Message( const char* content, const MessageType& messageType = MessageType::Unknown );
00026   std::string    dump( const int& indent = -1, const char& indent_char = ' ', const bool& ensure_ascii
      = false, const nlohmann::detail::error_handler_t& error_handler =
      nlohmann::detail::error_handler_t::strict ) const;
00027   nlohmann::json get() const;
00028   std::string    getContent() const;
00029   std::string    getTypeName() const;
00030   MessageType    getTypeValue() const;
00031   std::string    getTimestamp() const;
00032   std::time_t    getTime() const;
00033   Identifier     getIdentifier() const;
00034   void           setFrom( const Identifier& );
00035
00036 protected:
00037   explicit Message( const MessageType& messageType );
00038   void setContent( const nlohmann::json& content );
00039   void setContent( const std::string& content );
00040   void setContent( const char* content );
00041
00042 private:
00043   nlohmann::json m_JSON;
00044 };
00045
00046 }  // namespace yaodaq
00047
00048 #endif  // YAODAQ_MESSAGE
```

9.23 yaodaq/MessageType.hpp File Reference

```
#include "yaodaq/Interrupt.hpp"
#include <cstdint>
#include <iosfwd>
```

Namespaces

- namespace yaodaq

Enumerations

- enum class yaodaq::MessageType : std::int_least16_t { yaodaq::Open = -1 , yaodaq::Close = -2 , yaodaq::ConnectionError = -3 , yaodaq::Ping = -4 , yaodaq::Pong = -5 , yaodaq::Fragment = -6 , yaodaq::Unknown = 0 }

Functions

- std::ostream & yaodaq::operator<< (std::ostream &os, const MessageType &messageTypes)

9.24 MessageType.hpp

Go to the documentation of this file.

```
00001 #ifndef YAODAQ_MESSAGETYPE
00002 #define YAODAQ_MESSAGETYPE
00003
00007 #include "yaodaq/Interrupt.hpp"
00008
00009 #include <cstdint>
00010 #include <iosfwd>
00011
00012 namespace yaodaq
00013 {
00014
00015 enum class MessageType : std::int_least16_t
00016 {
00017   // IXWebSocket MessageType (Message is not set here)
00018   Open            = -1,
```

```
00019   Close           = -2,
00020   ConnectionError = -3,
00021   Ping            = -4,
00022   Pong            = -5,
00023   Fragment        = -6,
00024   // Unknown should not be used !
00025   Unknown         = 0,
00026 };
00027
00028 inline std::ostream& operator«( std::ostream& os, const MessageType& messageTypes ) { return os «
       static_cast<std::int_least8_t>( messageTypes ) + 0; }
00029
00030 }  // namespace yaodaq
00031
00032 #endif  // YAODAQ_MESSAGETYPE
```

9.25 yaodaq/Severity.hpp File Reference

```
#include <cstdint>
```

Namespaces

- namespace yaodaq

Enumerations

- enum class yaodaq::Severity : std::int_least16_t { yaodaq::Info = 1 , yaodaq::Warning = 10 , yaodaq::Error = 100 , yaodaq::Critical = 1000 }

9.26 Severity.hpp

Go to the documentation of this file.

```
00001 #ifndef YAODAQ_SEVERITY
00002 #define YAODAQ_SEVERITY
00003
00004 #include <cstdint>
00005
00010 namespace yaodaq
00011 {
00012
00013 enum class Severity : std::int_least16_t
00014 {
00015   Info     = 1,
00016   Warning  = 10,
00017   Error    = 100,
00018   Critical = 1000,
00019 };
00020
00021 }  // namespace yaodaq
00022
00023 #endif  // YAODAQ_SEVERITY
```

9.27 yaodaq/Signal.hpp File Reference

```
#include "yaodaq/Severity.hpp"
#include <cstdint>
```

Namespaces

- namespace yaodaq

Enumerations

- enum class yaodaq::Signal {
  yaodaq::NO = 0 , yaodaq::ABRT = static_cast<int>(Severity::Critical) + 1 , yaodaq::FPE = static_cast<int>(

Severity::Critical) + 2 , yaodaq::ILL = static_cast<int>(Severity::Critical) + 3 , yaodaq::SEGV = static_cast<int>(Severity::Critical) + 4 , yaodaq::INT = static_cast<int>(Severity::Warning) + 1 , yaodaq::TERM = static_cast<int>(Severity::Warning) + 2 }

9.28 Signal.hpp

Go to the documentation of this file.

```
00001 #ifndef YAODAQ_SIGNAL
00002 #define YAODAQ_SIGNAL
00003
00008 #include "yaodaq/Severity.hpp"
00009
00010 #include <cstdint>
00011
00012 namespace yaodaq
00013 {
00014
00015 enum class Signal
00016 {
00017   NO   = 0,  // No Signal.
00018   // Critical
00019   ABRT = static_cast<int>( Severity::Critical ) + 1,  // (Signal Abort) Abnormal termination, such as is initiated by the abort function.
00020   FPE  = static_cast<int>( Severity::Critical ) + 2,  // (Signal Floating-Point Exception) Erroneous arithmetic operation, such as zero divide or an operation resulting in overflow (not necessarily with a floating-point operation).
00021   ILL  = static_cast<int>( Severity::Critical ) + 3,  // (Signal Illegal Instruction) Invalid function image, such as an illegal instruction. This is generally due to a corruption in the code or to an attempt to execute data.
00022   SEGV = static_cast<int>( Severity::Critical ) + 4,  // (Signal Segmentation Violation) Invalid access to storage: When a program tries to read or write outside the memory it has allocated.
00023   // Warning
00024   INT  = static_cast<int>( Severity::Warning ) + 1,  // (Signal Interrupt) Interactive attention signal. Generally generated by the application user.
00025   TERM = static_cast<int>( Severity::Warning ) + 2,  // (Signal Terminate) Termination request sent to program.
00026 };
00027
00028 }  // namespace yaodaq
00029
00030 #endif  // YAODAQ_CLASS
```

9.29 yaodaq/StatusCode.hpp File Reference

```
#include <cstdint>
```

Namespaces

- namespace yaodaq

Enumerations

- enum class yaodaq::StatusCode : std::int_least32_t { yaodaq::SUCCESS = 0 , yaodaq::LISTEN_ERROR , yaodaq::WRONG_NUMBER_PARAMETERS , yaodaq::CLIENT_WITH_SAME_NAME_ALREADY_CONNECTED = 4999 }

9.30 StatusCode.hpp

Go to the documentation of this file.

```
00001 #ifndef YAODAQ_STATUSCODE
00002 #define YAODAQ_STATUSCODE
00003
00008 #include <cstdint>
00009
00010 namespace yaodaq
00011 {
00012
00013 enum class StatusCode : std::int_least32_t
00014 {
00015   SUCCESS = 0,
```

```
00016   LISTEN_ERROR,
00017   WRONG_NUMBER_PARAMETERS,
00018   CLIENT_WITH_SAME_NAME_ALREADY_CONNECTED = 4999,
00019 };
00020
00021 }  // namespace yaodaq
00022
00023 #endif
```

9.31 yaodaq/Version.hpp File Reference

```
#include <cstdint>
#include <semver.hpp>
#include <string>
```

Data Structures

- class yaodaq::Version

Namespaces

- namespace yaodaq

9.32 Version.hpp

Go to the documentation of this file.

```
00001 #ifndef YAODAQ_VERSION
00002 #define YAODAQ_VERSION
00003
00008 #include <cstdint>
00009 #include <semver.hpp>
00010 #include <string>
00011
00012 namespace yaodaq
00013 {
00014
00015 class Version : public semver::version
00016 {
00017 public:
00018   constexpr Version( const std::uint8_t& mj, const std::uint8_t& mn, const std::uint8_t& pt, const
       semver::prerelease& prt = semver::prerelease::none, const std::uint8_t& prn = 0 ) noexcept :
       semver::version( mj, mn, pt, prt, prn ) {}
00019   explicit constexpr Version( const std::string_view& str ) : semver::version( str ) {}
00020   constexpr Version() = default;
00021   std::uint8_t getMajor();
00022   std::uint8_t getMinor();
00023   std::uint8_t getPatch();
00024   std::string  getPreRelease();
00025   std::uint8_t getPreReleaseNumber();
00026 };
00027
00028 }  // namespace yaodaq
00029
00030 #endif  // YAODAQ_VERSION
```

9.33 yaodaq/WebsocketClient.hpp File Reference

```
#include "yaodaq/Identifier.hpp"
#include "yaodaq/LoggerHandler.hpp"
#include "yaodaq/Looper.hpp"
#include <ixwebsocket/IXWebSocket.h>
#include <memory>
#include <spdlog/spdlog.h>
#include <string>
```

Data Structures

- class yaodaq::WebsocketClient

Namespaces

- namespace yaodaq

9.34 WebsocketClient.hpp

Go to the documentation of this file.

```
00001 #ifndef YAODAQ_WEBSOCKETCLIENT
00002 #define YAODAQ_WEBSOCKETCLIENT
00003
00008 #include "yaodaq/Identifier.hpp"
00009 #include "yaodaq/LoggerHandler.hpp"
00010 #include "yaodaq/Looper.hpp"
00011
00012 #include <ixwebsocket/IXWebSocket.h>
00013 #include <memory>
00014 #include <spdlog/spdlog.h>
00015 #include <string>
00016
00017 namespace yaodaq
00018 {
00019
00020 class WebsocketClient : public ix::WebSocket
00021 {
00022 public:
00023   static void throwGeneralIfSameName( const bool& );
00024   explicit WebsocketClient( const std::string& name, const std::string& type = "YAODAQWebsocketClient"
      );
00025   virtual ~WebsocketClient();
00026   void                              start();
00027   void                              stop();
00028   void                              loop();
00029   std::shared_ptr<spdlog::logger> logger() { return m_Logger.logger(); }
00030
00031 private:
00032   void          onRaisingSignal();
00033   Identifier    m_Identifier;
00034   LoggerHandler m_Logger;
00035   Looper        m_Looper;
00036   static bool   m_ThrowGeneralIfSameName;
00037 };
00038
00039 }  // namespace yaodaq
00040
00041 #endif
```

9.35 yaodaq/WebsocketServer.hpp File Reference

```
#include "yaodaq/Identifier.hpp"
#include "yaodaq/LoggerHandler.hpp"
#include "yaodaq/Looper.hpp"
#include <ixwebsocket/IXWebSocketServer.h>
#include <memory>
#include <spdlog/spdlog.h>
#include <string>
```

Data Structures

- class yaodaq::WebsocketServer

Namespaces

- namespace yaodaq

9.36 WebsocketServer.hpp

Go to the documentation of this file.

```
00001 #ifndef YAODAQ_WEBSOCKETSERVER
00002 #define YAODAQ_WEBSOCKETSERVER
00003
00008 #include "yaodaq/Identifier.hpp"
00009 #include "yaodaq/LoggerHandler.hpp"
00010 #include "yaodaq/Looper.hpp"
00011
00012 #include <ixwebsocket/IXWebSocketServer.h>
00013 #include <memory>
00014 #include <spdlog/spdlog.h>
00015 #include <string>
00016
00017 namespace yaodaq
00018 {
00019
00020 class WebsocketServer : public ix::WebSocketServer
00021 {
00022 public:
00023   explicit WebsocketServer( const std::string& name, const int& port = ix::SocketServer::kDefaultPort,
       const std::string& host = ix::SocketServer::kDefaultHost, const int& backlog =
       ix::SocketServer::kDefaultTcpBacklog,
00024                             const std::size_t& maxConnections =
       ix::SocketServer::kDefaultMaxConnections, const int& handshakeTimeoutSecs =
       ix::WebSocketServer::kDefaultHandShakeTimeoutSecs, const int& addressFamily =
       ix::SocketServer::kDefaultAddressFamily,
00025                             const std::string& type = "YAODAQWebsocketServer" );
00026   virtual ~WebsocketServer();
00027   void loop();
00028   void start();
00029   void stop( bool useless = true );
00030   void listen();
00031
00032   void setVerbosity( const yaodaq::LoggerHandler::Verbosity& verbosity );
00033
00034   std::shared_ptr<spdlog::logger> logger() { return m_Logger.logger(); }
00035
00036 private:
00037   void          onRaisingSignal();
00038   bool          m_isListening{ false };
00039   Identifier    m_Identifier;
00040   LoggerHandler m_Logger;
00041   Interrupt     m_Interrupt;
00042   Looper        m_Looper;
00043   bool          m_isStopped{ false };
00044   bool          m_isStarted{ false };
00045 };
00046
00047 }  // namespace yaodaq
00048
00049 #endif  // YAODAQ_WEBSOCKETSERVER
```

9.37 yaodaq/ConnectionState.cpp File Reference

```
#include "yaodaq/ConnectionState.hpp"
#include "yaodaq/Identifier.hpp"
```

Namespaces

- namespace yaodaq

9.38 ConnectionState.cpp

Go to the documentation of this file.

```
00001
00005 #include "yaodaq/ConnectionState.hpp"
00006
00007 #include "yaodaq/Identifier.hpp"
00008
00009 namespace yaodaq
00010 {
00011
00012 std::list<std::pair<std::string, std::string» ConnectionState::m_Ids{};
00013
```

```
00014 ConnectionState::ConnectionState() : ix::ConnectionState() {}
00015
00016 ConnectionState::~ConnectionState()
00017 {
00018   std::lock_guard<std::mutex> guard( m_Mutex );
00019   m_Ids.remove( m_Pair );
00020 }
00021
00022 void ConnectionState::computeId( const std::string& host, const Identifier& id )
00023 {
00024   std::lock_guard<std::mutex> guard( m_Mutex );
00025   m_Pair = std::pair<std::string, std::string>( host, id.getName() );
00026
00027   if( id.empty() ) { _id = std::to_string( _globalId++ ); }
00028   else
00029   {
00030     std::list<std::pair<std::string, std::string»::iterator found = std::find( m_Ids.begin(),
      m_Ids.end(), m_Pair );
00031     if( found == m_Ids.end() )
00032     {
00033       _id = id.getName();
00034       m_Ids.push_back( m_Pair );
00035     }
00036     else
00037     {
00038       setTerminated();
00039     }
00040   }
00041 }
00042
00043 }  // namespace yaodaq
```

9.39 yaodaq/Exception.cpp File Reference

`#include "yaodaq/Exception.hpp"`

Namespaces

- namespace yaodaq

9.40 Exception.cpp

Go to the documentation of this file.

```
00001
00005 #include "yaodaq/Exception.hpp"
00006
00007 namespace yaodaq
00008 {
00009
00010 std::string Exception::m_Format{ "\n\t[Code] : {Code}\n\t[Description] : {Description}\n\t[File] :
      {File}\n\t[Function] : {Function}\n\t[Line] : {Line}\n\t[Column] : {Column}\n" };
00011
00012 fmt::text_style Exception::m_Style = { fg( fmt::color::crimson ) | fmt::emphasis::bold };
00013
00014 Exception::Exception( const StatusCode& statusCode, const std::string& description, const
      source_location& location ) : source_location( location ), m_Code( static_cast<std::int_least32_t>(
      statusCode ) ), m_Description( description ) { constructMessage(); }
00015
00016 const char* Exception::what() const noexcept { return m_Message.c_str(); }
00017
00018 const char* Exception::description() const noexcept { return m_Description.c_str(); }
00019
00020 std::int_least32_t Exception::code() const noexcept { return m_Code; }
00021
00022 void Exception::constructMessage()
00023 {
00024   m_Message = fmt::format( m_Style, m_Format, fmt::arg( "Code", m_Code ), fmt::arg( "Description",
      m_Description ), fmt::arg( "File", file_name() ), fmt::arg( "Function", function_name() ), fmt::arg(
      "Column", column() ), fmt::arg( "Line", line() ) );
00025 }
00026
00027 }  // namespace yaodaq
```

9.41 yaodaq/Identifier.cpp File Reference

```
#include "yaodaq/Identifier.hpp"
#include "yaodaq/Exception.hpp"
#include "yaodaq/Key.hpp"
#include "yaodaq/StatusCode.hpp"
#include <fmt/color.h>
#include <magic_enum.hpp>
#include <string>
#include <vector>
```

Namespaces

- namespace yaodaq

9.42 Identifier.cpp

Go to the documentation of this file.

```
00001
00005 #include "yaodaq/Identifier.hpp"
00006
00007 #include "yaodaq/Exception.hpp"
00008 #include "yaodaq/Key.hpp"
00009 #include "yaodaq/StatusCode.hpp"
00010
00011 #include <fmt/color.h>
00012 #include <magic_enum.hpp>
00013 #include <string>
00014 #include <vector>
00015
00016 namespace yaodaq
00017 {
00018
00019 bool Identifier::empty() const
00020 {
00021   if( get() == Identifier().get() ) return true;
00022   else
00023     return false;
00024 }
00025
00026 Identifier::Identifier( const std::string& type, const std::string& name ) : m_Type( type ), m_Name(
       name ) {}
00027
00028 void Identifier::generateKey( const Domain& domain, const Class& c_lass, const Family& family ) {
       m_Key = Key( domain, c_lass, family ); }
00029
00030 std::string Identifier::getDomain() const { return static_cast<std::string>( magic_enum::enum_name(
       magic_enum::enum_cast<Domain>( m_Key.getDomain() ).value() ) ); }
00031
00032 std::string Identifier::getClass() const { return static_cast<std::string>( magic_enum::enum_name(
       magic_enum::enum_cast<Class>( m_Key.getClass() ).value() ) ); }
00033
00034 std::string Identifier::getFamily() const { return static_cast<std::string>( magic_enum::enum_name(
       magic_enum::enum_cast<Family>( m_Key.getFamily() ).value() ) ); }
00035
00036 std::string Identifier::getType() const { return m_Type; }
00037
00038 std::string Identifier::getName() const { return m_Name; }
00039
00040 Key Identifier::getKey() const { return m_Key; }
00041
00042 std::string Identifier::get() const { return fmt::format( "{0}/{1}/{2}/{3}/{4}", getDomain(),
       getClass(), getFamily(), getType(), getName() ); }
00043
00044 Identifier Identifier::parse( const std::string& id )
00045 {
00046   std::vector<std::string> result;
00047   std::string              tmp        = id;
00048   std::string              separator  = "/";
00049   std::size_t              second_pos = tmp.find( separator );
00050   while( second_pos != std::string::npos )
00051   {
00052     if( 0 != second_pos )
00053     {
00054       std::string word = tmp.substr( 0, second_pos - 0 );
00055       result.push_back( word );
```

```
00056     }
00057     else
00058       result.push_back( "" );
00059     tmp        = tmp.substr( second_pos + separator.length() );
00060     second_pos = tmp.find( separator );
00061     if( second_pos == std::string::npos ) result.push_back( tmp );
00062   }
00063   if( result.size() == 5 )
00064   {
00065     Identifier identifier( result[3], result[4] );
00066     identifier.generateKey( magic_enum::enum_cast<Domain>( result[0] ).value(),
      magic_enum::enum_cast<Class>( result[1] ).value(), magic_enum::enum_cast<Family>( result[2] ).value()
      );
00067     return identifier;
00068   }
00069   else
00070   {
00071     throw Exception( StatusCode::WRONG_NUMBER_PARAMETERS, "Number of parameters in key should be 5
      (Domain/Class/Family/Type/Name) !" );
00072   }
00073 }
00074
00075 }  // namespace yaodaq
```

9.43 yaodaq/Interrupt.cpp File Reference

```
#include "yaodaq/Interrupt.hpp"
#include "yaodaq/Signal.hpp"
#include <atomic>
#include <csignal>
#include <mutex>
#include <thread>
```

Namespaces

- namespace yaodaq

9.44 Interrupt.cpp

Go to the documentation of this file.

```
00001
00005 #include "yaodaq/Interrupt.hpp"
00006
00007 #include "yaodaq/Signal.hpp"
00008
00009 #include <atomic>
00010 #include <csignal>
00011 #include <mutex>
00012 #include <thread>
00013
00014 namespace yaodaq
00015 {
00016
00017 volatile std::atomic<Signal> Interrupt::m_Signal = Signal::NO;
00018
00019 Interrupt::Interrupt() { init(); }
00020
00021 void Interrupt::restore()
00022 {
00023   std::signal( SIGTERM, SIG_DFL );
00024   std::signal( SIGSEGV, SIG_DFL );
00025   std::signal( SIGINT, SIG_DFL );
00026   std::signal( SIGILL, SIG_DFL );
00027   std::signal( SIGABRT, SIG_DFL );
00028   std::signal( SIGFPE, SIG_DFL );
00029 }
00030
00031 void Interrupt::init()
00032 {
00033   setSignal( Signal::TERM );
00034   setSignal( Signal::TERM );
00035   setSignal( Signal::SEGV );
00036   setSignal( Signal::INT );
00037   setSignal( Signal::ILL );
00038   setSignal( Signal::ABRT );
```

```
00039   setSignal( Signal::FPE );
00040 }
00041
00042 Interrupt::~Interrupt() { restore(); }
00043
00044 Signal Interrupt::getSignal()
00045 {
00046   if( m_Signal.load() != Signal::NO )
00047   {
00048     std::lock_guard<std::mutex> guard( m_mutex );
00049     init();
00050   }
00051   return m_Signal.load();
00052 }
00053
00054 void Interrupt::setSignal( const Signal& signal )
00055 {
00056   switch( signal )
00057   {
00058     case Signal::ABRT: std::signal( SIGABRT, []( int ) -> void { m_Signal.store( Signal::ABRT ); } );
      break;
00059     case Signal::FPE: std::signal( SIGFPE, []( int ) -> void { m_Signal.store( Signal::FPE ); } );
      break;
00060     case Signal::ILL: std::signal( SIGILL, []( int ) -> void { m_Signal.store( Signal::ILL ); } );
      break;
00061     case Signal::SEGV: std::signal( SIGSEGV, []( int ) -> void { m_Signal.store( Signal::SEGV ); } );
      break;
00062     case Signal::INT: std::signal( SIGINT, []( int ) -> void { m_Signal.store( Signal::INT ); } );
      break;
00063     case Signal::TERM: std::signal( SIGTERM, []( int ) -> void { m_Signal.store( Signal::TERM ); } );
      break;
00064     default: break;
00065   }
00066 }
00067
00068 }  // namespace yaodaq
```

9.45 yaodaq/IXWebsocketMessage.cpp File Reference

`#include "yaodaq/IXWebsocketMessage.hpp"`

Namespaces

- namespace yaodaq

9.46 IXWebsocketMessage.cpp

Go to the documentation of this file.

```
00001
00005 #include "yaodaq/IXWebsocketMessage.hpp"
00006
00007 namespace yaodaq
00008 {
00009
00010 Open::Open( const ix::WebSocketOpenInfo& openInfo ) : Message( MessageType::Open )
00011 {
00012   nlohmann::json j;
00013   j["uri"]      = openInfo.uri;
00014   j["headers"]  = openInfo.headers;
00015   j["protocol"] = openInfo.protocol;
00016   setContent( j );
00017 }
00018
00019 Open::Open( const ix::WebSocketOpenInfo& openInfo, std::shared_ptr<ConnectionState>& connectionState )
       : Open( openInfo )
00020 {
00021   nlohmann::json j = get();
00022   j["id"]          = connectionState->getId();
00023   j["remote_ip"]   = connectionState->getRemoteIp();
00024   j["remote_port"] = connectionState->getRemotePort();
00025   setContent( j );
00026 }
00027
00028 std::string Open::getURI() const { return get()["content"]["uri"].get<std::string>(); }
00029
00030 std::map<std::string, std::string> Open::getHeaders() const
00031 {
```

```
00032   std::map<std::string, std::string> ret = get()["content"]["headers"].get<std::map<std::string,
       std::string»();
00033   return ret;
00034 }
00035
00036 std::string Open::getProtocol() const { return get()["content"]["protocol"].get<std::string>(); }
00037
00038 }  // namespace yaodaq
```

9.47 yaodaq/Key.cpp File Reference

```
#include "yaodaq/Key.hpp"
#include <cstdint>
```

Namespaces

- namespace yaodaq

9.48 Key.cpp

Go to the documentation of this file.

```
00001
00005 #include "yaodaq/Key.hpp"
00006
00007 #include <cstdint>
00008
00009 namespace yaodaq
00010 {
00011 Key::Key( const Domain& domain, const Class& c_lass, const Family& family ) { m_Key = (
       static_cast<std::int_least8_t>( domain ) « 24 ) + ( static_cast<std::int_least8_t>( c_lass ) « 16 ) +
       static_cast<std::int_least16_t>( family ); }
00012
00013 std::int_least8_t Key::getDomain() const { return ( m_Key » 24 ) & 0xFF; }
00014
00015 std::int_least8_t Key::getClass() const { return ( m_Key » 16 ) & 0xFF; }
00016
00017 std::int_least16_t Key::getFamily() const { return (m_Key)&0xFFFF; }
00018
00019 std::int_least32_t Key::getKey() const { return m_Key; }
00020
00021 }  // namespace yaodaq
```

9.49 yaodaq/LoggerHandler.cpp File Reference

```
#include "yaodaq/LoggerHandler.hpp"
#include "spdlog/spdlog.h"
```

Namespaces

- namespace yaodaq

9.50 LoggerHandler.cpp

Go to the documentation of this file.

```
00001
00005 #include "yaodaq/LoggerHandler.hpp"
00006
00007 #include "spdlog/spdlog.h"
00008
00009 namespace yaodaq
00010 {
00011
00012 LoggerHandler::LoggerHandler() { init(); }
00013
00014 void LoggerHandler::setName( const std::string& name )
00015 {
00016   m_Name = name;
```

```
00017   init();
00018 }
00019
00020 LoggerHandler::~LoggerHandler() {}
00021
00022 void LoggerHandler::setVerbosity( const Verbosity& verbosity )
00023 {
00024   m_Verbosity = verbosity;
00025   init();
00026 }
00027
00028 void LoggerHandler::init()
00029 {
00030   m_Logger = std::make_shared<spdlog::logger>( m_Name, std::begin( m_Sinks ), std::end( m_Sinks ) );
00031   switch( m_Verbosity )
00032   {
00033     case Verbosity::Off: m_Logger->set_level( spdlog::level::off ); break;
00034     case Verbosity::Trace: m_Logger->set_level( spdlog::level::trace ); break;
00035     case Verbosity::Debug: m_Logger->set_level( spdlog::level::debug ); break;
00036     case Verbosity::Info: m_Logger->set_level( spdlog::level::info ); break;
00037     case Verbosity::Warn: m_Logger->set_level( spdlog::level::warn ); break;
00038     case Verbosity::Error: m_Logger->set_level( spdlog::level::err ); break;
00039     case Verbosity::Critical: m_Logger->set_level( spdlog::level::critical ); break;
00040   }
00041 }
00042
00043 std::shared_ptr<spdlog::logger> LoggerHandler::logger() { return std::shared_ptr<spdlog::logger>(
      m_Logger ); }
00044
00045 void LoggerHandler::addSink( const spdlog::sink_ptr& sink )
00046 {
00047   m_Sinks.push_back( sink );
00048   init();
00049 }
00050
00051 void LoggerHandler::clearSinks()
00052 {
00053   m_Sinks.clear();
00054   init();
00055 }
00056
00057 }  // namespace yaodaq
```

9.51 yaodaq/Looper.cpp File Reference

```
#include "yaodaq/Looper.hpp"
#include <chrono>
#include <thread>
```

Namespaces

- namespace yaodaq

9.52 Looper.cpp

Go to the documentation of this file.

```
00001
00005 #include "yaodaq/Looper.hpp"
00006
00007 #include <chrono>
00008 #include <thread>
00009
00010 namespace yaodaq
00011 {
00012
00013 int Looper::m_instance{ 0 };
00014
00015 Interrupt Looper::m_Interrupt{ Interrupt{} };
00016
00017 int Looper::getInstance() { return m_instance; }
00018
00019 void Looper::supressInstance()
00020 {
00021   if( m_hasBeenSupressed == false )
00022   {
00023     m_hasBeenSupressed = true;
```

```
00024     m_instance--;
00025   }
00026 }
00027
00028 Looper::Looper()
00029 {
00030   if( m_hasBeenAdded == false )
00031   {
00032     m_hasBeenAdded = true;
00033     ++m_instance;
00034   }
00035 }
00036
00037 Signal Looper::loop()
00038 {
00039   static Signal signal{ yaodaq::Signal::NO };
00040   if( m_instance == 0 )
00041   {
00042     do {
00043       signal = m_Interrupt.getSignal();
00044       std::this_thread::sleep_for( std::chrono::microseconds( 1 ) );
00045     } while( signal == yaodaq::Signal::NO );
00046   }
00047   return signal;
00048 }
00049
00050 Signal Looper::getSignal() { return m_Interrupt.getSignal(); }
00051
00052 Looper::~Looper()
00053 {
00054   if( m_hasBeenAdded == true && m_hasBeenSupressed == false )
00055   {
00056     m_hasBeenSupressed = true;
00057     --m_instance;
00058   }
00059 }
00060
00061 }  // namespace yaodaq
```

9.53 yaodaq/Message.cpp File Reference

```
#include "yaodaq/Message.hpp"
#include "fmt/chrono.h"
#include "magic_enum.hpp"
#include "yaodaq/Classification.hpp"
#include "yaodaq/Identifier.hpp"
#include <chrono>
#include <ctime>
#include <string>
#include <ixwebsocket/IXWebSocketVersion.h>
#include <yaodaq/YaodaqVersion.hpp>
```

Namespaces

- namespace yaodaq

9.54 Message.cpp

Go to the documentation of this file.

```
00001
00005 #include "yaodaq/Message.hpp"
00006
00007 #include "fmt/chrono.h"
00008 #include "magic_enum.hpp"
00009 #include "yaodaq/Classification.hpp"
00010 #include "yaodaq/Identifier.hpp"
00011
00012 #include <chrono>
00013 #include <ctime>
00014 #include <string>
00015
00016 // Versions numbers
00017 #include <ixwebsocket/IXWebSocketVersion.h>
```

```
00018 #include <yaodaq/YaodaqVersion.hpp>
00019
00020 namespace yaodaq
00021 {
00022
00023 Message::Message()
00024 {
00025   m_JSON["from"];
00026   m_JSON["to"];
00027   m_JSON["type"]      = magic_enum::enum_name( MessageType::Unknown );
00028   m_JSON["content"];
00029   m_JSON["timestamp"] = fmt::format( "{:%F %T %z}", fmt::gmtime(
      std::chrono::system_clock::to_time_t( std::chrono::system_clock::now() ) ) );
00030   m_JSON["meta"]["compiler"]                = nlohmann::json::meta()["compiler"];
00031   m_JSON["meta"]["platform"]                = nlohmann::json::meta()["platform"];
00032   m_JSON["meta"]["versions"]["json"]        = nlohmann::json::meta()["version"]["string"];
00033   m_JSON["meta"]["versions"]["yaodaq"]      = yaodaq_version.to_string();
00034   m_JSON["meta"]["versions"]["ixwebsocket"] = std::string( IX_WEBSOCKET_VERSION );
00035 }
00036
00037 void Message::setContent( const nlohmann::json& content ) { m_JSON["content"] =
      static_cast<nlohmann::json>( content ); }
00038
00039 void Message::setContent( const std::string& content )
00040 {
00041   m_JSON["content"] = nlohmann::json::parse( content, nullptr, false );
00042   if( m_JSON["content"].is_discarded() ) { m_JSON["content"] = static_cast<std::string>( content ); }
00043 }
00044 void Message::setContent( const char* content )
00045 {
00046   m_JSON["content"] = nlohmann::json::parse( content, nullptr, false );
00047   if( m_JSON["content"].is_discarded() ) { m_JSON["content"] = static_cast<std::string>( content ); }
00048 }
00049
00050 Message::Message( const nlohmann::json& content, const MessageType& messageType ) : Message(
      messageType ) { setContent( content ); }
00051
00052 Message::Message( const std::string& content, const MessageType& messageType ) : Message( messageType
      ) { setContent( content ); }
00053
00054 Message::Message( const char* content, const MessageType& messageType ) : Message( messageType ) {
      setContent( content ); }
00055
00056 std::string Message::dump( const int& indent, const char& indent_char, const bool& ensure_ascii, const
      nlohmann::detail::error_handler_t& error_handler ) const { return m_JSON.dump( indent, indent_char,
      ensure_ascii, error_handler ); }
00057
00058 nlohmann::json Message::get() const { return m_JSON; }
00059
00060 std::string Message::getTypeName() const { return m_JSON["type"].get<std::string>(); }
00061
00062 MessageType Message::getTypeValue() const { return magic_enum::enum_cast<MessageType>(
      m_JSON["type"].get<std::string>() ).value(); }
00063
00064 std::string Message::getContent() const
00065 {
00066   if( m_JSON["content"].is_null() ) return "";
00067   else if( m_JSON["content"].is_string() )
00068     return m_JSON["content"].get<std::string>();
00069   else
00070     return m_JSON["content"].dump();
00071 }
00072
00073 std::string Message::getTimestamp() const { return m_JSON["timestamp"].get<std::string>(); }
00074
00075 std::time_t Message::getTime() const
00076 {
00077   std::tm tm;
00078   memset( &tm, 0, sizeof( tm ) );
00079   std::istringstream ss( getTimestamp() );
00080   ss >> std::get_time( &tm, "%Y-%m-%d %H:%M:%S %z" );
00081   return mktime( &tm );
00082 }
00083
00084 void Message::setFrom( const Identifier& identifier )
00085 {
00086   m_JSON["from"]["name"]   = identifier.getName();
00087   m_JSON["from"]["type"]   = identifier.getType();
00088   m_JSON["from"]["family"] = identifier.getFamily();
00089   m_JSON["from"]["class"]  = identifier.getClass();
00090   m_JSON["from"]["domain"] = identifier.getDomain();
00091 }
00092
00093 Identifier Message::getIdentifier() const
00094 {
00095   if( m_JSON["from"].is_null() ) return {};
00096   else
```

```
00097   {
00098     Identifier id( m_JSON["from"]["type"].get<std::string>(),
      m_JSON["from"]["name"].get<std::string>() );
00099     id.generateKey( magic_enum::enum_cast<Domain>( m_JSON["from"]["domain"].get<std::string>()
      ).value(), magic_enum::enum_cast<Class>( m_JSON["from"]["class"].get<std::string>() ).value(),
00100                     magic_enum::enum_cast<Family>( m_JSON["from"]["family"].get<std::string>()
      ).value() );
00101     return id;
00102   }
00103 }
00104
00105 Message::Message( const MessageType& messageType ) : Message() { m_JSON["type"] =
      magic_enum::enum_name( messageType ); }
00106
00107 }  // namespace yaodaq
```

9.55 yaodaq/Version.cpp File Reference

```
#include "yaodaq/Version.hpp"
#include <magic_enum.hpp>
```

Namespaces

- namespace yaodaq

9.56 Version.cpp

Go to the documentation of this file.

```
00001
00005 #include "yaodaq/Version.hpp"
00006
00007 #include <magic_enum.hpp>
00008
00009 namespace yaodaq
00010 {
00011
00012 std::uint8_t Version::getMajor() { return major; }
00013
00014 std::uint8_t Version::getMinor() { return minor; }
00015
00016 std::uint8_t Version::getPatch() { return patch; }
00017
00018 std::string Version::getPreRelease() { return std::string( magic_enum::enum_name( prerelease_type ) );
       }
00019
00020 std::uint8_t Version::getPreReleaseNumber() { return prerelease_number; }
00021
00022 const static Version yaodaq_version;
00023
00024 }  // namespace yaodaq
```

9.57 yaodaq/WebsocketClient.cpp File Reference

```
#include "yaodaq/WebsocketClient.hpp"
#include "yaodaq/Exception.hpp"
#include "yaodaq/IXWebsocketMessage.hpp"
#include "yaodaq/StatusCode.hpp"
#include <chrono>
#include <ixwebsocket/IXNetSystem.h>
#include <magic_enum.hpp>
#include <spdlog/sinks/stdout_color_sinks.h>
#include <thread>
```

Namespaces

- namespace yaodaq

9.58 WebsocketClient.cpp

Go to the documentation of this file.

```
00001
00005 #include "yaodaq/WebsocketClient.hpp"
00006
00007 #include "yaodaq/Exception.hpp"
00008 #include "yaodaq/IXWebsocketMessage.hpp"
00009 #include "yaodaq/StatusCode.hpp"
00010
00011 #include <chrono>
00012 #include <ixwebsocket/IXNetSystem.h>
00013 #include <magic_enum.hpp>
00014 #include <spdlog/sinks/stdout_color_sinks.h>
00015 #include <thread>
00016
00017 namespace yaodaq
00018 {
00019
00020 bool WebsocketClient::m_ThrowGeneralIfSameName{ true };
00021
00022 void WebsocketClient::throwGeneralIfSameName( const bool& activate ) { m_ThrowGeneralIfSameName =
       activate; }
00023
00024 WebsocketClient::WebsocketClient( const std::string& name, const std::string& type ) : m_Identifier(
       type, name )
00025 {
00026   ix::initNetSystem();
00027
00028   m_Identifier.generateKey( Domain::Application, Class::Client, Family::WebSocketClient );
00029   m_Logger.setName( m_Identifier.get() );
00030   m_Logger.addSink( std::make_shared<spdlog::sinks::stdout_color_sink_mt>() );
00031
00032   ix::WebSocketHttpHeaders header{ { "id", m_Identifier.get() } };
00033   setExtraHeaders( header );
00034
00035   setOnMessageCallback(
00036     [this]( const ix::WebSocketMessagePtr& msg )
00037     {
00038       if( msg->type == ix::WebSocketMessageType::Message ) { logger()->error( "{}", msg->str ); }
00039       else if( msg->type == ix::WebSocketMessageType::Error )
00040       {
00041         std::cout << "Connection error: " << msg->errorInfo.reason << std::endl;
00042       }
00043       else if( msg->type == ix::WebSocketMessageType::Close )
00044       {
00045         disableAutomaticReconnection();
00046         std::this_thread::sleep_for( std::chrono::milliseconds( 100 ) );
00047         if( msg->closeInfo.code == magic_enum::enum_integer(
       StatusCode::CLIENT_WITH_SAME_NAME_ALREADY_CONNECTED ) )
00048         {
00049           logger()->critical( fmt::format( fg( fmt::color::red ) | fmt::emphasis::bold,
       msg->closeInfo.reason ) );
00050           if( m_ThrowGeneralIfSameName ) throw Exception(
       StatusCode::CLIENT_WITH_SAME_NAME_ALREADY_CONNECTED, msg->closeInfo.reason );
00051         }
00052       }
00053     }
00054
00055   );
00056 }
00057
00058 WebsocketClient::~WebsocketClient()
00059 {
00060   stop();
00061   ix::uninitNetSystem();
00062 }
00063
00064 void WebsocketClient::start()
00065 {
00066   if( getReadyState() == ix::ReadyState::Closed || getReadyState() == ix::ReadyState::Closing )
00067   {
00068     logger()->trace( "Client started. Connected to {}", getUrl() );
00069     ix::WebSocket::start();
00070   }
00071 }
00072
00073 void WebsocketClient::stop()
00074 {
00075   if( getReadyState() == ix::ReadyState::Open || getReadyState() == ix::ReadyState::Connecting )
00076   {
00077     logger()->trace( "Client stopped" );
00078     ix::WebSocket::stop();
00079     while( getReadyState() != ix::ReadyState::Closed ) { std::this_thread::sleep_for(
       std::chrono::microseconds( 1 ) ); }
00080   }
```

```
00081 }
00082
00083 void WebsocketClient::loop()
00084 {
00085   WebsocketClient::start();
00086   m_Looper.supressInstance();
00087   onRaisingSignal();
00088 }
00089
00090 void WebsocketClient::onRaisingSignal()
00091 {
00092   Signal signal = m_Looper.loop();
00093   if( m_Looper.getInstance() == 0 )
00094   {
00095     int value = magic_enum::enum_integer( signal );
00096     if( value >= magic_enum::enum_integer( yaodaq::Severity::Critical ) ) { logger()->critical(
       "Signal SIG{} raised !", magic_enum::enum_name( signal ) ); }
00097     else if( value >= magic_enum::enum_integer( yaodaq::Severity::Error ) )
00098     {
00099       logger()->error( "Signal SIG{} raised !", magic_enum::enum_name( signal ) );
00100     }
00101     else if( value >= magic_enum::enum_integer( yaodaq::Severity::Warning ) )
00102     {
00103       fmt::print( "\n" );
00104       logger()->warn( "Signal SIG{} raised !", magic_enum::enum_name( signal ) );
00105     }
00106     else if( value >= magic_enum::enum_integer( yaodaq::Severity::Info ) )
00107     {
00108       fmt::print( "\n" );
00109       logger()->info( "Signal SIG{} raised !", magic_enum::enum_name( signal ) );
00110     }
00111     else
00112     {
00113       fmt::print( "\n" );
00114       logger()->trace( "Signal SIG{} raised !", magic_enum::enum_name( signal ) );
00115     }
00116     if( magic_enum::enum_integer( signal ) >= magic_enum::enum_integer( Severity::Critical ) )
       std::exit( magic_enum::enum_integer( signal ) );
00117   }
00118 }
00119
00120 }  // namespace yaodaq
```

9.59 yaodaq/WebsocketServer.cpp File Reference

```
#include "yaodaq/WebsocketServer.hpp"
#include "yaodaq/ConnectionState.hpp"
#include "yaodaq/Exception.hpp"
#include "yaodaq/IXWebsocketMessage.hpp"
#include "yaodaq/Identifier.hpp"
#include "yaodaq/StatusCode.hpp"
#include <chrono>
#include <iostream>
#include <ixwebsocket/IXNetSystem.h>
#include <magic_enum.hpp>
#include <spdlog/sinks/stdout_color_sinks.h>
#include <spdlog/spdlog.h>
#include <string>
#include <thread>
#include <utility>
```

Namespaces

- namespace yaodaq

9.60 WebsocketServer.cpp

Go to the documentation of this file.

```
00001
00005 #include "yaodaq/WebsocketServer.hpp"
```

```
00006
00007 #include "yaodaq/ConnectionState.hpp"
00008 #include "yaodaq/Exception.hpp"
00009 #include "yaodaq/IXWebsocketMessage.hpp"
00010 #include "yaodaq/Identifier.hpp"
00011 #include "yaodaq/StatusCode.hpp"
00012
00013 #include <chrono>
00014 #include <iostream>
00015 #include <ixwebsocket/IXNetSystem.h>
00016 #include <magic_enum.hpp>
00017 #include <spdlog/sinks/stdout_color_sinks.h>
00018 #include <spdlog/spdlog.h>
00019 #include <string>
00020 #include <thread>
00021 #include <utility>
00022
00023 namespace yaodaq
00024 {
00025
00026 WebsocketServer::WebsocketServer( const std::string& name, const int& port, const std::string& host,
      const int& backlog, const std::size_t& maxConnections, const int& handshakeTimeoutSecs, const int&
      addressFamily, const std::string& type ) :
00027   ix::WebSocketServer( port, host, backlog, maxConnections, handshakeTimeoutSecs, addressFamily ),
      m_Identifier( type, name )
00028 {
00029   ix::initNetSystem();
00030
00031   m_Identifier.generateKey( Domain::Application, Class::Server, Family::WebSocketServer );
00032   m_Logger.setName( m_Identifier.get() );
00033   m_Logger.addSink( std::make_shared<spdlog::sinks::stdout_color_sink_mt>() );
00034
00035   setConnectionStateFactory( []() { return std::make_shared<ConnectionState>(); } );
00036
00037   setOnClientMessageCallback(
00038     [this]( std::shared_ptr<ix::ConnectionState> connectionState, ix::WebSocket& webSocket, const
      ix::WebSocketMessagePtr& msg )
00039     {
00040       // The ConnectionState object contains information about the connection
00041       std::shared_ptr<ConnectionState> connection = std::static_pointer_cast<ConnectionState>(
      connectionState );
00042
00043       if( msg->type == ix::WebSocketMessageType::Open )
00044       {
00045         // Check if a client with the same name is already connected;
00046         logger()->critical( fmt::format( fg( fmt::color::red ) | fmt::emphasis::bold, getHost() + ":"
      + std::to_string( getPort() ) ) );
00047         connection->computeId( getHost() + ":" + std::to_string( getPort() ), Identifier::parse(
      msg->openInfo.headers["id"] ) );
00048         if( connection->isTerminated() )
00049         {
00050           logger()->error( fmt::format( fg( fmt::color::red ) | fmt::emphasis::bold, "One client with
      the name \"{}\" is already connected !", Identifier::parse( msg->openInfo.headers["id"] ).getName() )
      );
00051           webSocket.stop( magic_enum::enum_integer(
      StatusCode::CLIENT_WITH_SAME_NAME_ALREADY_CONNECTED ),
00052                           fmt::format( "One client with the name \"{}\" is already connected to
      ws{}://{}:{} !", Identifier::parse( msg->openInfo.headers["id"] ).getName(), "", getHost(), getPort()
      ) );
00053           return;
00054         }
00055       }
00056       else if( msg->type == ix::WebSocketMessageType::Message )
00057       {
00058         webSocket.send( msg->str, msg->binary );
00059       }
00060     } );
00061 }
00062
00063 void WebsocketServer::listen()
00064 {
00065   if( !m_isListening )
00066   {
00067     std::pair<bool, std::string> ret = ix::WebSocketServer::listen();
00068     if( ret.first )
00069     {
00070       m_isListening = ret.first;
00071       logger()->info( "Server listening on {0}:{1}", getHost(), getPort() );
00072     }
00073     else
00074       throw Exception( StatusCode::LISTEN_ERROR, ret.second );
00075   }
00076 }
00077
00078 void WebsocketServer::start()
00079 {
00080   if( !m_isStarted )
```

```
00081   {
00082     m_isStarted = true;
00083     logger()->trace( "Server started" );
00084     ix::WebSocketServer::start();
00085   }
00086 }
00087
00088 void WebsocketServer::stop( bool useless )
00089 {
00090   if( !m_isStopped )
00091   {
00092     m_isStopped = true;
00093     useless     = !useless;
00094     logger()->trace( "Server stopped" );
00095     ix::WebSocketServer::stop();
00096   }
00097 }
00098
00099 void WebsocketServer::setVerbosity( const yaodaq::LoggerHandler::Verbosity& verbosity ) {
       m_Logger.setVerbosity( verbosity ); }
00100
00101 WebsocketServer::~WebsocketServer()
00102 {
00103   stop();
00104   ix::uninitNetSystem();
00105 }
00106
00107 void WebsocketServer::loop()
00108 {
00109   listen();
00110   start();
00111   m_Looper.supressInstance();
00112   onRaisingSignal();
00113 }
00114
00115 void WebsocketServer::onRaisingSignal()
00116 {
00117   Signal signal = m_Looper.loop();
00118   if( m_Looper.getInstance() == 0 )
00119   {
00120     int value = magic_enum::enum_integer( signal );
00121     if( value >= magic_enum::enum_integer( yaodaq::Severity::Critical ) ) { logger()->critical(
       "Signal SIG{} raised !", magic_enum::enum_name( signal ) ); }
00122     else if( value >= magic_enum::enum_integer( yaodaq::Severity::Error ) )
00123     {
00124       logger()->error( "Signal SIG{} raised !", magic_enum::enum_name( signal ) );
00125     }
00126     else if( value >= magic_enum::enum_integer( yaodaq::Severity::Warning ) )
00127     {
00128       fmt::print( "\n" );
00129       logger()->warn( "Signal SIG{} raised !", magic_enum::enum_name( signal ) );
00130     }
00131     else if( value >= magic_enum::enum_integer( yaodaq::Severity::Info ) )
00132     {
00133       fmt::print( "\n" );
00134       logger()->info( "Signal SIG{} raised !", magic_enum::enum_name( signal ) );
00135     }
00136     else
00137     {
00138       fmt::print( "\n" );
00139       logger()->trace( "Signal SIG{} raised !", magic_enum::enum_name( signal ) );
00140     }
00141     if( magic_enum::enum_integer( signal ) >= magic_enum::enum_integer( Severity::Critical ) )
       std::exit( magic_enum::enum_integer( signal ) );
00142   }
00143 }
00144
00145 }  // namespace yaodaq
```