YAODAQ

Yet An Other DAQ

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Chapter 1

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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 Close
- class ConnectionState
- class Error
- class Exception
- class Fragment
- class Identifier
- class Interrupt
- class IXMessage
- class Key
- class LoggerHandler
- class Looper
- class Message
- class MessageException
- class Open
- class Ping
- class Pong
- 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 = -6 , Close , Error , Ping ,
  Pong , Fragment , Unknown = 0 , Exception }
- 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.

```
{
  Unknown = 0,
  Server,
  Client,
  // Module is a client with start stop etc...
  Module,
  // Board is a module with a connector
  Board,
};
```

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.

```
{
  Unknown     = 0,
  Application = 1,
  Web         = 2,
};
```

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.

```
{
  Unknown = 0,
  WebSocketServer,
  WebSocketClient,
  Logger,
  Controller,
  Configurator,
  SlowController,
  Viewer,
  Analyser,
  FileWriter,
};
```

7.2.2.4 MessageType

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

Enumerator

Open	
Close	
Error	
Ping	
Pong	
Fragment	

Enumerator

Unknown	
Exception	

Definition at line 15 of file MessageType.hpp.

```
{
  // IXWebSocket MessageType (Message is not set here)
  Open = -6,
  Close,
  Error,
  Ping,
  Pong,
  Fragment,
  // Unknown should not be used !
  Unknown = 0,
  Exception,
};
```

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.

```
{
  Info     = 1,
  Warning  = 10,
  Error    = 100,
  Critical = 1000,
};
```

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.

```
{
  NO   = 0,  // No Signal.
  // Critical
  ABRT = static_cast<int>( Severity::Critical ) + 1,  // (Signal Abort) Abnormal termination, such as
       is initiated by the abort function.
  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).
  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.
  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.
  // Warning
  INT  = static_cast<int>( Severity::Warning ) + 1,  // (Signal Interrupt) Interactive attention
signal. Generally generated by the application user.
  TERM = static_cast<int>( Severity::Warning ) + 2,  // (Signal Terminate) Termination request sent to
program.
};
```

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.

```
{
  SUCCESS = 0,
  LISTEN_ERROR,
  WRONG_NUMBER_PARAMETERS,
  CLIENT_WITH_SAME_NAME_ALREADY_CONNECTED = 4999,
};
```

7.2.3 Function Documentation

7.2.3.1 operator<<()

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

Definition at line 29 of file MessageType.hpp.

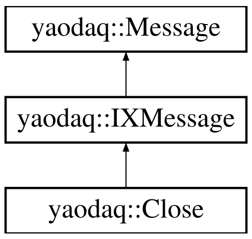
```
{ return os « static_cast<std::int_least8_t>( messageTypes ); }
```

Chapter 8

Data Structure Documentation

8.1 yaodaq::Close Class Reference

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



Public Member Functions

- Close (const ix::WebSocketCloseInfo &closeInfo)
- Close (const ix::WebSocketCloseInfo &closeInfo, std::shared_ptr< ConnectionState > &connectionState)
- std::uint16_t getCode () const
- std::string getReason () const
- bool getRemote () 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
- nlohmann::json 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 setConnectionStateInfos (std::shared_ptr< ConnectionState > &connectionState)
- void setContent (const nlohmann::json &content)
- void setContent (const std::string &content)
- void setContent (const char ∗content)

Protected Attributes

- nlohmann::json m_JSON

8.1.1 Detailed Description

Definition at line 42 of file IXWebsocketMessage.hpp.

8.1.2 Constructor & Destructor Documentation

8.1.2.1 Close() [1/2]

```
yaodaq::Close::Close (
            const ix::WebSocketCloseInfo & closeInfo )  [explicit]
```

Definition at line 54 of file IXWebsocketMessage.cpp.

```
00054                                                 : IXMessage( MessageType::Close )
00055 {
00056   nlohmann::json j;
00057   j["code"]   = closeInfo.code;
00058   j["reason"] = closeInfo.reason;
00059   j["remote"] = closeInfo.remote;
00060   setContent( j );
00061 }
```

8.1.2.2 Close() [2/2]

```
yaodaq::Close::Close (
            const ix::WebSocketCloseInfo & closeInfo,
            std::shared_ptr< ConnectionState > & connectionState )
```

Definition at line 63 of file IXWebsocketMessage.cpp.

```
00063 : Close( closeInfo ) { setConnectionStateInfos( connectionState ); }
```

8.1.3 Member Function Documentation

8.1.3.1 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 60 of file Message.cpp.

```
00060 { return m_JSON.dump( indent, indent_char, ensure_ascii, error_handler ); }
```

8.1.3.2 get()

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

Definition at line 62 of file Message.cpp.

```
00062 { return m_JSON; }
```

8.1.3.3 getCode()

```
std::uint16_t yaodaq::Close::getCode ( ) const
```

Definition at line 65 of file IXWebsocketMessage.cpp.

```
00065 { return get()["content"]["code"].get<std::uint16_t>(); }
```

8.1.3.4 getContent()

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

Definition at line 68 of file Message.cpp.

```
{ return m_JSON["content"]; }
```

8.1.3.5 getIdentifier()

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

Definition at line 90 of file Message.cpp.

```
{
  if( m_JSON["from"].is_null() ) return {};
  else
  {
    Identifier id( m_JSON["from"]["type"].get<std::string>(),
      m_JSON["from"]["name"].get<std::string>() );
    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(),
                    magic_enum::enum_cast<Family>( m_JSON["from"]["family"].get<std::string>()
      ).value() );
    return id;
  }
}
```

8.1.3.6 getReason()

```
std::string yaodaq::Close::getReason ( ) const
```

Definition at line 66 of file IXWebsocketMessage.cpp.

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

8.1.3.7 getRemote()

```
bool yaodaq::Close::getRemote ( ) const
```

Definition at line 67 of file IXWebsocketMessage.cpp.

```
{ return get()["content"]["remote"].get<bool>(); }
```

8.1.3.8 getTime()

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

Definition at line 72 of file Message.cpp.

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

8.1.3.9 getTimestamp()

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

Definition at line 70 of file Message.cpp.

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

8.1.3.10 getTypeName()

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

Definition at line 64 of file Message.cpp.

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

8.1.3.11 getTypeValue()

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

Definition at line 66 of file Message.cpp.

```
00066 { return magic_enum::enum_cast<MessageType>( m_JSON["type"].get<std::string>() ).value(); }
```

8.1.3.12 setConnectionStateInfos()

```
void yaodaq::IXMessage::setConnectionStateInfos (
              std::shared_ptr< ConnectionState > & connectionState )  [protected], [inherited]
```

Definition at line 22 of file IXWebsocketMessage.cpp.

```
00023 {
00024   nlohmann::json j = getContent();
00025   j["id"]          = connectionState->getId();
00026   j["remote_ip"]   = connectionState->getRemoteIp();
00027   j["remote_port"] = connectionState->getRemotePort();
00028   setContent( j );
00029 }
```

8.1.3.13 setContent() [1/3]

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

Definition at line 48 of file Message.cpp.

```
00049 {
00050   m_JSON["content"] = nlohmann::json::parse( content, nullptr, false );
00051   if( m_JSON["content"].is_discarded() ) { m_JSON["content"] = static_cast<std::string>( content ); }
00052 }
```

8.1.3.14 setContent() [2/3]

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

Definition at line 40 of file Message.cpp.

```
00040 { m_JSON["content"] = static_cast<nlohmann::json>( content ); }
```

8.1.3.15 setContent() [3/3]

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

Definition at line 42 of file Message.cpp.

```
00043 {
00044   m_JSON["content"] = nlohmann::json::parse( content, nullptr, false );
00045   if( m_JSON["content"].is_discarded() ) { m_JSON["content"] = static_cast<std::string>( content ); }
00046 }
```

8.1.3.16 setFrom()

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

Definition at line 81 of file Message.cpp.

```
00082 {
00083   m_JSON["from"]["name"]   = identifier.getName();
00084   m_JSON["from"]["type"]   = identifier.getType();
00085   m_JSON["from"]["family"] = identifier.getFamily();
00086   m_JSON["from"]["class"]  = identifier.getClass();
00087   m_JSON["from"]["domain"] = identifier.getDomain();
00088 }
```

8.1.4 Field Documentation

8.1.4.1 m_JSON

```
nlohmann::json yaodaq::Message::m_JSON  [protected], [inherited]
```

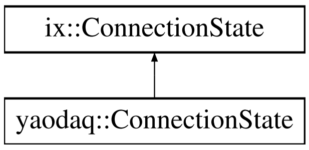
Definition at line 41 of file Message.hpp.
The documentation for this class was generated from the following files:

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

8.2 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 ()

8.2.1 Detailed Description

Definition at line 21 of file ConnectionState.hpp.

8.2.2 Constructor & Destructor Documentation

8.2.2.1 ConnectionState()

```
yaodaq::ConnectionState::ConnectionState ( )
```

Definition at line 14 of file ConnectionState.cpp.

```
00014 : ix::ConnectionState() {}
```

8.2.2.2 ~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 }
```

8.2.3 Member Function Documentation

8.2.3.1 computeId()

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

Definition at line 22 of file ConnectionState.cpp.

```
{
  std::lock_guard<std::mutex> guard( m_Mutex );
  m_Pair = std::pair<std::string, std::string>( host, id.getName() );

  if( id.empty() ) { _id = std::to_string( _globalId++ ); }
  else
  {
    std::list<std::pair<std::string, std::string»::iterator found = std::find( m_Ids.begin(), m_Ids.end(), m_Pair );
    if( found == m_Ids.end() )
    {
      _id = id.getName();
      m_Ids.push_back( m_Pair );
    }
    else
    {
      setTerminated();
    }
  }
}
```

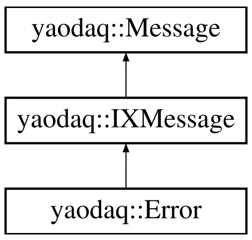
The documentation for this class was generated from the following files:

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

8.3 yaodaq::Error Class Reference

`#include <yaodaq/IXWebsocketMessage.hpp>`

Inheritance diagram for yaodaq::Error:



Public Member Functions

- Error (const ix::WebSocketErrorInfo &errorInfo)
- Error (const ix::WebSocketErrorInfo &errorInfo, std::shared_ptr< ConnectionState > &connectionState)
- std::uint16_t getRetries () const
- double getWaitTime () const
- int getHttpStatus () const
- std::string getReason () const
- bool getDecompressionError () 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
- nlohmann::json 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 setConnectionStateInfos (std::shared_ptr< ConnectionState > &connectionState)
- void setContent (const nlohmann::json &content)
- void setContent (const std::string &content)
- void setContent (const char ∗content)

Protected Attributes

- nlohmann::json m_JSON

8.3.1 Detailed Description

Definition at line 52 of file IXWebsocketMessage.hpp.

8.3.2 Constructor & Destructor Documentation

8.3.2.1 Error() [1/2]

```
yaodaq::Error::Error (
            const ix::WebSocketErrorInfo & errorInfo )  [explicit]
```

Definition at line 70 of file IXWebsocketMessage.cpp.

```
                                                : IXMessage( MessageType::Error )
{
  nlohmann::json j;
  j["retries"]              = errorInfo.retries;
  j["wait_time"]            = errorInfo.wait_time;
  j["http_status"]          = errorInfo.http_status;
  j["reason"]               = errorInfo.reason;
  j["decompression_error"] = errorInfo.decompressionError;
  setContent( j );
}
```

8.3.2.2 Error() [2/2]

```
yaodaq::Error::Error (
            const ix::WebSocketErrorInfo & errorInfo,
            std::shared_ptr< ConnectionState > & connectionState )
```

Definition at line 81 of file IXWebsocketMessage.cpp.

```
: Error( errorInfo ) { setConnectionStateInfos( connectionState ); }
```

8.3.3 Member Function Documentation

8.3.3.1 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 60 of file Message.cpp.

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

8.3.3.2 get()

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

Definition at line 62 of file Message.cpp.

```
00062 { return m_JSON; }
```

8.3.3.3 getContent()

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

Definition at line 68 of file Message.cpp.

```
00068 { return m_JSON["content"]; }
```

8.3.3.4 getDecompressionError()

```
bool yaodaq::Error::getDecompressionError ( ) const
```

Definition at line 91 of file IXWebsocketMessage.cpp.

```
00091 { return get()["content"]["decompression_error"].get<bool>(); }
```

8.3.3.5 getHttpStatus()

```
int yaodaq::Error::getHttpStatus ( ) const
```

Definition at line 87 of file IXWebsocketMessage.cpp.

```
00087 { return get()["content"]["http_status"].get<int>(); }
```

8.3.3.6 getIdentifier()

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

Definition at line 90 of file Message.cpp.

```
00091 {
00092   if( m_JSON["from"].is_null() ) return {};
00093   else
00094   {
00095     Identifier id( m_JSON["from"]["type"].get<std::string>(),
      m_JSON["from"]["name"].get<std::string>() );
00096     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(),
00097                     magic_enum::enum_cast<Family>( m_JSON["from"]["family"].get<std::string>()
      ).value() );
00098     return id;
00099   }
00100 }
```

8.3.3.7 getReason()

```
std::string yaodaq::Error::getReason ( ) const
```

Definition at line 89 of file IXWebsocketMessage.cpp.

```
00089 { return get()["content"]["reason"].get<std::string>(); }
```

8.3.3.8 getRetries()

```
std::uint16_t yaodaq::Error::getRetries ( ) const
```

Definition at line 83 of file IXWebsocketMessage.cpp.

```
00083 { return get()["content"]["retries"].get<std::uint16_t>(); }
```

8.3.3.9 getTime()

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

Definition at line 72 of file Message.cpp.

```
00073 {
00074   std::tm tm;
```

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

8.3.3.10 getTimestamp()

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

Definition at line 70 of file Message.cpp.

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

8.3.3.11 getTypeName()

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

Definition at line 64 of file Message.cpp.

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

8.3.3.12 getTypeValue()

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

Definition at line 66 of file Message.cpp.

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

8.3.3.13 getWaitTime()

`double yaodaq::Error::getWaitTime ( ) const`

Definition at line 85 of file IXWebsocketMessage.cpp.

```
{ return get()["content"]["wait_time"].get<double>(); }
```

8.3.3.14 setConnectionStateInfos()

```
void yaodaq::IXMessage::setConnectionStateInfos (
              std::shared_ptr< ConnectionState > & connectionState ) [protected], [inherited]
```

Definition at line 22 of file IXWebsocketMessage.cpp.

```
{
  nlohmann::json j = getContent();
  j["id"]          = connectionState->getId();
  j["remote_ip"]   = connectionState->getRemoteIp();
  j["remote_port"] = connectionState->getRemotePort();
  setContent( j );
}
```

8.3.3.15 setContent() [1/3]

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

Definition at line 48 of file Message.cpp.

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

8.3.3.16 setContent() [2/3]

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

Definition at line 40 of file Message.cpp.

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

8.3.3.17 setContent() [3/3]

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

Definition at line 42 of file Message.cpp.

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

8.3.3.18 setFrom()

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

Definition at line 81 of file Message.cpp.

```
{
  m_JSON["from"]["name"]   = identifier.getName();
  m_JSON["from"]["type"]   = identifier.getType();
  m_JSON["from"]["family"] = identifier.getFamily();
  m_JSON["from"]["class"]  = identifier.getClass();
  m_JSON["from"]["domain"] = identifier.getDomain();
}
```

8.3.4 Field Documentation

8.3.4.1 m_JSON

```
nlohmann::json yaodaq::Message::m_JSON  [protected], [inherited]
```

Definition at line 41 of file Message.hpp.

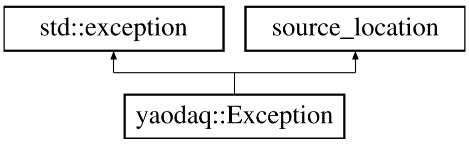
The documentation for this class was generated from the following files:

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

8.4 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={})

8.4.1 Detailed Description

Definition at line 19 of file Exception.hpp.

8.4.2 Constructor & Destructor Documentation

8.4.2.1 Exception() [1/2]

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

8.4.2.2 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(); }
```

8.4.2.3 ∼Exception()

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

8.4.3 Member Function Documentation

8.4.3.1 code()

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

Definition at line 20 of file Exception.cpp.

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

8.4.3.2 description()

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

Definition at line 18 of file Exception.cpp.

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

8.4.3.3 setFormat()

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

Definition at line 24 of file Exception.hpp.

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

8.4.3.4 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; }
```

8.4.3.5 what()

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

Definition at line 16 of file Exception.cpp.

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

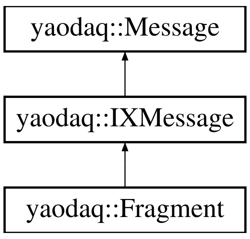
The documentation for this class was generated from the following files:

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

8.5 yaodaq::Fragment Class Reference

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

Inheritance diagram for yaodaq::Fragment:



Public Member Functions

- Fragment (const ix::WebSocketMessagePtr &fragment)
- Fragment (const ix::WebSocketMessagePtr &fragment, std::shared_ptr< ConnectionState > &connection↩State)
- 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
- nlohmann::json 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 setConnectionStateInfos (std::shared_ptr< ConnectionState > &connectionState)
- void setContent (const nlohmann::json &content)
- void setContent (const std::string &content)
- void setContent (const char *content)

Protected Attributes

- nlohmann::json m_JSON

8.5.1 Detailed Description

Definition at line 78 of file IXWebsocketMessage.hpp.

8.5.2 Constructor & Destructor Documentation

8.5.2.1 Fragment() [1/2]

```
yaodaq::Fragment::Fragment (
            const ix::WebSocketMessagePtr & fragment )  [explicit]
```

Definition at line 104 of file IXWebsocketMessage.cpp.

```
00104 : IXMessage( MessageType::Fragment ) {}
```

8.5.2.2 Fragment() [2/2]

```
yaodaq::Fragment::Fragment (
            const ix::WebSocketMessagePtr & fragment,
            std::shared_ptr< ConnectionState > & connectionState )
```

Definition at line 106 of file IXWebsocketMessage.cpp.

```
00106 : Fragment( fragment ) { setConnectionStateInfos( connectionState ); }
```

8.5.3 Member Function Documentation

8.5.3.1 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 60 of file Message.cpp.

```
00060 { return m_JSON.dump( indent, indent_char, ensure_ascii, error_handler ); }
```

8.5.3.2 get()

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

Definition at line 62 of file Message.cpp.

```
00062 { return m_JSON; }
```

8.5.3.3 getContent()

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

Definition at line 68 of file Message.cpp.

```
00068 { return m_JSON["content"]; }
```

8.5.3.4 getIdentifier()

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

Definition at line 90 of file Message.cpp.

```
00091 {
00092   if( m_JSON["from"].is_null() ) return {};
00093   else
00094   {
    Identifier id( m_JSON["from"]["type"].get<std::string>(),
  m_JSON["from"]["name"].get<std::string>() );
    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(),
                    magic_enum::enum_cast<Family>( m_JSON["from"]["family"].get<std::string>()
  ).value() );
    return id;
  }
}
```

8.5.3.5 getTime()

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

Definition at line 72 of file Message.cpp.

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

8.5.3.6 getTimestamp()

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

Definition at line 70 of file Message.cpp.

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

8.5.3.7 getTypeName()

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

Definition at line 64 of file Message.cpp.

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

8.5.3.8 getTypeValue()

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

Definition at line 66 of file Message.cpp.

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

8.5.3.9 setConnectionStateInfos()

void yaodaq::IXMessage::setConnectionStateInfos (
    std::shared_ptr< ConnectionState > & *connectionState*) [protected], [inherited]

Definition at line 22 of file IXWebsocketMessage.cpp.

```
{
  nlohmann::json j = getContent();
  j["id"]          = connectionState->getId();
  j["remote_ip"]   = connectionState->getRemoteIp();
  j["remote_port"] = connectionState->getRemotePort();
  setContent( j );
}
```

8.5.3.10 setContent() [1/3]

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

Definition at line 48 of file Message.cpp.

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

8.5.3.11 setContent() [2/3]

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

Definition at line 40 of file Message.cpp.

```
00040 { m_JSON["content"] = static_cast<nlohmann::json>( content ); }
```

8.5.3.12 setContent() [3/3]

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

Definition at line 42 of file Message.cpp.

```
00043 {
00044   m_JSON["content"] = nlohmann::json::parse( content, nullptr, false );
00045   if( m_JSON["content"].is_discarded() ) { m_JSON["content"] = static_cast<std::string>( content ); }
00046 }
```

8.5.3.13 setFrom()

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

Definition at line 81 of file Message.cpp.

```
00082 {
00083   m_JSON["from"]["name"]   = identifier.getName();
00084   m_JSON["from"]["type"]   = identifier.getType();
00085   m_JSON["from"]["family"] = identifier.getFamily();
00086   m_JSON["from"]["class"]  = identifier.getClass();
00087   m_JSON["from"]["domain"] = identifier.getDomain();
00088 }
```

8.5.4 Field Documentation

8.5.4.1 m_JSON

```
nlohmann::json yaodaq::Message::m_JSON  [protected], [inherited]
```

Definition at line 41 of file Message.hpp.

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

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

8.6 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
- bool operator< (const Identifier &) const

Static Public Member Functions

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

8.6.1 Detailed Description

Definition at line 16 of file Identifier.hpp.

8.6.2 Constructor & Destructor Documentation

8.6.2.1 Identifier() [1/2]

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

8.6.2.2 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 ) {}
```

8.6.3 Member Function Documentation

8.6.3.1 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 }
```

8.6.3.2 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 ); }
```

8.6.3.3 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() ); }
```

8.6.3.4 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() ) ); }
```

8.6.3.5 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() ) ); }
```

8.6.3.6 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() ) ); }
```

8.6.3.7 getKey()

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

Definition at line 40 of file Identifier.cpp.

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

8.6.3.8 getName()

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

Definition at line 38 of file Identifier.cpp.

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

8.6.3.9 getType()

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

Definition at line 36 of file Identifier.cpp.

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

8.6.3.10 operator<()

```
bool yaodaq::Identifier::operator< (
               const Identifier & identifier ) const
```

Definition at line 75 of file Identifier.cpp.

```
00075 { return this->get() < identifier.get(); }
```

8.6.3.11 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 )
```

```
    {
      std::string word = tmp.substr( 0, second_pos - 0 );
      result.push_back( word );
    }
    else
      result.push_back( "" );
    tmp        = tmp.substr( second_pos + separator.length() );
    second_pos = tmp.find( separator );
    if( second_pos == std::string::npos ) result.push_back( tmp );
  }
  if( result.size() == 5 )
  {
    Identifier identifier( result[3], result[4] );
    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() );
    return identifier;
  }
  else
  {
    throw Exception( StatusCode::WRONG_NUMBER_PARAMETERS, "Number of parameters in key should be 5 (Domain/Class/Family/Type/Name) !" );
  }
}
```

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

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

8.7 yaodaq::Interrupt Class Reference

`#include <yaodaq/Interrupt.hpp>`

Public Member Functions

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

8.7.1 Detailed Description

Definition at line 19 of file Interrupt.hpp.

8.7.2 Constructor & Destructor Documentation

8.7.2.1 Interrupt()

`yaodaq::Interrupt::Interrupt ( )`

Definition at line 19 of file Interrupt.cpp.

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

8.7.2.2 ∼Interrupt()

`yaodaq::Interrupt::∼Interrupt ( )`

Definition at line 42 of file Interrupt.cpp.

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

8.7.3 Member Function Documentation

8.7.3.1 getSignal()

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

Definition at line 44 of file Interrupt.cpp.

```
{
  if( m_Signal.load() != Signal::NO )
  {
    std::lock_guard<std::mutex> guard( m_mutex );
    init();
  }
  return m_Signal.load();
}
```

8.7.3.2 init()

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

Definition at line 31 of file Interrupt.cpp.

```
{
  setSignal( Signal::TERM );
  setSignal( Signal::TERM );
  setSignal( Signal::SEGV );
  setSignal( Signal::INT );
  setSignal( Signal::ILL );
  setSignal( Signal::ABRT );
  setSignal( Signal::FPE );
}
```

8.7.3.3 restore()

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

Definition at line 21 of file Interrupt.cpp.

```
{
  std::signal( SIGTERM, SIG_DFL );
  std::signal( SIGSEGV, SIG_DFL );
  std::signal( SIGINT, SIG_DFL );
  std::signal( SIGILL, SIG_DFL );
  std::signal( SIGABRT, SIG_DFL );
  std::signal( SIGFPE, SIG_DFL );
}
```

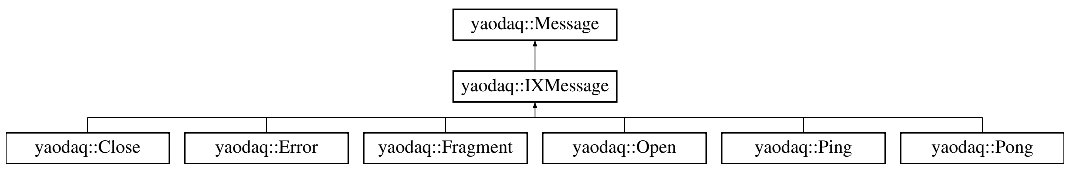
The documentation for this class was generated from the following files:

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

8.8 yaodaq::IXMessage Class Reference

`#include <yaodaq/IXWebsocketMessage.hpp>`

Inheritance diagram for yaodaq::IXMessage:



Public Member Functions

- IXMessage (const MessageType &messageType)
- IXMessage (const ix::WebSocketMessagePtr &msg)
- 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
- nlohmann::json 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 setConnectionStateInfos (std::shared_ptr< ConnectionState > &connectionState)
- void setContent (const nlohmann::json &content)
- void setContent (const std::string &content)
- void setContent (const char ∗content)

Protected Attributes

- nlohmann::json m_JSON

8.8.1 Detailed Description

Definition at line 22 of file IXWebsocketMessage.hpp.

8.8.2 Constructor & Destructor Documentation

8.8.2.1 IXMessage() [1/2]

```
yaodaq::IXMessage::IXMessage (
            const MessageType & messageType )  [explicit]
```

Definition at line 10 of file IXWebsocketMessage.cpp.

```
: Message( messageType ) {}
```

8.8.2.2 IXMessage() [2/2]

```
yaodaq::IXMessage::IXMessage (
            const ix::WebSocketMessagePtr & msg )  [explicit]
```

Definition at line 12 of file IXWebsocketMessage.cpp.

```
                                                       : Message()
{
  // FIXME
  nlohmann::json json = nlohmann::json::parse( msg->str, nullptr, false );
  if( json.is_discarded() ) { m_JSON["content"] = static_cast<std::string>( msg->str ); }
  else
    m_JSON = json;
  std::cout « m_JSON.dump() « std::endl;
}
```

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  [inherited]
```

Definition at line 60 of file Message.cpp.

```
00060 { return m_JSON.dump( indent, indent_char, ensure_ascii, error_handler ); }
```

8.8.3.2 get()

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

Definition at line 62 of file Message.cpp.

```
00062 { return m_JSON; }
```

8.8.3.3 getContent()

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

Definition at line 68 of file Message.cpp.

```
00068 { return m_JSON["content"]; }
```

8.8.3.4 getIdentifier()

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

Definition at line 90 of file Message.cpp.

```
00091 {
00092   if( m_JSON["from"].is_null() ) return {};
00093   else
00094   {
00095     Identifier id( m_JSON["from"]["type"].get<std::string>(),
        m_JSON["from"]["name"].get<std::string>() );
00096     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(),
00097                     magic_enum::enum_cast<Family>( m_JSON["from"]["family"].get<std::string>()
        ).value() );
00098     return id;
00099   }
00100 }
```

8.8.3.5 getTime()

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

Definition at line 72 of file Message.cpp.

```
00073 {
00074   std::tm tm;
00075   memset( &tm, 0, sizeof( tm ) );
00076   std::istringstream ss( getTimestamp() );
00077   ss » std::get_time( &tm, "%Y-%m-%d %H:%M:%S %z" );
00078   return mktime( &tm );
00079 }
```

8.8.3.6 getTimestamp()

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

Definition at line 70 of file Message.cpp.

```
00070 { return m_JSON["timestamp"].get<std::string>(); }
```

8.8.3.7 getTypeName()

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

Definition at line 64 of file Message.cpp.

```
00064 { return m_JSON["type"].get<std::string>(); }
```

8.8.3.8 getTypeValue()

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

Definition at line 66 of file Message.cpp.

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

8.8.3.9 setConnectionStateInfos()

```
void yaodaq::IXMessage::setConnectionStateInfos (
            std::shared_ptr< ConnectionState > & connectionState )  [protected]
```

Definition at line 22 of file IXWebsocketMessage.cpp.

```
{
  nlohmann::json j = getContent();
  j["id"]          = connectionState->getId();
  j["remote_ip"]   = connectionState->getRemoteIp();
  j["remote_port"] = connectionState->getRemotePort();
  setContent( j );
}
```

8.8.3.10 setContent() [1/3]

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

Definition at line 48 of file Message.cpp.

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

8.8.3.11 setContent() [2/3]

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

Definition at line 40 of file Message.cpp.

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

8.8.3.12 setContent() [3/3]

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

Definition at line 42 of file Message.cpp.

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

8.8.3.13 setFrom()

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

Definition at line 81 of file Message.cpp.

```
{
  m_JSON["from"]["name"]   = identifier.getName();
  m_JSON["from"]["type"]   = identifier.getType();
  m_JSON["from"]["family"] = identifier.getFamily();
  m_JSON["from"]["class"]  = identifier.getClass();
  m_JSON["from"]["domain"] = identifier.getDomain();
}
```

8.8.4 Field Documentation

8.8.4.1 m_JSON

```
nlohmann::json yaodaq::Message::m_JSON  [protected], [inherited]
```

Definition at line 41 of file Message.hpp.

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

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

8.9 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

8.9.1 Detailed Description

Definition at line 15 of file Key.hpp.

8.9.2 Constructor & Destructor Documentation

8.9.2.1 Key() [1/2]

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

8.9.2.2 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 ); }
```

8.9.3 Member Function Documentation

8.9.3.1 getClass()

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

Definition at line 15 of file Key.cpp.

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

8.9.3.2 getDomain()

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

Definition at line 13 of file Key.cpp.

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

8.9.3.3 getFamily()

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

Definition at line 17 of file Key.cpp.

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

8.9.3.4 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

8.10 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 ()

8.10.1 Detailed Description

Definition at line 21 of file LoggerHandler.hpp.

8.10.2 Member Enumeration Documentation

8.10.2.1 Verbosity

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

Enumerator

Off	

Enumerator

Trace	
Debug	
Info	
Warn	
Error	
Critical	

Definition at line 24 of file LoggerHandler.hpp.

```
  {
    Off,
    Trace,
    Debug,
    Info,
    Warn,
    Error,
    Critical
  };
```

8.10.3 Constructor & Destructor Documentation

8.10.3.1 LoggerHandler()

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

Definition at line 12 of file LoggerHandler.cpp.

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

8.10.3.2 ∼LoggerHandler()

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

Definition at line 20 of file LoggerHandler.cpp.

```
{}
```

8.10.4 Member Function Documentation

8.10.4.1 addSink()

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

Definition at line 45 of file LoggerHandler.cpp.

```
{
  m_Sinks.push_back( sink );
  init();
}
```

8.10.4.2 clearSinks()

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

Definition at line 51 of file LoggerHandler.cpp.

```
{
  m_Sinks.clear();
  init();
}
```

8.10.4.3 logger()

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

Definition at line 43 of file LoggerHandler.cpp.

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

8.10.4.4 setName()

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

Definition at line 14 of file LoggerHandler.cpp.

```
{
  m_Name = name;
  init();
}
```

8.10.4.5 setVerbosity()

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

Definition at line 22 of file LoggerHandler.cpp.

```
{
  m_Verbosity = verbosity;
  init();
}
```

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

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

8.11 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 ()

8.11.1 Detailed Description

Definition at line 15 of file Looper.hpp.

8.11.2 Constructor & Destructor Documentation

8.11.2.1 Looper()

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

Definition at line 28 of file Looper.cpp.

```
{
  if( m_hasBeenAdded == false )
  {
    m_hasBeenAdded = true;
    ++m_instance;
  }
}
```

8.11.2.2 ∼Looper()

yaodaq::Looper::∼Looper ( )

Definition at line 52 of file Looper.cpp.

```
{
  if( m_hasBeenAdded == true && m_hasBeenSupressed == false )
  {
    m_hasBeenSupressed = true;
    --m_instance;
  }
}
```

8.11.3 Member Function Documentation

8.11.3.1 getInstance()

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

Definition at line 17 of file Looper.cpp.

```
{ return m_instance; }
```

8.11.3.2 getSignal()

Signal yaodaq::Looper::getSignal ( )

Definition at line 50 of file Looper.cpp.

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

8.11.3.3 loop()

Signal yaodaq::Looper::loop ( )

Definition at line 37 of file Looper.cpp.

```
{
  static Signal signal{ yaodaq::Signal::NO };
  if( m_instance == 0 )
  {
    do {
      signal = m_Interrupt.getSignal();
      std::this_thread::sleep_for( std::chrono::microseconds( 1 ) );
    } while( signal == yaodaq::Signal::NO );
  }
  return signal;
}
```

8.11.3.4 supressInstance()

void yaodaq::Looper::supressInstance ( )

Definition at line 19 of file Looper.cpp.

```
{
  if( m_hasBeenSupressed == false )
  {
    m_hasBeenSupressed = true;
    m_instance--;
  }
}
```

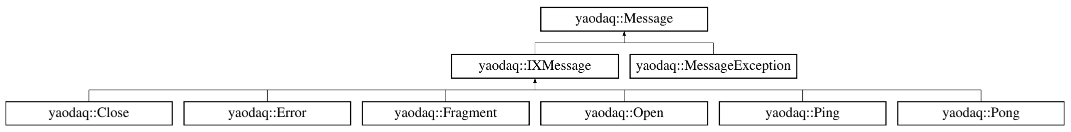
The documentation for this class was generated from the following files:

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

8.12 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
- nlohmann::json 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)

Protected Attributes

- nlohmann::json m_JSON

8.12.1 Detailed Description

Definition at line 19 of file Message.hpp.

8.12.2 Constructor & Destructor Documentation

8.12.2.1 Message() [1/5]

`yaodaq::Message::Message ( )`

Definition at line 25 of file Message.cpp.

```
{
  m_JSON["from"];
  m_JSON["to"];
  m_JSON["type"] = magic_enum::enum_name( MessageType::Unknown );
  m_JSON["uuid"] = ix::uuid4();
  m_JSON["content"];
  m_JSON["timestamp"]                    = fmt::format( "{:%F %T %z}", fmt::gmtime(
std::chrono::system_clock::to_time_t( std::chrono::system_clock::now() ) ) );
  m_JSON["meta"]["compiler"]             = nlohmann::json::meta()["compiler"];
  m_JSON["meta"]["platform"]             = nlohmann::json::meta()["platform"];
00035   m_JSON["meta"]["versions"]["json"]        = nlohmann::json::meta()["version"]["string"];
00036   m_JSON["meta"]["versions"]["yaodaq"]      = yaodaq_version.to_string();
00037   m_JSON["meta"]["versions"]["ixwebsocket"] = std::string( IX_WEBSOCKET_VERSION );
00038 }
```

8.12.2.2 Message() [2/5]

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

Definition at line 54 of file Message.cpp.

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

8.12.2.3 Message() [3/5]

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

Definition at line 56 of file Message.cpp.

```
00056 : Message( messageType ) { setContent( content ); }
```

8.12.2.4 Message() [4/5]

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

Definition at line 58 of file Message.cpp.

```
00058 : Message( messageType ) { setContent( content ); }
```

8.12.2.5 Message() [5/5]

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

Definition at line 102 of file Message.cpp.

```
00102 : Message() { m_JSON["type"] = magic_enum::enum_name( messageType ); }
```

8.12.3 Member Function Documentation

8.12.3.1 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 60 of file Message.cpp.

```
00060 { return m_JSON.dump( indent, indent_char, ensure_ascii, error_handler ); }
```

8.12.3.2 get()

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

Definition at line 62 of file Message.cpp.

```
00062 { return m_JSON; }
```

8.12.3.3 getContent()

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

Definition at line 68 of file Message.cpp.

```
{ return m_JSON["content"]; }
```

8.12.3.4 getIdentifier()

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

Definition at line 90 of file Message.cpp.

```
{
  if( m_JSON["from"].is_null() ) return {};
  else
  {
    Identifier id( m_JSON["from"]["type"].get<std::string>(),
  m_JSON["from"]["name"].get<std::string>() );
    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(),
                    magic_enum::enum_cast<Family>( m_JSON["from"]["family"].get<std::string>()
  ).value() );
    return id;
  }
}
```

8.12.3.5 getTime()

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

Definition at line 72 of file Message.cpp.

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

8.12.3.6 getTimestamp()

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

Definition at line 70 of file Message.cpp.

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

8.12.3.7 getTypeName()

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

Definition at line 64 of file Message.cpp.

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

8.12.3.8 getTypeValue()

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

Definition at line 66 of file Message.cpp.

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

8.12.3.9 setContent() [1/3]

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

Definition at line 48 of file Message.cpp.

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

8.12.3.10 setContent() [2/3]

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

Definition at line 40 of file Message.cpp.

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

8.12.3.11 setContent() [3/3]

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

Definition at line 42 of file Message.cpp.

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

8.12.3.12 setFrom()

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

Definition at line 81 of file Message.cpp.

```
{
  m_JSON["from"]["name"]   = identifier.getName();
  m_JSON["from"]["type"]   = identifier.getType();
  m_JSON["from"]["family"] = identifier.getFamily();
  m_JSON["from"]["class"]  = identifier.getClass();
  m_JSON["from"]["domain"] = identifier.getDomain();
}
```

8.12.4 Field Documentation

8.12.4.1 m_JSON

```
nlohmann::json yaodaq::Message::m_JSON  [protected]
```

Definition at line 41 of file Message.hpp.

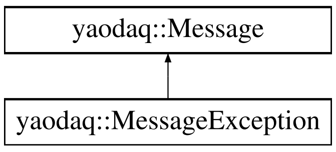
The documentation for this class was generated from the following files:

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

8.13 yaodaq::MessageException Class Reference

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

Inheritance diagram for yaodaq::MessageException:



Public Member Functions

- MessageException (const Exception &content)
- std::int_least32_t getCode ()

- std::string getDescription ()
- std::int_least32_t getLine ()
- std::int_least32_t getColumn ()
- std::string getFileName ()
- std::string getFunctionName ()
- 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
- nlohmann::json 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)

Protected Attributes

- nlohmann::json m_JSON

8.13.1 Detailed Description

Definition at line 44 of file Message.hpp.

8.13.2 Constructor & Destructor Documentation

8.13.2.1 MessageException()

```
yaodaq::MessageException::MessageException (
            const Exception & content )  [explicit]
```

Definition at line 105 of file Message.cpp.

```
                                                                 : Message( MessageType::Exception )
{
  nlohmann::json j;
  j["code"]          = exception.code();
  j["description"]   = exception.description();
  j["line"]          = exception.line();
  j["column"]        = exception.column();
  j["file_name"]     = exception.file_name();
  j["function_name"] = exception.function_name();
  setContent( j );
}
```

8.13.3 Member Function Documentation

8.13.3.1 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 60 of file Message.cpp.

```
00060 { return m_JSON.dump( indent, indent_char, ensure_ascii, error_handler ); }
```

8.13.3.2 get()

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

Definition at line 62 of file Message.cpp.

```
00062 { return m_JSON; }
```

8.13.3.3 getCode()

```
std::int_least32_t yaodaq::MessageException::getCode ( )
```

Definition at line 117 of file Message.cpp.

```
00117 { return get()["content"]["code"].get<std::int_least32_t>(); }
```

8.13.3.4 getColumn()

```
std::int_least32_t yaodaq::MessageException::getColumn ( )
```

Definition at line 123 of file Message.cpp.

```
00123 { return get()["content"]["column"].get<std::int_least32_t>(); }
```

8.13.3.5 getContent()

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

Definition at line 68 of file Message.cpp.

```
00068 { return m_JSON["content"]; }
```

8.13.3.6 getDescription()

```
std::string yaodaq::MessageException::getDescription ( )
```

Definition at line 119 of file Message.cpp.

```
00119 { return get()["content"]["description"].get<std::string>(); }
```

8.13.3.7 getFileName()

```
std::string yaodaq::MessageException::getFileName ( )
```

Definition at line 125 of file Message.cpp.

```
00125 { return get()["content"]["file_name"].get<std::string>(); }
```

8.13.3.8 getFunctionName()

```
std::string yaodaq::MessageException::getFunctionName ( )
```

Definition at line 127 of file Message.cpp.

```
00127 { return get()["content"]["function_name"].get<std::string>(); }
```

8.13.3.9 getIdentifier()

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

Definition at line 90 of file Message.cpp.

```
{
  if( m_JSON["from"].is_null() ) return {};
  else
  {
    Identifier id( m_JSON["from"]["type"].get<std::string>(),
m_JSON["from"]["name"].get<std::string>() );
    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(),
                    magic_enum::enum_cast<Family>( m_JSON["from"]["family"].get<std::string>()
).value() );
    return id;
  }
}
```

8.13.3.10 getLine()

```
std::int_least32_t yaodaq::MessageException::getLine ( )
```

Definition at line 121 of file Message.cpp.

```
{ return get()["content"]["line"].get<std::int_least32_t>(); }
```

8.13.3.11 getTime()

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

Definition at line 72 of file Message.cpp.

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

8.13.3.12 getTimestamp()

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

Definition at line 70 of file Message.cpp.

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

8.13.3.13 getTypeName()

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

Definition at line 64 of file Message.cpp.

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

8.13.3.14 getTypeValue()

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

Definition at line 66 of file Message.cpp.

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

8.13.3.15 setContent() [1/3]

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

Definition at line 48 of file Message.cpp.

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

8.13.3.16 setContent() [2/3]

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

Definition at line 40 of file Message.cpp.

```
00040 { m_JSON["content"] = static_cast<nlohmann::json>( content ); }
```

8.13.3.17 setContent() [3/3]

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

Definition at line 42 of file Message.cpp.

```
00043 {
00044   m_JSON["content"] = nlohmann::json::parse( content, nullptr, false );
00045   if( m_JSON["content"].is_discarded() ) { m_JSON["content"] = static_cast<std::string>( content ); }
00046 }
```

8.13.3.18 setFrom()

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

Definition at line 81 of file Message.cpp.

```
00082 {
00083   m_JSON["from"]["name"]   = identifier.getName();
00084   m_JSON["from"]["type"]   = identifier.getType();
00085   m_JSON["from"]["family"] = identifier.getFamily();
00086   m_JSON["from"]["class"]  = identifier.getClass();
00087   m_JSON["from"]["domain"] = identifier.getDomain();
00088 }
```

8.13.4 Field Documentation

8.13.4.1 m_JSON

```
nlohmann::json yaodaq::Message::m_JSON  [protected], [inherited]
```

Definition at line 41 of file Message.hpp.

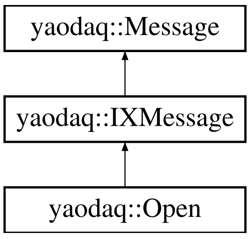
The documentation for this class was generated from the following files:

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

8.14 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
- nlohmann::json 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 setConnectionStateInfos (std::shared_ptr< ConnectionState > &connectionState)
- void setContent (const nlohmann::json &content)
- void setContent (const std::string &content)
- void setContent (const char *content)

Protected Attributes

- nlohmann::json m_JSON

8.14.1 Detailed Description

Definition at line 32 of file IXWebsocketMessage.hpp.

8.14.2 Constructor & Destructor Documentation

8.14.2.1 Open() [1/2]

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

Definition at line 32 of file IXWebsocketMessage.cpp.

```
00032                                                   : IXMessage( MessageType::Open )
00033 {
00034   nlohmann::json j = getContent();
00035   j["uri"]         = openInfo.uri;
00036   j["headers"]     = openInfo.headers;
00037   j["protocol"]    = openInfo.protocol;
00038   setContent( j );
00039 }
```

8.14.2.2 Open() [2/2]

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

Definition at line 41 of file IXWebsocketMessage.cpp.

```
00041 : Open( openInfo ) { setConnectionStateInfos( connectionState ); }
```

8.14.3 Member Function Documentation

8.14.3.1 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 60 of file Message.cpp.

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

8.14.3.2 get()

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

Definition at line 62 of file Message.cpp.

```
{ return m_JSON; }
```

8.14.3.3 getContent()

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

Definition at line 68 of file Message.cpp.

```
{ return m_JSON["content"]; }
```

8.14.3.4 getHeaders()

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

Definition at line 45 of file IXWebsocketMessage.cpp.

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

8.14.3.5 getIdentifier()

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

Definition at line 90 of file Message.cpp.

```
{
  if( m_JSON["from"].is_null() ) return {};
  else
  {
    Identifier id( m_JSON["from"]["type"].get<std::string>(),
  m_JSON["from"]["name"].get<std::string>() );
    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(),
                    magic_enum::enum_cast<Family>( m_JSON["from"]["family"].get<std::string>()
  ).value() );
    return id;
  }
}
```

8.14.3.6 getProtocol()

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

Definition at line 51 of file IXWebsocketMessage.cpp.

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

8.14.3.7 getTime()

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

Definition at line 72 of file Message.cpp.

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

8.14.3.8 getTimestamp()

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

Definition at line 70 of file Message.cpp.

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

8.14.3.9 getTypeName()

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

Definition at line 64 of file Message.cpp.

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

8.14.3.10 getTypeValue()

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

Definition at line 66 of file Message.cpp.

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

8.14.3.11 getURI()

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

Definition at line 43 of file IXWebsocketMessage.cpp.

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

8.14.3.12 setConnectionStateInfos()

```
void yaodaq::IXMessage::setConnectionStateInfos (
              std::shared_ptr< ConnectionState > & connectionState )  [protected], [inherited]
```

Definition at line 22 of file IXWebsocketMessage.cpp.

```
{
  nlohmann::json j = getContent();
  j["id"]          = connectionState->getId();
  j["remote_ip"]   = connectionState->getRemoteIp();
  j["remote_port"] = connectionState->getRemotePort();
  setContent( j );
}
```

8.14.3.13 setContent() [1/3]

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

Definition at line 48 of file Message.cpp.

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

8.14.3.14 setContent() [2/3]

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

Definition at line 40 of file Message.cpp.

```
00040 { m_JSON["content"] = static_cast<nlohmann::json>( content ); }
```

8.14.3.15 setContent() [3/3]

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

Definition at line 42 of file Message.cpp.

```
00043 {
00044   m_JSON["content"] = nlohmann::json::parse( content, nullptr, false );
00045   if( m_JSON["content"].is_discarded() ) { m_JSON["content"] = static_cast<std::string>( content ); }
00046 }
```

8.14.3.16 setFrom()

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

Definition at line 81 of file Message.cpp.

```
00082 {
00083   m_JSON["from"]["name"]   = identifier.getName();
00084   m_JSON["from"]["type"]   = identifier.getType();
00085   m_JSON["from"]["family"] = identifier.getFamily();
00086   m_JSON["from"]["class"]  = identifier.getClass();
00087   m_JSON["from"]["domain"] = identifier.getDomain();
00088 }
```

8.14.4 Field Documentation

8.14.4.1 m_JSON

```
nlohmann::json yaodaq::Message::m_JSON [protected], [inherited]
```

Definition at line 41 of file Message.hpp.

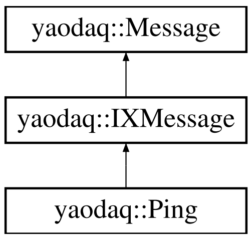
The documentation for this class was generated from the following files:

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

8.15 yaodaq::Ping Class Reference

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

Inheritance diagram for yaodaq::Ping:



Public Member Functions

- Ping (const ix::WebSocketMessagePtr &ping)

- Ping (const ix::WebSocketMessagePtr &ping, std::shared_ptr< ConnectionState > &connectionState)
- 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
- nlohmann::json 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 setConnectionStateInfos (std::shared_ptr< ConnectionState > &connectionState)
- void setContent (const nlohmann::json &content)
- void setContent (const std::string &content)
- void setContent (const char *content)

Protected Attributes

- nlohmann::json m_JSON

8.15.1 Detailed Description

Definition at line 64 of file IXWebsocketMessage.hpp.

8.15.2 Constructor & Destructor Documentation

8.15.2.1 Ping() [1/2]

```
yaodaq::Ping::Ping (
            const ix::WebSocketMessagePtr & ping )  [explicit]
```

Definition at line 94 of file IXWebsocketMessage.cpp.

```
00094 : IXMessage( MessageType::Ping ) {}
```

8.15.2.2 Ping() [2/2]

```
yaodaq::Ping::Ping (
            const ix::WebSocketMessagePtr & ping,
            std::shared_ptr< ConnectionState > & connectionState )
```

Definition at line 96 of file IXWebsocketMessage.cpp.

```
00096 : Ping( ping ) { setConnectionStateInfos( connectionState ); }
```

8.15.3 Member Function Documentation

8.15.3.1 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 60 of file Message.cpp.

```
00060 { return m_JSON.dump( indent, indent_char, ensure_ascii, error_handler ); }
```

8.15.3.2 get()

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

Definition at line 62 of file Message.cpp.

```
00062 { return m_JSON; }
```

8.15.3.3 getContent()

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

Definition at line 68 of file Message.cpp.

```
00068 { return m_JSON["content"]; }
```

8.15.3.4 getIdentifier()

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

Definition at line 90 of file Message.cpp.

```
00091 {
00092   if( m_JSON["from"].is_null() ) return {};
00093   else
00094   {
00095     Identifier id( m_JSON["from"]["type"].get<std::string>(),
        m_JSON["from"]["name"].get<std::string>() );
00096     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(),
00097                     magic_enum::enum_cast<Family>( m_JSON["from"]["family"].get<std::string>()
        ).value() );
00098     return id;
00099   }
00100 }
```

8.15.3.5 getTime()

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

Definition at line 72 of file Message.cpp.

```
00073 {
00074   std::tm tm;
00075   memset( &tm, 0, sizeof( tm ) );
00076   std::istringstream ss( getTimestamp() );
00077   ss » std::get_time( &tm, "%Y-%m-%d %H:%M:%S %z" );
00078   return mktime( &tm );
00079 }
```

8.15.3.6 getTimestamp()

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

Definition at line 70 of file Message.cpp.

```
00070 { return m_JSON["timestamp"].get<std::string>(); }
```

8.15.3.7 getTypeName()

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

Definition at line 64 of file Message.cpp.

```
00064 { return m_JSON["type"].get<std::string>(); }
```

8.15.3.8 getTypeValue()

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

Definition at line 66 of file Message.cpp.

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

8.15.3.9 setConnectionStateInfos()

```
void yaodaq::IXMessage::setConnectionStateInfos (
        std::shared_ptr< ConnectionState > & connectionState )  [protected], [inherited]
```

Definition at line 22 of file IXWebsocketMessage.cpp.

```
{
  nlohmann::json j = getContent();
  j["id"]          = connectionState->getId();
  j["remote_ip"]   = connectionState->getRemoteIp();
  j["remote_port"] = connectionState->getRemotePort();
  setContent( j );
}
```

8.15.3.10 setContent() [1/3]

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

Definition at line 48 of file Message.cpp.

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

8.15.3.11 setContent() [2/3]

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

Definition at line 40 of file Message.cpp.

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

8.15.3.12 setContent() [3/3]

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

Definition at line 42 of file Message.cpp.

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

8.15.3.13 setFrom()

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

Definition at line 81 of file Message.cpp.

```
{
  m_JSON["from"]["name"]   = identifier.getName();
  m_JSON["from"]["type"]   = identifier.getType();
  m_JSON["from"]["family"] = identifier.getFamily();
  m_JSON["from"]["class"]  = identifier.getClass();
  m_JSON["from"]["domain"] = identifier.getDomain();
}
```

8.15.4 Field Documentation

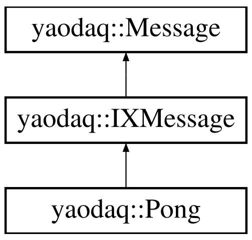
8.15.4.1 m_JSON

`nlohmann::json yaodaq::Message::m_JSON [protected], [inherited]`
Definition at line 41 of file Message.hpp.
The documentation for this class was generated from the following files:

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

8.16 yaodaq::Pong Class Reference

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



Public Member Functions

- Pong (const ix::WebSocketMessagePtr &pong)
- Pong (const ix::WebSocketMessagePtr &pong, std::shared_ptr< ConnectionState > &connectionState)
- 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
- nlohmann::json 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 setConnectionStateInfos (std::shared_ptr< ConnectionState > &connectionState)
- void setContent (const nlohmann::json &content)
- void setContent (const std::string &content)
- void setContent (const char *content)

Protected Attributes

- nlohmann::json m_JSON

8.16.1 Detailed Description

Definition at line 71 of file IXWebsocketMessage.hpp.

8.16.2 Constructor & Destructor Documentation

8.16.2.1 Pong() [1/2]

```
yaodaq::Pong::Pong (
            const ix::WebSocketMessagePtr & pong ) [explicit]
```

Definition at line 99 of file IXWebsocketMessage.cpp.

```
: IXMessage( MessageType::Pong ) {}
```

8.16.2.2 Pong() [2/2]

```
yaodaq::Pong::Pong (
            const ix::WebSocketMessagePtr & pong,
            std::shared_ptr< ConnectionState > & connectionState )
```

Definition at line 101 of file IXWebsocketMessage.cpp.

```
: Pong( pong ) { setConnectionStateInfos( connectionState ); }
```

8.16.3 Member Function Documentation

8.16.3.1 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 60 of file Message.cpp.

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

8.16.3.2 get()

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

Definition at line 62 of file Message.cpp.

```
{ return m_JSON; }
```

8.16.3.3 getContent()

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

Definition at line 68 of file Message.cpp.

```
{ return m_JSON["content"]; }
```

8.16.3.4 getIdentifier()

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

Definition at line 90 of file Message.cpp.

```
{
  if( m_JSON["from"].is_null() ) return {};
  else
  {
    Identifier id( m_JSON["from"]["type"].get<std::string>(),
  m_JSON["from"]["name"].get<std::string>() );
    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(),
                    magic_enum::enum_cast<Family>( m_JSON["from"]["family"].get<std::string>()
  ).value() );
    return id;
  }
}
```

8.16.3.5 getTime()

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

Definition at line 72 of file Message.cpp.

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

8.16.3.6 getTimestamp()

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

Definition at line 70 of file Message.cpp.

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

8.16.3.7 getTypeName()

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

Definition at line 64 of file Message.cpp.

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

8.16.3.8 getTypeValue()

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

Definition at line 66 of file Message.cpp.

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

8.16.3.9 setConnectionStateInfos()

```
void yaodaq::IXMessage::setConnectionStateInfos (
              std::shared_ptr< ConnectionState > & connectionState )  [protected], [inherited]
```

Definition at line 22 of file IXWebsocketMessage.cpp.

```
{
  nlohmann::json j = getContent();
  j["id"]          = connectionState->getId();
  j["remote_ip"]   = connectionState->getRemoteIp();
  j["remote_port"] = connectionState->getRemotePort();
  setContent( j );
}
```

8.16.3.10 setContent() [1/3]

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

Definition at line 48 of file Message.cpp.

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

8.16.3.11 setContent() [2/3]

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

Definition at line 40 of file Message.cpp.

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

8.16.3.12 setContent() [3/3]

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

Definition at line 42 of file Message.cpp.

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

8.16.3.13 setFrom()

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

Definition at line 81 of file Message.cpp.

```
{
  m_JSON["from"]["name"]   = identifier.getName();
  m_JSON["from"]["type"]   = identifier.getType();
  m_JSON["from"]["family"] = identifier.getFamily();
  m_JSON["from"]["class"]  = identifier.getClass();
  m_JSON["from"]["domain"] = identifier.getDomain();
}
```

8.16.4 Field Documentation

8.16.4.1 m_JSON

```
nlohmann::json yaodaq::Message::m_JSON  [protected], [inherited]
```

Definition at line 41 of file Message.hpp.

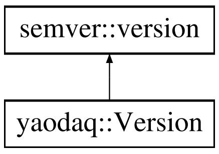
The documentation for this class was generated from the following files:

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

8.17 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 ()

8.17.1 Detailed Description

Definition at line 15 of file Version.hpp.

8.17.2 Constructor & Destructor Documentation

8.17.2.1 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 ) {}
```

8.17.2.2 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 ) {}
```

8.17.2.3 Version() [3/3]

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

8.17.3 Member Function Documentation

8.17.3.1 getMajor()

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

Definition at line 12 of file Version.cpp.

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

8.17.3.2 getMinor()

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

Definition at line 14 of file Version.cpp.

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

8.17.3.3 getPatch()

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

Definition at line 16 of file Version.cpp.

```
00016 { return patch; }
```

8.17.3.4 getPreRelease()

```
std::string yaodaq::Version::getPreRelease ( )
```

Definition at line 18 of file Version.cpp.

```
00018 { return std::string( magic_enum::enum_name( prerelease_type ) ); }
```

8.17.3.5 getPreReleaseNumber()

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

Definition at line 20 of file Version.cpp.

```
{ return prerelease_number; }
```

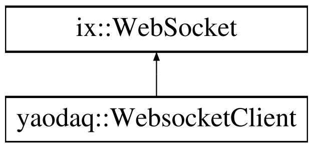
The documentation for this class was generated from the following files:

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

8.18 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 ()
- virtual void onMessage (Message &message)
- virtual void onOpen (Open &open)
- virtual void onClose (Close &close)
- virtual void onError (Error &error)
- virtual void onPing (Ping &ping)
- virtual void onPong (Pong &pong)
- virtual void onFragment (Fragment &fragment)

8.18.1 Detailed Description

Definition at line 29 of file WebsocketClient.hpp.

8.18.2 Constructor & Destructor Documentation

8.18.2.1 WebsocketClient()

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

Definition at line 20 of file WebsocketClient.cpp.

```
                                                                            : m_Identifier( type,
       name )
{
  ix::initNetSystem();

  m_Identifier.generateKey( Domain::Application, Class::Client, Family::WebSocketClient );
  m_Logger.setName( m_Identifier.get() );
  m_Logger.addSink( std::make_shared<spdlog::sinks::stdout_color_sink_mt>() );

  ix::WebSocketHttpHeaders header{ { "id", m_Identifier.get() } };
  setExtraHeaders( header );

  setOnMessageCallback(
    [this]( const ix::WebSocketMessagePtr& msg )
    {
      if( msg->type == ix::WebSocketMessageType::Message ) { logger()->error( "{}", msg->str ); }
      else if( msg->type == ix::WebSocketMessageType::Error )
      {
        std::cout « "Connection error: " « msg->errorInfo.reason « std::endl;
      }
      else if( msg->type == ix::WebSocketMessageType::Close )
      {
        disableAutomaticReconnection();
        if( msg->closeInfo.code == magic_enum::enum_integer(
StatusCode::CLIENT_WITH_SAME_NAME_ALREADY_CONNECTED ) )
        {
          logger()->critical( fmt::format( fg( fmt::color::red ) | fmt::emphasis::bold,
msg->closeInfo.reason ) );
          close();
          // throw Exception( StatusCode::CLIENT_WITH_SAME_NAME_ALREADY_CONNECTED,
msg->closeInfo.reason );
        }
      }
    }

  );
}
```

8.18.2.2 ∼WebsocketClient()

yaodaq::WebsocketClient::∼WebsocketClient ( ) [virtual]

Definition at line 68 of file WebsocketClient.cpp.

```
{
  stop();
  ix::uninitNetSystem();
}
```

8.18.3 Member Function Documentation

8.18.3.1 logger()

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

Definition at line 37 of file WebsocketClient.hpp.

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

8.18.3.2 loop()

void yaodaq::WebsocketClient::loop ( )

Definition at line 93 of file WebsocketClient.cpp.

```
{
  WebsocketClient::start();
  m_Looper.supressInstance();
  onRaisingSignal();
}
```

8.18.3.3 onClose()

void yaodaq::WebsocketClient::onClose (
    Close & *close*) [virtual]

Definition at line 58 of file WebsocketClient.cpp.

```
{}
```

8.18.3.4 onError()

```
void yaodaq::WebsocketClient::onError (
            Error & error ) [virtual]
```

Definition at line 60 of file WebsocketClient.cpp.

```
00060 {}
```

8.18.3.5 onFragment()

```
void yaodaq::WebsocketClient::onFragment (
            Fragment & fragment ) [virtual]
```

Definition at line 66 of file WebsocketClient.cpp.

```
00066 {}
```

8.18.3.6 onMessage()

```
void yaodaq::WebsocketClient::onMessage (
            Message & message ) [virtual]
```

Definition at line 54 of file WebsocketClient.cpp.

```
00054 {}
```

8.18.3.7 onOpen()

```
void yaodaq::WebsocketClient::onOpen (
            Open & open ) [virtual]
```

Definition at line 56 of file WebsocketClient.cpp.

```
00056 {}
```

8.18.3.8 onPing()

```
void yaodaq::WebsocketClient::onPing (
            Ping & ping ) [virtual]
```

Definition at line 62 of file WebsocketClient.cpp.

```
00062 {}
```

8.18.3.9 onPong()

```
void yaodaq::WebsocketClient::onPong (
            Pong & pong ) [virtual]
```

Definition at line 64 of file WebsocketClient.cpp.

```
00064 {}
```

8.18.3.10 start()

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

Definition at line 74 of file WebsocketClient.cpp.

```
00075 {
00076   if( getReadyState() == ix::ReadyState::Closed || getReadyState() == ix::ReadyState::Closing )
00077   {
00078     logger()->trace( "Client started. Connected to {}", getUrl() );
00079     ix::WebSocket::start();
00080   }
00081 }
```

8.18.3.11 stop()

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

Definition at line 83 of file WebsocketClient.cpp.

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

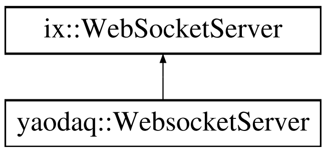
The documentation for this class was generated from the following files:

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

8.19 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 ()
- virtual void onMessage (Message &message)
- virtual void onOpen (Open &open)
- virtual void onClose (Close &close)
- virtual void onError (Error &error)
- virtual void onPing (Ping &ping)
- virtual void onPong (Pong &pong)
- virtual void onFragment (Fragment &fragment)
- void setVerbosity (const yaodaq::LoggerHandler::Verbosity &verbosity)
- std::shared_ptr< spdlog::logger > logger ()
- void sendToLoggers (Message &message)
- void sendToLoggers (const Message &message)
- void sendToLoggers (Message &message, ix::WebSocket &webSocket)
- void sendToLoggers (const Message &message, ix::WebSocket &webSocket)

8.19.1 Detailed Description

Definition at line 31 of file WebsocketServer.hpp.

8.19.2 Constructor & Destructor Documentation

8.19.2.1 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 27 of file WebsocketServer.cpp.

```
00027
                                :
00028   ix::WebSocketServer( port, host, backlog, maxConnections, handshakeTimeoutSecs, addressFamily ),
       m_Identifier( type, name )
00029 {
00030   ix::initNetSystem();
00031
00032   m_Identifier.generateKey( Domain::Application, Class::Server, Family::WebSocketServer );
00033   m_Logger.setName( m_Identifier.get() );
00034   m_Logger.addSink( std::make_shared<spdlog::sinks::stdout_color_sink_mt>() );
00035
00036   setConnectionStateFactory( []() { return std::make_shared<ConnectionState>(); } );
00037
00038   setOnClientMessageCallback(
00039     [this]( std::shared_ptr<ix::ConnectionState> connectionState, ix::WebSocket& webSocket, const
       ix::WebSocketMessagePtr& msg )
00040     {
00041       // The ConnectionState object contains information about the connection
00042       std::shared_ptr<ConnectionState> connection = std::static_pointer_cast<ConnectionState>(
       connectionState );
00043       if( msg->type == ix::WebSocketMessageType::Message )
00044       {
00045         IXMessage ixmessage( msg );
00046         onMessage( ixmessage );
00047       }
00048       else if( msg->type == ix::WebSocketMessageType::Open )
00049       {
00050         // Check if a client with the same name is already connected;
00051         connection->computeId( getHost() + ":" + std::to_string( getPort() ), Identifier::parse(
       msg->openInfo.headers["id"] ) );
00052         if( connection->isTerminated() )
00053         {
00054           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() )
       );
00055           webSocket.stop( magic_enum::enum_integer(
       StatusCode::CLIENT_WITH_SAME_NAME_ALREADY_CONNECTED ),
00056                           fmt::format( "One client with the name \"{}\" is already connected to
       ws{}://{}:{} !", Identifier::parse( msg->openInfo.headers["id"] ).getName(), "", getHost(), getPort()
       ) );
00057           std::this_thread::sleep_for( std::chrono::milliseconds( 100 ) );
00058           return;
00059         }
00060         addClient( Identifier::parse( msg->openInfo.headers["id"] ), webSocket );
00061         Open open( msg->openInfo, connection );
00062         sendToLoggers( open, webSocket );
00063         onOpen( open );
00064       }
00065       else if( msg->type == ix::WebSocketMessageType::Close )
00066       {
00067         Close close( msg->closeInfo, connection );
00068         sendToLoggers( close, webSocket );
00069         onClose( close );
00070         removeClient( webSocket );
00071       }
00072       else if( msg->type == ix::WebSocketMessageType::Error )
00073       {
00074         Error error( msg->errorInfo, connection );
00075         sendToLoggers( error, webSocket );
00076         onError( error );
00077       }
00078       else if( msg->type == ix::WebSocketMessageType::Ping )
00079       {
00080         Ping ping( msg, connection );
00081         sendToLoggers( ping, webSocket );
00082         onPing( ping );
00083       }
00084       else if( msg->type == ix::WebSocketMessageType::Pong )
00085       {
      Pong pong( msg, connection );
      sendToLoggers( pong, webSocket );
      onPong( pong );
    }
    else if( msg->type == ix::WebSocketMessageType::Fragment )
    {
      Fragment fragment( msg, connection );
      sendToLoggers( fragment, webSocket );
      onFragment( fragment );
    }
  } );
}
```

8.19.2.2 ∼WebsocketServer()

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

Definition at line 202 of file WebsocketServer.cpp.

```
{
  stop();
  ix::uninitNetSystem();
}
```

8.19.3 Member Function Documentation

8.19.3.1 listen()

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

Definition at line 164 of file WebsocketServer.cpp.

```
{
  if( !m_isListening )
  {
    std::pair<bool, std::string> ret = ix::WebSocketServer::listen();
    if( ret.first )
    {
      m_isListening = ret.first;
      logger()->info( "Server listening on {0}:{1}", getHost(), getPort() );
    }
    else
      throw Exception( StatusCode::LISTEN_ERROR, ret.second );
  }
}
```

8.19.3.2 logger()

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

Definition at line 53 of file WebsocketServer.hpp.

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

8.19.3.3 loop()

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

Definition at line 208 of file WebsocketServer.cpp.

```
{
  listen();
  start();
  m_Looper.supressInstance();
  onRaisingSignal();
}
```

8.19.3.4 onClose()

```
void yaodaq::WebsocketServer::onClose (
                Close & close ) [virtual]
```

Definition at line 154 of file WebsocketServer.cpp.

```
{}
```

8.19.3.5 onError()

```
void yaodaq::WebsocketServer::onError (
            Error & error )  [virtual]
```

Definition at line 156 of file WebsocketServer.cpp.

```
{}
```

8.19.3.6 onFragment()

```
void yaodaq::WebsocketServer::onFragment (
            Fragment & fragment )  [virtual]
```

Definition at line 162 of file WebsocketServer.cpp.

```
{}
```

8.19.3.7 onMessage()

```
void yaodaq::WebsocketServer::onMessage (
            Message & message )  [virtual]
```

Definition at line 150 of file WebsocketServer.cpp.

```
{}
```

8.19.3.8 onOpen()

```
void yaodaq::WebsocketServer::onOpen (
            Open & open )  [virtual]
```

Definition at line 152 of file WebsocketServer.cpp.

```
{}
```

8.19.3.9 onPing()

```
void yaodaq::WebsocketServer::onPing (
            Ping & ping )  [virtual]
```

Definition at line 158 of file WebsocketServer.cpp.

```
{}
```

8.19.3.10 onPong()

```
void yaodaq::WebsocketServer::onPong (
            Pong & pong )  [virtual]
```

Definition at line 160 of file WebsocketServer.cpp.

```
{}
```

8.19.3.11 sendToLoggers() [1/4]

```
void yaodaq::WebsocketServer::sendToLoggers (
            const Message & message )
```

Definition at line 142 of file WebsocketServer.cpp.

```
{
  for( std::map<Identifier, ix::WebSocket&>::iterator it = m_Clients.begin(); it != m_Clients.end();
  ++it )
  {
    if( magic_enum::enum_cast<Family>( it->first.getFamily() ).value() == Family::Logger )
  it->second.send( message.dump() );
  }
}
```

8.19.3.12 sendToLoggers() [2/4]

```
void yaodaq::WebsocketServer::sendToLoggers (
              const Message & message,
              ix::WebSocket & webSocket )
```

Definition at line 134 of file WebsocketServer.cpp.

```
{
  for( std::map<Identifier, ix::WebSocket&>::iterator it = m_Clients.begin(); it != m_Clients.end();
      ++it )
  {
    if( magic_enum::enum_cast<Family>( it->first.getFamily() ).value() == Family::Logger && &webSocket
      != &it->second ) it->second.send( message.dump() );
  }
}
```

8.19.3.13 sendToLoggers() [3/4]

```
void yaodaq::WebsocketServer::sendToLoggers (
              Message & message )
```

Definition at line 126 of file WebsocketServer.cpp.

```
{
  for( std::map<Identifier, ix::WebSocket&>::iterator it = m_Clients.begin(); it != m_Clients.end();
      ++it )
  {
    if( magic_enum::enum_cast<Family>( it->first.getFamily() ).value() == Family::Logger )
      it->second.send( message.dump() );
  }
}
```

8.19.3.14 sendToLoggers() [4/4]

```
void yaodaq::WebsocketServer::sendToLoggers (
              Message & message,
              ix::WebSocket & webSocket )
```

Definition at line 118 of file WebsocketServer.cpp.

```
{
  for( std::map<Identifier, ix::WebSocket&>::iterator it = m_Clients.begin(); it != m_Clients.end();
      ++it )
  {
    if( magic_enum::enum_cast<Family>( it->first.getFamily() ).value() == Family::Logger && &webSocket
      != &it->second ) it->second.send( message.dump() );
  }
}
```

8.19.3.15 setVerbosity()

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

Definition at line 200 of file WebsocketServer.cpp.

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

8.19.3.16 start()

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

Definition at line 179 of file WebsocketServer.cpp.

```
{
  if( !m_isStarted )
  {
    m_isStarted = true;
    logger()->trace( "Server started" );
    ix::WebSocketServer::start();
  }
}
```

8.19.3.17 stop()

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

Definition at line 189 of file WebsocketServer.cpp.

```
{
  if( !m_isStopped )
  {
    m_isStopped = true;
    useless     = !useless;
    logger()->trace( "Server stopped" );
    ix::WebSocketServer::stop();
  }
}
```

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.

```
#ifndef YAODAQ_CLASSIFICATION_HPP
#define YAODAQ_CLASSIFICATION_HPP

#include <cstdint>

namespace yaodaq
{

/* The domain specify if we are on browser or standalone program */
enum class Domain : std::uint_least8_t
{
  Unknown     = 0,
  Application = 1,
  Web         = 2,
};

/* The class define if we are a server, module, or board */
enum class Class : std::uint_least8_t
{
  Unknown = 0,
  Server,
  Client,
  // Module is a client with start stop etc...
  Module,
  // Board is a module with a connector
  Board,
};

/* the family */
enum class Family : std::uint_least16_t
{
  Unknown = 0,
  WebSocketServer,
  WebSocketClient,
  Logger,
  Controller,
  Configurator,
  SlowController,
  Viewer,
  Analyser,
  FileWriter,
};

}  // namespace yaodaq

#endif  // YAODAQ_CLASSIFICATION_HPP
```

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.

```
#ifndef YAODAQ_CONNECTIONSTATE
#define YAODAQ_CONNECTIONSTATE

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

namespace yaodaq
{

class Identifier;

class ConnectionState : public ix::ConnectionState
{
public:
  virtual void computeId( const std::string& host, const Identifier& id ) final;
  ConnectionState();
  virtual ~ConnectionState();

private:
  static std::list<std::pair<std::string, std::string» m_Ids;
  std::pair<std::string, std::string>                   m_Pair;
  std::mutex                                            m_Mutex;
};

}  // namespace yaodaq

#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.

```
#ifndef YAODAQ_EXCEPTION
#define YAODAQ_EXCEPTION

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

namespace yaodaq
{

enum class StatusCode : std::int_least32_t;

class Exception : public std::exception, public source_location
{
public:
  Exception() = delete;

  static void setFormat( const std::string& format ) { m_Format = format; }

  static void setStyle( const fmt::text_style& style = {} ) { m_Style = style; }

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

private:
  static fmt::text_style   m_Style;
  static std::string       m_Format;
  const std::int_least32_t m_Code{ 0 };
  std::string              m_Description;
  std::string              m_Message;
  void                     constructMessage();
};

}  // namespace yaodaq

#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.

```
#ifndef YAODAQ_IDENTIFIER_HPP
#define YAODAQ_IDENTIFIER_HPP

#include "yaodaq/Key.hpp"

#include <cstdint>
#include <string>

namespace yaodaq
{

class Identifier
{
public:
  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 );
  [[nodiscard]] std::string getDomain() const;
  [[nodiscard]] std::string getClass() const;
  [[nodiscard]] std::string getFamily() const;
  [[nodiscard]] std::string getType() const;
  [[nodiscard]] std::string getName() const;
  [[nodiscard]] Key         getKey() const;
  [[nodiscard]] std::string get() const;
  bool                      empty() const;
  static Identifier         parse( const std::string& );
  bool                      operator<( const Identifier& ) const;

private:
  std::string m_Type{ "Unknown" };
  std::string m_Name{ "Unknown" };
  Key         m_Key;
};

}  // namespace yaodaq

#endif  // YAODAQ_IDENTIFIER_HPP
```

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.

```
#ifndef YAODAQ_HANDLER_HPP
#define YAODAQ_HANDLER_HPP

#include "yaodaq/Signal.hpp"

#include <atomic>
#include <csignal>
#include <mutex>

namespace yaodaq
{

enum class Signal;

class Interrupt
{
public:
  Interrupt();
  void   init();
  void   restore();
  Signal getSignal();
  ~Interrupt();

private:
  volatile static std::atomic<Signal> m_Signal;
  void                                setSignal( const Signal& signal );
  std::mutex                          m_mutex;
};

}  // namespace yaodaq

#endif  // YAODAQ_HANDLER_HPP
```

9.13 yaodaq/IXWebsocketMessage.hpp File Reference

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

Data Structures

- class yaodaq::IXMessage
- class yaodaq::Open
- class yaodaq::Close
- class yaodaq::Error
- class yaodaq::Ping
- class yaodaq::Pong
- class yaodaq::Fragment

Namespaces

- namespace yaodaq

9.14 IXWebsocketMessage.hpp

Go to the documentation of this file.

```cpp
#ifndef YAODAQ_IXWEBSOCKETMESSAGE
#define YAODAQ_IXWEBSOCKETMESSAGE

#include "yaodaq/ConnectionState.hpp"
#include "yaodaq/Message.hpp"

#include <ixwebsocket/IXWebSocketCloseInfo.h>
#include <ixwebsocket/IXWebSocketErrorInfo.h>
#include <ixwebsocket/IXWebSocketMessage.h>
#include <ixwebsocket/IXWebSocketOpenInfo.h>
#include <map>
#include <memory>
#include <string>

namespace yaodaq
{

class IXMessage : public Message
{
public:
  explicit IXMessage( const MessageType& messageType );
  explicit IXMessage( const ix::WebSocketMessagePtr& msg );

protected:
  void setConnectionStateInfos( std::shared_ptr<ConnectionState>& connectionState );
};

class Open : public IXMessage
{
public:
  explicit 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;
};

class Close : public IXMessage
{
public:
  explicit Close( const ix::WebSocketCloseInfo& closeInfo );
  Close( const ix::WebSocketCloseInfo& closeInfo, std::shared_ptr<ConnectionState>& connectionState );
  std::uint16_t getCode() const;
  std::string   getReason() const;
  bool          getRemote() const;
};

class Error : public IXMessage
{
public:
  explicit Error( const ix::WebSocketErrorInfo& errorInfo );
  Error( const ix::WebSocketErrorInfo& errorInfo, std::shared_ptr<ConnectionState>& connectionState );
  std::uint16_t getRetries() const;
  double        getWaitTime() const;
  int           getHttpStatus() const;
  std::string   getReason() const;
  bool          getDecompressionError() const;
};

class Ping : public IXMessage
{
public:
  explicit Ping( const ix::WebSocketMessagePtr& ping );
  Ping( const ix::WebSocketMessagePtr& ping, std::shared_ptr<ConnectionState>& connectionState );
};

class Pong : public IXMessage
{
public:
  explicit Pong( const ix::WebSocketMessagePtr& pong );
  Pong( const ix::WebSocketMessagePtr& pong, std::shared_ptr<ConnectionState>& connectionState );
};

class Fragment : public IXMessage
{
public:
  explicit Fragment( const ix::WebSocketMessagePtr& fragment );
  Fragment( const ix::WebSocketMessagePtr& fragment, std::shared_ptr<ConnectionState>& connectionState
  );
};

}  // namespace yaodaq
#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.

```
#ifndef YAODAQ_KEY_HPP
#define YAODAQ_KEY_HPP

#include "yaodaq/Classification.hpp"

#include <cstdint>

namespace yaodaq
{

class Key
{
private:
  std::int_least32_t m_Key{ 0 };

public:
  Key() = default;
  explicit Key( const Domain& domain, const Class& c_lass, const Family& family );
  [[nodiscard]] std::int_least8_t  getDomain() const;
  [[nodiscard]] std::int_least8_t  getClass() const;
  [[nodiscard]] std::int_least16_t getFamily() const;
  [[nodiscard]] std::int_least32_t getKey() const;
};

}  // namespace yaodaq

#endif  // YAODAQ_KEY_HPP
```

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.

```
#ifndef YAODAQ_LOGGERHANDLER
#define YAODAQ_LOGGERHANDLER

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

namespace spdlog
{
using sink_ptr = std::shared_ptr<spdlog::sinks::sink>;
}

namespace yaodaq
{

class LoggerHandler
{
public:
  enum class Verbosity
  {
    Off,
    Trace,
    Debug,
    Info,
    Warn,
    Error,
    Critical
  };
  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();

private:
  std::shared_ptr<spdlog::logger> m_Logger{ nullptr };
  std::vector<spdlog::sink_ptr>   m_Sinks;
  std::string                     m_Name{ "Unknown" };
  Verbosity                       m_Verbosity{ Verbosity::Trace };
  void                            init();
};

}  // namespace yaodaq

#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.

```
#ifndef YAODAQ_LOOPER
#define YAODAQ_LOOPER

#include "yaodaq/Interrupt.hpp"

namespace yaodaq
{
```

```

enum class Signal;

class Looper
{
public:
  Looper();
  Signal     loop();
  Signal     getSignal();
  static int getInstance();
  void       supressInstance();
  ~Looper();

private:
  static int       m_instance;
  bool             m_hasBeenAdded{ false };
  bool             m_hasBeenSupressed{ false };
  static Interrupt m_Interrupt;
};

}  // namespace yaodaq

#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
- class yaodaq::MessageException

Namespaces

- namespace yaodaq

9.22 Message.hpp

Go to the documentation of this file.

```
#ifndef YAODAQ_MESSAGE
#define YAODAQ_MESSAGE

#include "nlohmann/json.hpp"
#include "yaodaq/MessageType.hpp"

#include <string>

namespace yaodaq
{

class Identifier;
class Exception;

class Message
{
public:
  Message();
  explicit Message( const nlohmann::json& content, const MessageType& messageType =
 MessageType::Unknown );
  explicit Message( const std::string& content, const MessageType& messageType = MessageType::Unknown
 );
  explicit 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;
  nlohmann::json 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:
  explicit Message( const MessageType& messageType );
  void           setContent( const nlohmann::json& content );
  void           setContent( const std::string& content );
  void           setContent( const char* content );
  nlohmann::json m_JSON;
};

class MessageException : public Message
{
public:
  explicit MessageException( const Exception& content );
  std::int_least32_t getCode();
  std::string        getDescription();
  std::int_least32_t getLine();
  std::int_least32_t getColumn();
  std::string        getFileName();
  std::string        getFunctionName();
};

}  // namespace yaodaq

#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 = -6 , yaodaq::Close , yaodaq::Error , yaodaq::Ping ,
  yaodaq::Pong , yaodaq::Fragment , yaodaq::Unknown = 0 , yaodaq::Exception }

Functions

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

9.24 MessageType.hpp

Go to the documentation of this file.

```
#ifndef YAODAQ_MESSAGETYPE
#define YAODAQ_MESSAGETYPE

#include "yaodaq/Interrupt.hpp"

#include <cstdint>
#include <iosfwd>

namespace yaodaq
{

enum class MessageType : std::int_least16_t
{
  // IXWebSocket MessageType (Message is not set here)
  Open = -6,
  Close,
  Error,
  Ping,
  Pong,
  Fragment,
  // Unknown should not be used !
  Unknown = 0,
  Exception,
};

inline std::ostream& operator«( std::ostream& os, const MessageType& messageTypes ) { return os «
 static_cast<std::int_least8_t>( messageTypes ); }

}  // namespace yaodaq

#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.

```
#ifndef YAODAQ_SEVERITY
#define YAODAQ_SEVERITY

#include <cstdint>

namespace yaodaq
{

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

}  // namespace yaodaq

#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.

```
#ifndef YAODAQ_SIGNAL
#define YAODAQ_SIGNAL

#include "yaodaq/Severity.hpp"

#include <cstdint>

namespace yaodaq
{

enum class Signal
{
  NO   = 0,  // No Signal.
  // Critical
  ABRT = static_cast<int>( Severity::Critical ) + 1,  // (Signal Abort) Abnormal termination, such as
 is initiated by the abort function.
  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).
  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.
  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.
  // Warning
  INT  = static_cast<int>( Severity::Warning ) + 1,  // (Signal Interrupt) Interactive attention
 signal. Generally generated by the application user.
  TERM = static_cast<int>( Severity::Warning ) + 2,  // (Signal Terminate) Termination request sent to
 program.
};

}  // namespace yaodaq

#endif  // YAODAQ_CLASS_HPP
```

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.

```
#ifndef YAODAQ_STATUSCODE
#define YAODAQ_STATUSCODE

#include <cstdint>

namespace yaodaq
{

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

}  // namespace yaodaq

#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.

```
#ifndef YAODAQ_VERSION_HPP
#define YAODAQ_VERSION_HPP

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

namespace yaodaq
{

class Version : public semver::version
{
public:
  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 ) {}
  explicit constexpr Version( const std::string_view& str ) : semver::version( str ) {}
  constexpr Version() = default;
  std::uint8_t getMajor();
  std::uint8_t getMinor();
  std::uint8_t getPatch();
  std::string  getPreRelease();
  std::uint8_t getPreReleaseNumber();
};

}  // namespace yaodaq

#endif  // YAODAQ_VERSION_HPP
```

9.33 yaodaq/WebsocketClient.hpp File Reference

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

```
#ifndef YAODAQ_WEBSOCKETCLIENT
#define YAODAQ_WEBSOCKETCLIENT

#include "yaodaq/Identifier.hpp"
#include "yaodaq/Interrupt.hpp"
#include "yaodaq/LoggerHandler.hpp"
#include "yaodaq/Looper.hpp"

#include <ixwebsocket/IXWebSocket.h>
#include <memory>
#include <spdlog/spdlog.h>
#include <string>

namespace yaodaq
{

class Message;
class Open;
class Close;
class Error;
class Ping;
class Pong;
class Fragment;

class WebsocketClient : public ix::WebSocket
{
public:
  explicit WebsocketClient( const std::string& name, const std::string& type = "YAODAQWebsocketClient"
 );
  virtual ~WebsocketClient();
  void                            start();
  void                            stop();
  void                            loop();
  std::shared_ptr<spdlog::logger> logger() { return m_Logger.logger(); }

  virtual void onMessage( Message& message );
  virtual void onOpen( Open& open );
  virtual void onClose( Close& close );
  virtual void onError( Error& error );
  virtual void onPing( Ping& ping );
  virtual void onPong( Pong& pong );
  virtual void onFragment( Fragment& fragment );

private:
  void          onRaisingSignal();
  Identifier    m_Identifier;
  LoggerHandler m_Logger;
  Looper        m_Looper;
};

}  // namespace yaodaq

#endif
```

9.35 yaodaq/WebsocketServer.hpp File Reference

```
#include "yaodaq/Identifier.hpp"
#include "yaodaq/Interrupt.hpp"
#include "yaodaq/LoggerHandler.hpp"
#include "yaodaq/Looper.hpp"
#include <ixwebsocket/IXWebSocketServer.h>
#include <map>
#include <memory>
#include <mutex>
#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.

```
#ifndef YAODAQ_WEBSOCKETSERVER
#define YAODAQ_WEBSOCKETSERVER

#include "yaodaq/Identifier.hpp"
#include "yaodaq/Interrupt.hpp"
#include "yaodaq/LoggerHandler.hpp"
#include "yaodaq/Looper.hpp"

#include <ixwebsocket/IXWebSocketServer.h>
#include <map>
#include <memory>
#include <mutex>
#include <spdlog/spdlog.h>
#include <string>

namespace yaodaq
{

class Message;
class Open;
class Close;
class Error;
class Ping;
class Pong;
class Fragment;

class WebsocketServer : public ix::WebSocketServer
{
public:
  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,
                            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" );
  virtual ~WebsocketServer();
  void loop();
  void start();
  void stop( bool useless = true );
  void listen();

  virtual void onMessage( Message& message );
  virtual void onOpen( Open& open );
  virtual void onClose( Close& close );
  virtual void onError( Error& error );
  virtual void onPing( Ping& ping );
  virtual void onPong( Pong& pong );
  virtual void onFragment( Fragment& fragment );

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

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

  void sendToLoggers( Message& message );
  void sendToLoggers( const Message& message );
  void sendToLoggers( Message& message, ix::WebSocket& webSocket );
  void sendToLoggers( const Message& message, ix::WebSocket& webSocket );

private:
  void                                 addClient( const Identifier&, ix::WebSocket& );
  void                                 removeClient( ix::WebSocket& );
  void                                 onRaisingSignal();
  bool                                 m_isListening{ false };
  Identifier                           m_Identifier;
  LoggerHandler                        m_Logger;
  Interrupt                            m_Interrupt;
  Looper                               m_Looper;
  bool                                 m_isStopped{ false };
  bool                                 m_isStarted{ false };
  std::map<Identifier, ix::WebSocket&> m_Clients;
  std::mutex                           m_Mutex;
};

}  // namespace yaodaq

```

```
#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.

```

#include "yaodaq/ConnectionState.hpp"

#include "yaodaq/Identifier.hpp"

namespace yaodaq
{

std::list<std::pair<std::string, std::string» ConnectionState::m_Ids{};

ConnectionState::ConnectionState() : ix::ConnectionState() {}

ConnectionState::~ConnectionState()
{
  std::lock_guard<std::mutex> guard( m_Mutex );
  m_Ids.remove( m_Pair );
}

void ConnectionState::computeId( const std::string& host, const Identifier& id )
{
  std::lock_guard<std::mutex> guard( m_Mutex );
  m_Pair = std::pair<std::string, std::string>( host, id.getName() );

  if( id.empty() ) { _id = std::to_string( _globalId++ ); }
  else
  {
    std::list<std::pair<std::string, std::string»::iterator found = std::find( m_Ids.begin(),
 m_Ids.end(), m_Pair );
    if( found == m_Ids.end() )
    {
      _id = id.getName();
      m_Ids.push_back( m_Pair );
    }
    else
    {
      setTerminated();
    }
  }
}

}  // 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.

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

namespace yaodaq
{

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" };

fmt::text_style Exception::m_Style = { fg( fmt::color::crimson ) | fmt::emphasis::bold };

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(); }

const char* Exception::what() const noexcept { return m_Message.c_str(); }

const char* Exception::description() const noexcept { return m_Description.c_str(); }

std::int_least32_t Exception::code() const noexcept { return m_Code; }

void Exception::constructMessage()
{
  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() ) );
}

}  // 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.

```
#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>

namespace yaodaq
{

bool Identifier::empty() const
{
  if( get() == Identifier().get() ) return true;
  else
    return false;
}

Identifier::Identifier( const std::string& type, const std::string& name ) : m_Type( type ), m_Name(
  name ) {}

void Identifier::generateKey( const Domain& domain, const Class& c_lass, const Family& family ) {
 m_Key = Key( domain, c_lass, family ); }

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

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

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

std::string Identifier::getType() const { return m_Type; }

std::string Identifier::getName() const { return m_Name; }

Key Identifier::getKey() const { return m_Key; }

std::string Identifier::get() const { return fmt::format( "{0}/{1}/{2}/{3}/{4}", getDomain(),
 getClass(), getFamily(), getType(), getName() ); }

Identifier Identifier::parse( const std::string& id )
{
  std::vector<std::string> result;
  std::string              tmp        = id;
  std::string              separator  = "/";
  std::size_t              second_pos = tmp.find( separator );
  while( second_pos != std::string::npos )
  {
    if( 0 != second_pos )
    {
      std::string word = tmp.substr( 0, second_pos - 0 );
      result.push_back( word );
    }
    else
      result.push_back( "" );
    tmp        = tmp.substr( second_pos + separator.length() );
    second_pos = tmp.find( separator );
    if( second_pos == std::string::npos ) result.push_back( tmp );
  }
  if( result.size() == 5 )
  {
    Identifier identifier( result[3], result[4] );
    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()
 );
    return identifier;
  }
  else
  {
    throw Exception( StatusCode::WRONG_NUMBER_PARAMETERS, "Number of parameters in key should be 5
 (Domain/Class/Family/Type/Name) !" );
  }
}

bool Identifier::operator<( const Identifier& identifier ) const { return this->get() <
 identifier.get(); }

}  // 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.

```

#include "yaodaq/Interrupt.hpp"

#include "yaodaq/Signal.hpp"

#include <atomic>
#include <csignal>
#include <mutex>
#include <thread>

namespace yaodaq
{

volatile std::atomic<Signal> Interrupt::m_Signal = Signal::NO;

Interrupt::Interrupt() { init(); }

void Interrupt::restore()
{
  std::signal( SIGTERM, SIG_DFL );
  std::signal( SIGSEGV, SIG_DFL );
  std::signal( SIGINT, SIG_DFL );
  std::signal( SIGILL, SIG_DFL );
  std::signal( SIGABRT, SIG_DFL );
  std::signal( SIGFPE, SIG_DFL );
}

void Interrupt::init()
{
  setSignal( Signal::TERM );
  setSignal( Signal::TERM );
  setSignal( Signal::SEGV );
  setSignal( Signal::INT );
  setSignal( Signal::ILL );
  setSignal( Signal::ABRT );
  setSignal( Signal::FPE );
}

Interrupt::~Interrupt() { restore(); }

Signal Interrupt::getSignal()
{
  if( m_Signal.load() != Signal::NO )
  {
    std::lock_guard<std::mutex> guard( m_mutex );
    init();
  }
  return m_Signal.load();
}

void Interrupt::setSignal( const Signal& signal )
{
  switch( signal )
  {
    case Signal::ABRT: std::signal( SIGABRT, []( int ) -> void { m_Signal.store( Signal::ABRT ); } );
 break;
    case Signal::FPE: std::signal( SIGFPE, []( int ) -> void { m_Signal.store( Signal::FPE ); } );
 break;
    case Signal::ILL: std::signal( SIGILL, []( int ) -> void { m_Signal.store( Signal::ILL ); } );
 break;
    case Signal::SEGV: std::signal( SIGSEGV, []( int ) -> void { m_Signal.store( Signal::SEGV ); } );
 break;
    case Signal::INT: std::signal( SIGINT, []( int ) -> void { m_Signal.store( Signal::INT ); } );
 break;
    case Signal::TERM: std::signal( SIGTERM, []( int ) -> void { m_Signal.store( Signal::TERM ); } );
 break;
    default: break;
  }
}

}  // 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.

```

#include "yaodaq/IXWebsocketMessage.hpp"

namespace yaodaq
{

IXMessage::IXMessage( const MessageType& messageType ) : Message( messageType ) {}

IXMessage::IXMessage( const ix::WebSocketMessagePtr& msg ) : Message()
{
  // FIXME
  nlohmann::json json = nlohmann::json::parse( msg->str, nullptr, false );
  if( json.is_discarded() ) { m_JSON["content"] = static_cast<std::string>( msg->str ); }
  else
    m_JSON = json;
  std::cout « m_JSON.dump() « std::endl;
}

void IXMessage::setConnectionStateInfos( std::shared_ptr<ConnectionState>& connectionState )
{
  nlohmann::json j = getContent();
  j["id"]          = connectionState->getId();
  j["remote_ip"]   = connectionState->getRemoteIp();
  j["remote_port"] = connectionState->getRemotePort();
  setContent( j );
}

// Open
Open::Open( const ix::WebSocketOpenInfo& openInfo ) : IXMessage( MessageType::Open )
{
  nlohmann::json j = getContent();
  j["uri"]         = openInfo.uri;
  j["headers"]     = openInfo.headers;
  j["protocol"]    = openInfo.protocol;
  setContent( j );
}

Open::Open( const ix::WebSocketOpenInfo& openInfo, std::shared_ptr<ConnectionState>& connectionState )
 : Open( openInfo ) { setConnectionStateInfos( connectionState ); }

std::string Open::getURI() const { return get()["content"]["uri"].get<std::string>(); }

std::map<std::string, std::string> Open::getHeaders() const
{
  std::map<std::string, std::string> ret = get()["content"]["headers"].get<std::map<std::string,
 std::string»();
  return ret;
}

std::string Open::getProtocol() const { return get()["content"]["protocol"].get<std::string>(); }

// Close
Close::Close( const ix::WebSocketCloseInfo& closeInfo ) : IXMessage( MessageType::Close )
{
  nlohmann::json j;
  j["code"]   = closeInfo.code;
  j["reason"] = closeInfo.reason;
  j["remote"] = closeInfo.remote;
  setContent( j );
}

Close::Close( const ix::WebSocketCloseInfo& closeInfo, std::shared_ptr<ConnectionState>&
 connectionState ) : Close( closeInfo ) { setConnectionStateInfos( connectionState ); }

std::uint16_t Close::getCode() const { return get()["content"]["code"].get<std::uint16_t>(); }
std::string   Close::getReason() const { return get()["content"]["reason"].get<std::string>(); }
bool          Close::getRemote() const { return get()["content"]["remote"].get<bool>(); }

// Error
Error::Error( const ix::WebSocketErrorInfo& errorInfo ) : IXMessage( MessageType::Error )
{
  nlohmann::json j;
  j["retries"]               = errorInfo.retries;
  j["wait_time"]             = errorInfo.wait_time;
  j["http_status"]           = errorInfo.http_status;
  j["reason"]                = errorInfo.reason;
  j["decompression_error"] = errorInfo.decompressionError;
  setContent( j );
}

Error::Error( const ix::WebSocketErrorInfo& errorInfo, std::shared_ptr<ConnectionState>&
 connectionState ) : Error( errorInfo ) { setConnectionStateInfos( connectionState ); }

std::uint16_t Error::getRetries() const { return get()["content"]["retries"].get<std::uint16_t>(); }

double Error::getWaitTime() const { return get()["content"]["wait_time"].get<double>(); }

int Error::getHttpStatus() const { return get()["content"]["http_status"].get<int>(); }

std::string Error::getReason() const { return get()["content"]["reason"].get<std::string>(); }

bool Error::getDecompressionError() const { return
 get()["content"]["decompression_error"].get<bool>(); }

// Ping
Ping::Ping( const ix::WebSocketMessagePtr& ping ) : IXMessage( MessageType::Ping ) {}

Ping::Ping( const ix::WebSocketMessagePtr& ping, std::shared_ptr<ConnectionState>& connectionState ) :
 Ping( ping ) { setConnectionStateInfos( connectionState ); }

// Pong
Pong::Pong( const ix::WebSocketMessagePtr& pong ) : IXMessage( MessageType::Pong ) {}

Pong::Pong( const ix::WebSocketMessagePtr& pong, std::shared_ptr<ConnectionState>& connectionState ) :
 Pong( pong ) { setConnectionStateInfos( connectionState ); }

// Fragment
Fragment::Fragment( const ix::WebSocketMessagePtr& fragment ) : IXMessage( MessageType::Fragment ) {}

Fragment::Fragment( const ix::WebSocketMessagePtr& fragment, std::shared_ptr<ConnectionState>&
 connectionState ) : Fragment( fragment ) { setConnectionStateInfos( connectionState ); }

}  // 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.

```

#include "yaodaq/Key.hpp"

#include <cstdint>

namespace yaodaq
{
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 ); }

std::int_least8_t Key::getDomain() const { return ( m_Key » 24 ) & 0xFF; }

std::int_least8_t Key::getClass() const { return ( m_Key » 16 ) & 0xFF; }

std::int_least16_t Key::getFamily() const { return (m_Key)&0xFFFF; }

std::int_least32_t Key::getKey() const { return m_Key; }

}  // 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.

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

#include "spdlog/spdlog.h"

namespace yaodaq
{

LoggerHandler::LoggerHandler() { init(); }

void LoggerHandler::setName( const std::string& name )
{
  m_Name = name;
  init();
}

LoggerHandler::~LoggerHandler() {}

void LoggerHandler::setVerbosity( const Verbosity& verbosity )
{
  m_Verbosity = verbosity;
  init();
}

void LoggerHandler::init()
{
  m_Logger = std::make_shared<spdlog::logger>( m_Name, std::begin( m_Sinks ), std::end( m_Sinks ) );
  switch( m_Verbosity )
  {
    case Verbosity::Off: m_Logger->set_level( spdlog::level::off ); break;
    case Verbosity::Trace: m_Logger->set_level( spdlog::level::trace ); break;
    case Verbosity::Debug: m_Logger->set_level( spdlog::level::debug ); break;
    case Verbosity::Info: m_Logger->set_level( spdlog::level::info ); break;
    case Verbosity::Warn: m_Logger->set_level( spdlog::level::warn ); break;
    case Verbosity::Error: m_Logger->set_level( spdlog::level::err ); break;
    case Verbosity::Critical: m_Logger->set_level( spdlog::level::critical ); break;
  }
}

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

void LoggerHandler::addSink( const spdlog::sink_ptr& sink )
{
  m_Sinks.push_back( sink );
  init();
}

void LoggerHandler::clearSinks()
{
  m_Sinks.clear();
  init();
}

}  // 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.

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

#include <chrono>
#include <thread>

namespace yaodaq
{

int Looper::m_instance{ 0 };

Interrupt Looper::m_Interrupt{ Interrupt{} };

int Looper::getInstance() { return m_instance; }

void Looper::supressInstance()
{
  if( m_hasBeenSupressed == false )
  {
    m_hasBeenSupressed = true;
    m_instance--;
  }
}

Looper::Looper()
{
  if( m_hasBeenAdded == false )
  {
    m_hasBeenAdded = true;
    ++m_instance;
  }
}

Signal Looper::loop()
{
  static Signal signal{ yaodaq::Signal::NO };
  if( m_instance == 0 )
  {
    do {
      signal = m_Interrupt.getSignal();
      std::this_thread::sleep_for( std::chrono::microseconds( 1 ) );
    } while( signal == yaodaq::Signal::NO );
  }
  return signal;
}

Signal Looper::getSignal() { return m_Interrupt.getSignal(); }

Looper::~Looper()
{
  if( m_hasBeenAdded == true && m_hasBeenSupressed == false )
  {
    m_hasBeenSupressed = true;
    --m_instance;
  }
}

}  // 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/Exception.hpp"
#include "yaodaq/Identifier.hpp"
#include <chrono>
#include <ctime>
#include <ixwebsocket/IXUuid.h>
#include <string>
#include <ixwebsocket/IXWebSocketVersion.h>
#include <yaodaq/YaodaqVersion.hpp>
```

Namespaces

- namespace yaodaq

9.54 Message.cpp

Go to the documentation of this file.

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

#include "fmt/chrono.h"
#include "magic_enum.hpp"
#include "yaodaq/Classification.hpp"
#include "yaodaq/Exception.hpp"
#include "yaodaq/Identifier.hpp"

#include <chrono>
#include <ctime>
#include <ixwebsocket/IXUuid.h>
#include <string>

// Versions numbers
#include <ixwebsocket/IXWebSocketVersion.h>
#include <yaodaq/YaodaqVersion.hpp>

namespace yaodaq
{

Message::Message()
{
  m_JSON["from"];
  m_JSON["to"];
  m_JSON["type"] = magic_enum::enum_name( MessageType::Unknown );
  m_JSON["uuid"] = ix::uuid4();
  m_JSON["content"];
  m_JSON["timestamp"]                        = fmt::format( "{:%F %T %z}", fmt::gmtime(
 std::chrono::system_clock::to_time_t( std::chrono::system_clock::now() ) ) );
  m_JSON["meta"]["compiler"]                 = nlohmann::json::meta()["compiler"];
  m_JSON["meta"]["platform"]                 = nlohmann::json::meta()["platform"];
  m_JSON["meta"]["versions"]["json"]         = nlohmann::json::meta()["version"]["string"];
  m_JSON["meta"]["versions"]["yaodaq"]       = yaodaq_version.to_string();
  m_JSON["meta"]["versions"]["ixwebsocket"] = std::string( IX_WEBSOCKET_VERSION );
}

void Message::setContent( const nlohmann::json& content ) { m_JSON["content"] =
 static_cast<nlohmann::json>( content ); }

void Message::setContent( const std::string& content )
{
  m_JSON["content"] = nlohmann::json::parse( content, nullptr, false );
  if( m_JSON["content"].is_discarded() ) { m_JSON["content"] = static_cast<std::string>( content ); }
}

void Message::setContent( const char* content )
{
  m_JSON["content"] = nlohmann::json::parse( content, nullptr, false );
  if( m_JSON["content"].is_discarded() ) { m_JSON["content"] = static_cast<std::string>( content ); }
}

Message::Message( const nlohmann::json& content, const MessageType& messageType ) : Message(
 messageType ) { setContent( content ); }

Message::Message( const std::string& content, const MessageType& messageType ) : Message( messageType
 ) { setContent( content ); }

Message::Message( const char* content, const MessageType& messageType ) : Message( messageType ) {
 setContent( content ); }

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 ); }

nlohmann::json Message::get() const { return m_JSON; }

std::string Message::getTypeName() const { return m_JSON["type"].get<std::string>(); }

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

nlohmann::json Message::getContent() const { return m_JSON["content"]; }

std::string Message::getTimestamp() const { return m_JSON["timestamp"].get<std::string>(); }

std::time_t Message::getTime() const
{
  std::tm tm;
  memset( &tm, 0, sizeof( tm ) );
  std::istringstream ss( getTimestamp() );
  ss » std::get_time( &tm, "%Y-%m-%d %H:%M:%S %z" );
  return mktime( &tm );
}

void Message::setFrom( const Identifier& identifier )
{
  m_JSON["from"]["name"]   = identifier.getName();
  m_JSON["from"]["type"]   = identifier.getType();
  m_JSON["from"]["family"] = identifier.getFamily();
  m_JSON["from"]["class"]  = identifier.getClass();
  m_JSON["from"]["domain"] = identifier.getDomain();
}

Identifier Message::getIdentifier() const
{
  if( m_JSON["from"].is_null() ) return {};
  else
  {
    Identifier id( m_JSON["from"]["type"].get<std::string>(), m_JSON["from"]["name"].get<std::string>() );
    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(),
                    magic_enum::enum_cast<Family>( m_JSON["from"]["family"].get<std::string>() ).value() );
    return id;
  }
}

Message::Message( const MessageType& messageType ) : Message() { m_JSON["type"] = magic_enum::enum_name( messageType ); }

// MessageException
MessageException::MessageException( const Exception& exception ) : Message( MessageType::Exception )
{
  nlohmann::json j;
  j["code"]          = exception.code();
  j["description"]   = exception.description();
  j["line"]          = exception.line();
  j["column"]        = exception.column();
  j["file_name"]     = exception.file_name();
  j["function_name"] = exception.function_name();
  setContent( j );
}

std::int_least32_t MessageException::getCode() { return get()["content"]["code"].get<std::int_least32_t>(); }

std::string MessageException::getDescription() { return get()["content"]["description"].get<std::string>(); }

std::int_least32_t MessageException::getLine() { return get()["content"]["line"].get<std::int_least32_t>(); }

std::int_least32_t MessageException::getColumn() { return get()["content"]["column"].get<std::int_least32_t>(); }

std::string MessageException::getFileName() { return get()["content"]["file_name"].get<std::string>(); }

std::string MessageException::getFunctionName() { return get()["content"]["function_name"].get<std::string>(); }

}  // 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.

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

#include <magic_enum.hpp>

namespace yaodaq
{

std::uint8_t Version::getMajor() { return major; }

std::uint8_t Version::getMinor() { return minor; }

std::uint8_t Version::getPatch() { return patch; }

std::string Version::getPreRelease() { return std::string( magic_enum::enum_name( prerelease_type ) );
 }

std::uint8_t Version::getPreReleaseNumber() { return prerelease_number; }

const static Version yaodaq_version;

}  // 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.

```
#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>

namespace yaodaq
{

WebsocketClient::WebsocketClient( const std::string& name, const std::string& type ) : m_Identifier(
 type, name )
{
  ix::initNetSystem();

  m_Identifier.generateKey( Domain::Application, Class::Client, Family::WebSocketClient );
  m_Logger.setName( m_Identifier.get() );
  m_Logger.addSink( std::make_shared<spdlog::sinks::stdout_color_sink_mt>() );

  ix::WebSocketHttpHeaders header{ { "id", m_Identifier.get() } };
  setExtraHeaders( header );

```

```cpp
  setOnMessageCallback(
    [this]( const ix::WebSocketMessagePtr& msg )
    {
      if( msg->type == ix::WebSocketMessageType::Message ) { logger()->error( "{}", msg->str ); }
      else if( msg->type == ix::WebSocketMessageType::Error )
      {
        std::cout « "Connection error: " « msg->errorInfo.reason « std::endl;
      }
      else if( msg->type == ix::WebSocketMessageType::Close )
      {
        disableAutomaticReconnection();
        if( msg->closeInfo.code == magic_enum::enum_integer( StatusCode::CLIENT_WITH_SAME_NAME_ALREADY_CONNECTED ) )
        {
          logger()->critical( fmt::format( fg( fmt::color::red ) | fmt::emphasis::bold, msg->closeInfo.reason ) );
          close();
          // throw Exception( StatusCode::CLIENT_WITH_SAME_NAME_ALREADY_CONNECTED, msg->closeInfo.reason );
        }
      }
    }

  );
}

void WebsocketClient::onMessage( Message& message ) {}

void WebsocketClient::onOpen( Open& open ) {}

void WebsocketClient::onClose( Close& close ) {}

void WebsocketClient::onError( Error& error ) {}

void WebsocketClient::onPing( Ping& ping ) {}

void WebsocketClient::onPong( Pong& pong ) {}

void WebsocketClient::onFragment( Fragment& fragment ) {}

WebsocketClient::~WebsocketClient()
{
  stop();
  ix::uninitNetSystem();
}

void WebsocketClient::start()
{
  if( getReadyState() == ix::ReadyState::Closed || getReadyState() == ix::ReadyState::Closing )
  {
    logger()->trace( "Client started. Connected to {}", getUrl() );
    ix::WebSocket::start();
  }
}

void WebsocketClient::stop()
{
  if( getReadyState() == ix::ReadyState::Open || getReadyState() == ix::ReadyState::Connecting )
  {
    logger()->trace( "Client stopped" );
    ix::WebSocket::stop();
    while( getReadyState() != ix::ReadyState::Closed ) { std::this_thread::sleep_for( std::chrono::microseconds( 1 ) ); }
  }
}

void WebsocketClient::loop()
{
  WebsocketClient::start();
  m_Looper.supressInstance();
  onRaisingSignal();
}

void WebsocketClient::onRaisingSignal()
{
  Signal signal = m_Looper.loop();
  if( m_Looper.getInstance() == 0 )
  {
    int value = magic_enum::enum_integer( signal );
    if( value >= magic_enum::enum_integer( yaodaq::Severity::Critical ) ) { logger()->critical( "Signal SIG{} raised !", magic_enum::enum_name( signal ) ); }
    else if( value >= magic_enum::enum_integer( yaodaq::Severity::Error ) )
    {
      logger()->error( "Signal SIG{} raised !", magic_enum::enum_name( signal ) );
    }
    else if( value >= magic_enum::enum_integer( yaodaq::Severity::Warning ) )
    {
      fmt::print( "\n" );
      logger()->warn( "Signal SIG{} raised !", magic_enum::enum_name( signal ) );
    }
    else if( value >= magic_enum::enum_integer( yaodaq::Severity::Info ) )
    {
      fmt::print( "\n" );
      logger()->info( "Signal SIG{} raised !", magic_enum::enum_name( signal ) );
    }
    else
    {
      fmt::print( "\n" );
      logger()->trace( "Signal SIG{} raised !", magic_enum::enum_name( signal ) );
    }
    if( magic_enum::enum_integer( signal ) >= magic_enum::enum_integer( Severity::Critical ) )
       std::exit( magic_enum::enum_integer( signal ) );
  }
}

}  // namespace yaodaq
```

9.59 yaodaq/WebsocketServer.cpp File Reference

```
#include "yaodaq/WebsocketServer.hpp"
#include "yaodaq/Classification.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.

```

#include "yaodaq/WebsocketServer.hpp"

#include "yaodaq/Classification.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>

namespace yaodaq
{

```

```
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 ) :
  ix::WebSocketServer( port, host, backlog, maxConnections, handshakeTimeoutSecs, addressFamily ), m_Identifier( type, name )
{
  ix::initNetSystem();

  m_Identifier.generateKey( Domain::Application, Class::Server, Family::WebSocketServer );
  m_Logger.setName( m_Identifier.get() );
  m_Logger.addSink( std::make_shared<spdlog::sinks::stdout_color_sink_mt>() );

  setConnectionStateFactory( []() { return std::make_shared<ConnectionState>(); } );

  setOnClientMessageCallback(
    [this]( std::shared_ptr<ix::ConnectionState> connectionState, ix::WebSocket& webSocket, const ix::WebSocketMessagePtr& msg )
    {
      // The ConnectionState object contains information about the connection
      std::shared_ptr<ConnectionState> connection = std::static_pointer_cast<ConnectionState>( connectionState );
      if( msg->type == ix::WebSocketMessageType::Message )
      {
        IXMessage ixmessage( msg );
        onMessage( ixmessage );
      }
      else if( msg->type == ix::WebSocketMessageType::Open )
      {
        // Check if a client with the same name is already connected;
        connection->computeId( getHost() + ":" + std::to_string( getPort() ), Identifier::parse( msg->openInfo.headers["id"] ) );
        if( connection->isTerminated() )
        {
          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() ) );
          webSocket.stop( magic_enum::enum_integer( StatusCode::CLIENT_WITH_SAME_NAME_ALREADY_CONNECTED ),
                          fmt::format( "One client with the name \"{}\" is already connected to ws{}://{}:{} !", Identifier::parse( msg->openInfo.headers["id"] ).getName(), "", getHost(), getPort() ) );
          std::this_thread::sleep_for( std::chrono::milliseconds( 100 ) );
          return;
        }
        addClient( Identifier::parse( msg->openInfo.headers["id"] ), webSocket );
        Open open( msg->openInfo, connection );
        sendToLoggers( open, webSocket );
        onOpen( open );
      }
      else if( msg->type == ix::WebSocketMessageType::Close )
      {
        Close close( msg->closeInfo, connection );
        sendToLoggers( close, webSocket );
        onClose( close );
        removeClient( webSocket );
      }
      else if( msg->type == ix::WebSocketMessageType::Error )
      {
        Error error( msg->errorInfo, connection );
        sendToLoggers( error, webSocket );
        onError( error );
      }
      else if( msg->type == ix::WebSocketMessageType::Ping )
      {
        Ping ping( msg, connection );
        sendToLoggers( ping, webSocket );
        onPing( ping );
      }
      else if( msg->type == ix::WebSocketMessageType::Pong )
      {
        Pong pong( msg, connection );
        sendToLoggers( pong, webSocket );
        onPong( pong );
      }
      else if( msg->type == ix::WebSocketMessageType::Fragment )
      {
        Fragment fragment( msg, connection );
        sendToLoggers( fragment, webSocket );
        onFragment( fragment );
      }
    } );
}

void WebsocketServer::addClient( const Identifier& identifier, ix::WebSocket& websocket )
{
  std::lock_guard<std::mutex> guard( m_Mutex );
  m_Clients.try_emplace( identifier, websocket );
```

```
}

void WebsocketServer::removeClient( ix::WebSocket& websocket )
{
  std::lock_guard<std::mutex> guard( m_Mutex );
  for( std::map<Identifier, ix::WebSocket&>::iterator it = m_Clients.begin(); it != m_Clients.end(); ++it )
  {
    if( &it->second == &websocket )
    {
      m_Clients.erase( it->first );
      break;
    }
  }
}

void WebsocketServer::sendToLoggers( Message& message, ix::WebSocket& webSocket )
{
  for( std::map<Identifier, ix::WebSocket&>::iterator it = m_Clients.begin(); it != m_Clients.end(); ++it )
  {
    if( magic_enum::enum_cast<Family>( it->first.getFamily() ).value() == Family::Logger && &webSocket != &it->second ) it->second.send( message.dump() );
  }
}

void WebsocketServer::sendToLoggers( Message& message )
{
  for( std::map<Identifier, ix::WebSocket&>::iterator it = m_Clients.begin(); it != m_Clients.end(); ++it )
  {
    if( magic_enum::enum_cast<Family>( it->first.getFamily() ).value() == Family::Logger ) it->second.send( message.dump() );
  }
}

void WebsocketServer::sendToLoggers( const Message& message, ix::WebSocket& webSocket )
{
  for( std::map<Identifier, ix::WebSocket&>::iterator it = m_Clients.begin(); it != m_Clients.end(); ++it )
  {
    if( magic_enum::enum_cast<Family>( it->first.getFamily() ).value() == Family::Logger && &webSocket != &it->second ) it->second.send( message.dump() );
  }
}

void WebsocketServer::sendToLoggers( const Message& message )
{
  for( std::map<Identifier, ix::WebSocket&>::iterator it = m_Clients.begin(); it != m_Clients.end(); ++it )
  {
    if( magic_enum::enum_cast<Family>( it->first.getFamily() ).value() == Family::Logger ) it->second.send( message.dump() );
  }
}

void WebsocketServer::onMessage( Message& message ) {}

void WebsocketServer::onOpen( Open& open ) {}

void WebsocketServer::onClose( Close& close ) {}

void WebsocketServer::onError( Error& error ) {}

void WebsocketServer::onPing( Ping& ping ) {}

void WebsocketServer::onPong( Pong& pong ) {}

void WebsocketServer::onFragment( Fragment& fragment ) {}

void WebsocketServer::listen()
{
  if( !m_isListening )
  {
    std::pair<bool, std::string> ret = ix::WebSocketServer::listen();
    if( ret.first )
    {
      m_isListening = ret.first;
      logger()->info( "Server listening on {0}:{1}", getHost(), getPort() );
    }
    else
      throw Exception( StatusCode::LISTEN_ERROR, ret.second );
  }
}

void WebsocketServer::start()
{
  if( !m_isStarted )
  {
    m_isStarted = true;
    logger()->trace( "Server started" );
    ix::WebSocketServer::start();
  }
}

void WebsocketServer::stop( bool useless )
{
  if( !m_isStopped )
  {
    m_isStopped = true;
    useless     = !useless;
    logger()->trace( "Server stopped" );
    ix::WebSocketServer::stop();
  }
}

void WebsocketServer::setVerbosity( const yaodaq::LoggerHandler::Verbosity& verbosity ) { m_Logger.setVerbosity( verbosity ); }

WebsocketServer::~WebsocketServer()
{
  stop();
  ix::uninitNetSystem();
}

void WebsocketServer::loop()
{
  listen();
  start();
  m_Looper.supressInstance();
  onRaisingSignal();
}

void WebsocketServer::onRaisingSignal()
{
  Signal signal = m_Looper.loop();
  if( m_Looper.getInstance() == 0 )
  {
    int value = magic_enum::enum_integer( signal );
    if( value >= magic_enum::enum_integer( yaodaq::Severity::Critical ) ) { logger()->critical( "Signal SIG{} raised !", magic_enum::enum_name( signal ) ); }
    else if( value >= magic_enum::enum_integer( yaodaq::Severity::Error ) )
    {
      logger()->error( "Signal SIG{} raised !", magic_enum::enum_name( signal ) );
    }
    else if( value >= magic_enum::enum_integer( yaodaq::Severity::Warning ) )
    {
      fmt::print( "\n" );
      logger()->warn( "Signal SIG{} raised !", magic_enum::enum_name( signal ) );
    }
    else if( value >= magic_enum::enum_integer( yaodaq::Severity::Info ) )
    {
      fmt::print( "\n" );
      logger()->info( "Signal SIG{} raised !", magic_enum::enum_name( signal ) );
    }
    else
    {
      fmt::print( "\n" );
      logger()->trace( "Signal SIG{} raised !", magic_enum::enum_name( signal ) );
    }
    if( magic_enum::enum_integer( signal ) >= magic_enum::enum_integer( Severity::Critical ) ) std::exit( magic_enum::enum_integer( signal ) );
  }
}

}  // namespace yaodaq
```