2015 Test beam Run Control

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1.1 Class Hierarchy

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Chapter 2

Data Structure Index

2.1 Data Structures

Here are the data structures with brief descriptions:

Chapter 3

Data Structure Documentation

3.1 Exception Class Reference

A simple exception handler.

`#include <Exception.h>`

Public Member Functions

- Exception (const char ∗from, std::string desc, ExceptionType type=Undefined, const int id=0)
- Exception (const char ∗from, const char ∗desc, ExceptionType type=Undefined, const int id=0)
- ∼Exception ()
- std::string From () const
- int ErrorNumber () const
- std::string Description () const
- ExceptionType Type () const
- std::string TypeString () const
- void Dump (std::ostream &os=std::cerr) const

3.1.1 Detailed Description

A simple exception handler.

Author

Laurent Forthomme `laurent.forthomme@cern.ch`

Date

24 Mar 2015

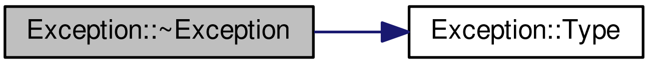
3.1.2 Constructor & Destructor Documentation

3.1.2.1 Exception::Exception (const char ∗ *from*, std::string *desc*, ExceptionType *type* = `Undefined`, const int *id* = `0`) `[inline]`

3.1.2.2 Exception::Exception (const char ∗ *from*, const char ∗ *desc*, ExceptionType *type* = `Undefined`, const int *id* = `0`) `[inline]`

3.1.2.3 Exception::∼Exception ( ) [inline]

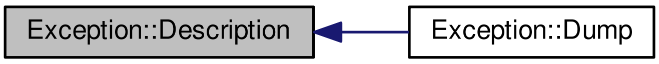
Here is the call graph for this function:



3.1.3 Member Function Documentation

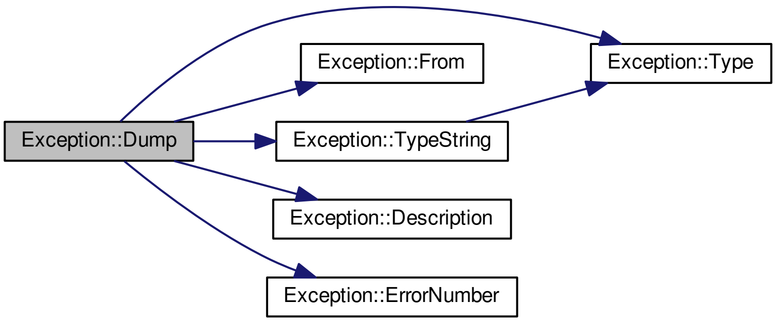
3.1.3.1 std::string Exception::Description ( ) const [inline]

Here is the caller graph for this function:



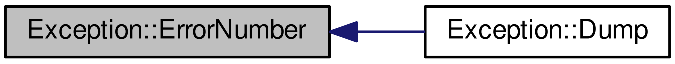
3.1.3.2 void Exception::Dump (std::ostream & *os* = std::cerr) const [inline]

Here is the call graph for this function:



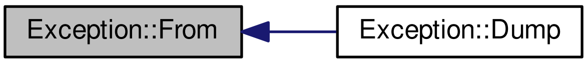
3.1.3.3 int Exception::ErrorNumber ( ) const [inline]

Here is the caller graph for this function:



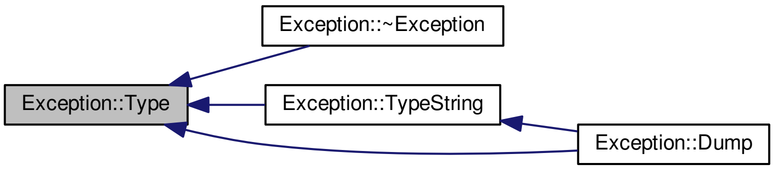
3.1.3.4 std::string Exception::From ( ) const [inline]

Here is the caller graph for this function:



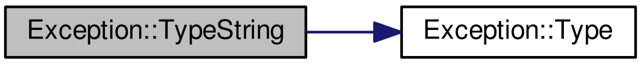
3.1.3.5 ExceptionType Exception::Type ( ) const [inline]

Here is the caller graph for this function:

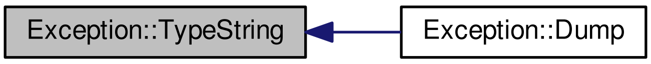


3.1.3.6 std::string Exception::TypeString ( ) const [inline]

Here is the call graph for this function:



Here is the caller graph for this function:



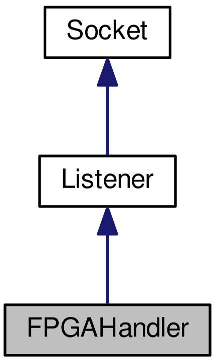
The documentation for this class was generated from the following file:

- include/Exception.h

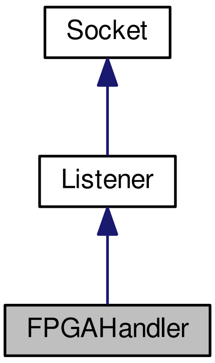
3.2 FPGAHandler Class Reference

```
#include <FPGAHandler.h>
```

Inheritance diagram for FPGAHandler:



Collaboration diagram for FPGAHandler:



Public Member Functions

- FPGAHandler (const char ∗dev)
- virtual ∼FPGAHandler ()

Additional Inherited Members

3.2.1 Constructor & Destructor Documentation

3.2.1.1 FPGAHandler::FPGAHandler (const char ∗ *dev*)

3.2.1.2 virtual FPGAHandler::∼FPGAHandler ( ) `[virtual]`

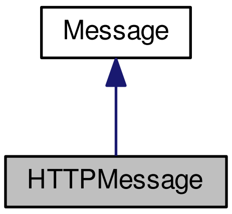
The documentation for this class was generated from the following file:

- include/FPGAHandler.h

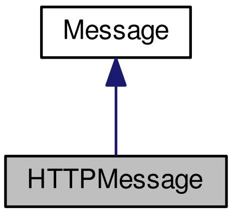
3.3 HTTPMessage Class Reference

```
#include <HTTPMessage.h>
```

Inheritance diagram for HTTPMessage:



Collaboration diagram for HTTPMessage:



Public Member Functions

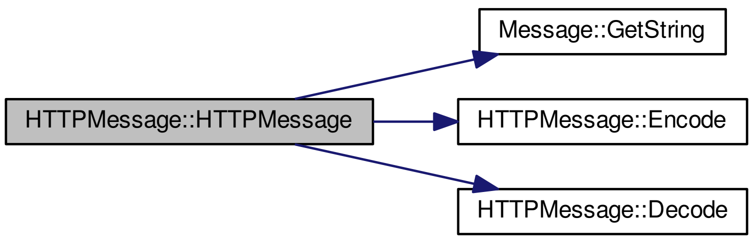
- HTTPMessage (WebSocket ∗ws, Message m, MessageAction a)
- HTTPMessage (WebSocket ∗ws, const char ∗msg, MessageAction a)
- void Decode ()
- void Encode ()
- MessageKey GetKey () const
- void Dump (std::ostream &os=std::cout) const

Additional Inherited Members

3.3.1 Constructor & Destructor Documentation

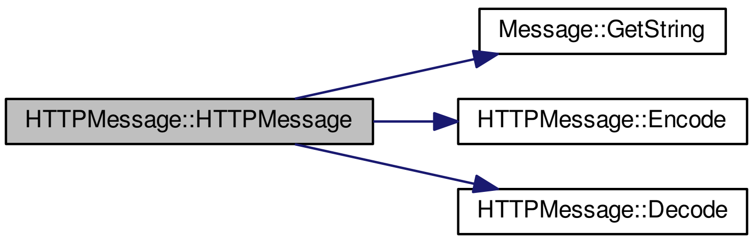
3.3.1.1 HTTPMessage::HTTPMessage (WebSocket ∗ *ws*, Message *m*, MessageAction *a*) [inline]

Here is the call graph for this function:



3.3.1.2 HTTPMessage::HTTPMessage (WebSocket ∗ *ws*, const char ∗ *msg*, MessageAction *a*) [inline]

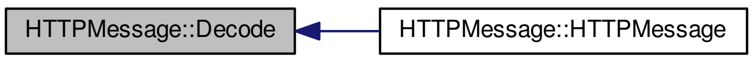
Here is the call graph for this function:



3.3.2 Member Function Documentation

3.3.2.1 void HTTPMessage::Decode ( ) [inline]

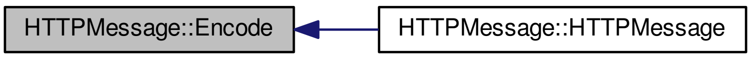
Here is the caller graph for this function:



3.3.2.2 void HTTPMessage::Dump (std::ostream & *os* = `std::cout`) const `[inline]`

3.3.2.3 void HTTPMessage::Encode ( ) `[inline]`

Here is the caller graph for this function:



3.3.2.4 MessageKey HTTPMessage::GetKey ( ) const `[inline]`

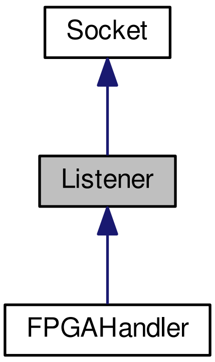
The documentation for this class was generated from the following file:

- include/HTTPMessage.h

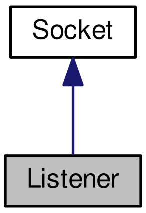
3.4 Listener Class Reference

`#include <Listener.h>`

Inheritance diagram for Listener:



Collaboration diagram for Listener:



Public Member Functions

- Listener ()
- Listener (int port)
- ∼Listener ()
- bool Connect ()
- void Disconnect ()
- void Send (const Message &m) const
- void Receive () const

Additional Inherited Members

3.4.1 Detailed Description

Listener/client object used by the server to send/receive commands from the messenger/broadcaster.

Author

Laurent Forthomme `laurent.forthomme@cern.ch`

Date

24 Mar 2015

3.4.2 Constructor & Destructor Documentation

3.4.2.1 Listener::Listener ( ) `[inline]`

3.4.2.2 Listener::Listener (int *port*)

3.4.2.3 Listener::∼Listener ( )

3.4.3 Member Function Documentation

3.4.3.1 bool Listener::Connect ( )

3.4.3.2 void Listener::Disconnect ( )

3.4.3.3 void Listener::Receive ( ) const

3.4.3.4 void Listener::Send (const Message & *m*) const

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

- include/Listener.h

3.5 ListenerInfo Struct Reference

```
#include <Messenger.h>
```

Data Fields

- std::string name
- int type

3.5.1 Field Documentation

3.5.1.1 std::string ListenerInfo::name

3.5.1.2 int ListenerInfo::type

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

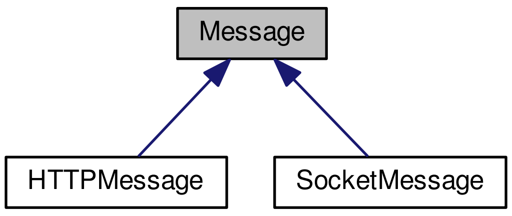
- include/Messenger.h

3.6 Message Class Reference

Base message type.

```
#include <Message.h>
```

Inheritance diagram for Message:



Public Member Functions

- Message ()

- Message (const char ∗msg)
- Message (std::string msg)
- ∼Message ()
- MessageKey GetKey () const
- std::string GetString () const
- bool IsFromWeb () const
- void Dump (std::ostream &os=std::cout) const

Protected Attributes

- std::string fString

3.6.1 Detailed Description

Base message type.

Author

Laurent Forthomme `laurent.forthomme@cern.ch`

Date

6 Apr 2015

3.6.2 Constructor & Destructor Documentation

3.6.2.1 Message::Message ( ) `[inline]`

3.6.2.2 Message::Message (const char ∗ *msg*) `[inline]`

3.6.2.3 Message::Message (std::string *msg*) `[inline]`

3.6.2.4 Message::∼Message ( ) `[inline]`

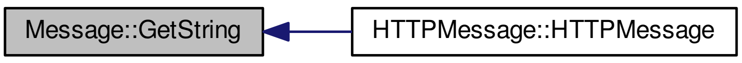
3.6.3 Member Function Documentation

3.6.3.1 void Message::Dump (std::ostream & *os* = `std::cout`) const `[inline]`

3.6.3.2 MessageKey Message::GetKey ( ) const `[inline]`

3.6.3.3 std::string Message::GetString ( ) const `[inline]`

Here is the caller graph for this function:



3.6.3.4 bool Message::IsFromWeb ( ) const `[inline]`

3.6.4 Field Documentation

3.6.4.1 std::string Message::fString `[protected]`

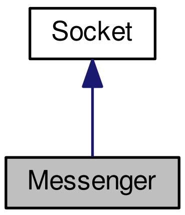
The documentation for this class was generated from the following file:

- include/Message.h

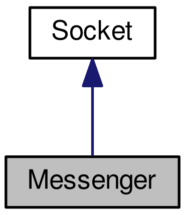
3.7 Messenger Class Reference

`#include <Messenger.h>`

Inheritance diagram for Messenger:



Collaboration diagram for Messenger:



Public Member Functions

- Messenger ()
- Messenger (int port)
- ∼Messenger ()
- bool Connect ()
- void Disconnect ()

- void DisconnectClient (int sid, MessageKey key, bool force=false)

    Disconnect a client.
- void Send (const Message &m, int sid) const

    Send any type of message to any client.
- MessageKey Receive ()

    Handle a message reception from a client.
- void ProcessMessage (SocketMessage m, int sid)

    Process a message received from the socket.
- void Broadcast (const Message &m) const

    Emit a message to all clients connected through the socket.

Additional Inherited Members

3.7.1 Detailed Description

Messenger/broadcaster object used by the server to send/receive commands from the clients/listeners.

Author

Laurent Forthomme `laurent.forthomme@cern.ch`

Date

23 Mar 2015

3.7.2 Constructor & Destructor Documentation

3.7.2.1 Messenger::Messenger ( )

3.7.2.2 Messenger::Messenger (int *port*)

3.7.2.3 Messenger::∼Messenger ( )

3.7.3 Member Function Documentation

3.7.3.1 void Messenger::Broadcast (const Message & *m*) const

Emit a message to all clients connected through the socket.

Parameters

`in`	*m*	Message to transmit

3.7.3.2 bool Messenger::Connect ( )

3.7.3.3 void Messenger::Disconnect ( )

3.7.3.4 void Messenger::DisconnectClient (int *sid*, MessageKey *key*, bool *force* = `false`)

Disconnect a client.

Ask to a client to disconnect from this socket

Parameters

in	*sid*	Unique identifier of the client to disconnect
in	*key*	Key to the message to transmit for disconnection
in	*force*	Do we need to force the client out of this socket ?

3.7.3.5 void Messenger::ProcessMessage (SocketMessage *m*, int *sid*)

Process a message received from the socket.

Parameters

in	*Unique*	identifier of the client sending the message

3.7.3.6 MessageKey Messenger::Receive ( )

Handle a message reception from a client.

Returns

The key to the message received if successfully parsed

3.7.3.7 void Messenger::Send (const Message & *m*, int *sid*) const `[inline]`

Send any type of message to any client.

Parameters

in	*m*	Message to transmit
in	*sid*	Unique identifier of the client on this socket

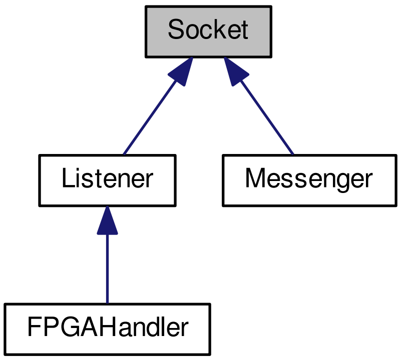
The documentation for this class was generated from the following file:

- include/Messenger.h

3.8 Socket Class Reference

```
#include <Socket.h>
```

Inheritance diagram for Socket:



Public Member Functions

- Socket ()
- Socket (int port)
- virtual ∼Socket ()
- void SetPort (int port)
- int GetPort () const

    Retrieve the port used for this socket.
- void AcceptConnections (Socket &socket)

    Accept connection from a client.
- void SelectConnections ()
- void SetSocketId (int sid)
- int GetSocketId () const
- bool IsWebSocket (int sid) const
- void DumpConnected () const

Protected Member Functions

- bool Start ()

    Start the socket.
- void Stop ()

    Terminates the socket and all attached communications.
- void Bind ()

    Bind a name to a socket.
- void PrepareConnection ()
- void Listen (int maxconn)

    Listen to incoming messages.
- void SendMessage (Message message, int id=-1) const

    Send a message on a socket.
- Message FetchMessage (int id=-1) const

    Receive a message from a socket.

Protected Attributes

- int fPort
- char fBuffer [MAX_WORD_LENGTH]
- SocketCollection fSocketsConnected
- fd_set fMaster

  Master file descriptor list.
- fd_set fReadFds

  Temp file descriptor list for select()

3.8.1 Detailed Description

General object providing all useful method to connect/bind/send/receive information through system sockets.

Author

Laurent Forthomme `laurent.forthomme@cern.ch`

Date

23 Mar 2015

3.8.2 Constructor & Destructor Documentation

3.8.2.1 Socket::Socket ( ) `[inline]`

3.8.2.2 Socket::Socket (int *port*)

3.8.2.3 virtual Socket::∼Socket ( ) `[virtual]`

3.8.3 Member Function Documentation

3.8.3.1 void Socket::AcceptConnections (Socket & *socket*)

Accept connection from a client.

Set the socket to accept connections any client transmitting through the socket

Parameters

`in,out`	*socket*	Master/client object to enable on the socket

3.8.3.2 void Socket::Bind ( ) `[protected]`

Bind a name to a socket.

Returns

Success of the operation

3.8.3.3 void Socket::DumpConnected ( ) const

3.8.3.4 Message Socket::FetchMessage (int *id* = `-1`) const `[protected]`

Receive a message from a socket.

Returns

Received message as a std::string

3.8.3.5 int Socket::GetPort ( ) const `[inline]`

Retrieve the port used for this socket.

3.8.3.6 int Socket::GetSocketId ( ) const `[inline]`

3.8.3.7 bool Socket::IsWebSocket (int *sid*) const `[inline]`

3.8.3.8 void Socket::Listen (int *maxconn*) `[protected]`

Listen to incoming messages.

Set the socket to listen to any message coming from outside

3.8.3.9 void Socket::PrepareConnection ( ) `[protected]`

3.8.3.10 void Socket::SelectConnections ( )

Register all open file descriptors to read their communication through the socket

3.8.3.11 void Socket::SendMessage (Message *message,* int *id* = `-1`) const `[protected]`

Send a message on a socket.

3.8.3.12 void Socket::SetPort (int *port*) `[inline]`

3.8.3.13 void Socket::SetSocketId (int *sid*) `[inline]`

3.8.3.14 bool Socket::Start ( ) `[protected]`

Start the socket.

Launch all mandatory operations to set the socket to be used

Returns

Success of the operation

3.8.3.15 void Socket::Stop ( ) `[protected]`

Terminates the socket and all attached communications.

3.8.4 Field Documentation

3.8.4.1 char Socket::fBuffer[MAX_WORD_LENGTH] `[protected]`

3.8.4.2 fd_set Socket::fMaster `[protected]`

Master file descriptor list.

3.8.4.3 int Socket::fPort [protected]

3.8.4.4 fd_set Socket::fReadFds [protected]

Temp file descriptor list for select()

3.8.4.5 SocketCollection Socket::fSocketsConnected [protected]

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

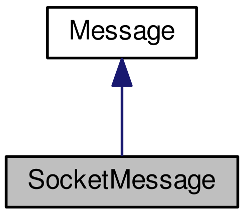
- include/Socket.h

3.9 SocketMessage Class Reference

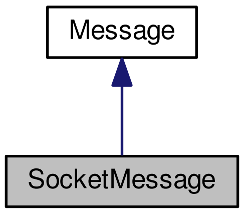
Socket-passed message type.

`#include <SocketMessage.h>`

Inheritance diagram for SocketMessage:



Collaboration diagram for SocketMessage:



Public Member Functions

- SocketMessage ()

- SocketMessage (Message msg)
- SocketMessage (const char ∗msg_s)
- SocketMessage (std::string msg_s)
- SocketMessage (MessageKey key)
- SocketMessage (MessageKey key, const char ∗value)
- SocketMessage (MessageKey key, std::string value)
- SocketMessage (MessageKey key, const int value)
- SocketMessage (MessageKey key, const float value)
- SocketMessage (MessageKey key, const double value)
- SocketMessage (MessageMap msg_m)
- ∼SocketMessage ()
- void SetKeyValue (MessageKey key, std::string value)

    Send a string-valued message.
- void SetKeyValue (MessageKey key, const char ∗value)
- void SetKeyValue (MessageKey key, int int_value)

    Send an integer-valued message.
- void SetKeyValue (MessageKey key, float float_value)

    Send an float-valued message.
- void SetKeyValue (MessageKey key, double double_value)

    Send an double-valued message.
- std::string GetString () const
- MessageKey GetKey () const
- std::string GetValue () const
- int GetIntValue () const
- VectorValue GetVectorValue () const
- void Dump (std::ostream &os=std::cout) const

Additional Inherited Members

3.9.1 Detailed Description

Socket-passed message type.

Author

Laurent Forthomme `laurent.forthomme@cern.ch`

Date

26 Mar 2015

3.9.2 Constructor & Destructor Documentation

3.9.2.1 SocketMessage::SocketMessage ( ) [inline]

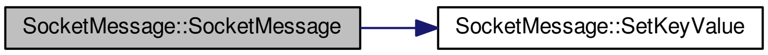
3.9.2.2 SocketMessage::SocketMessage (Message *msg*) [inline]

3.9.2.3 SocketMessage::SocketMessage (const char ∗ *msg_s*) [inline]

3.9.2.4 SocketMessage::SocketMessage (std::string *msg_s*) [inline]

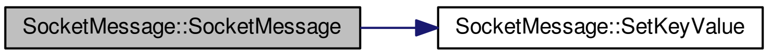
3.9.2.5 SocketMessage::SocketMessage (MessageKey *key*) [inline]

Here is the call graph for this function:



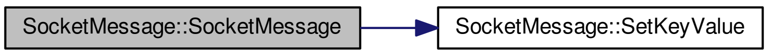
3.9.2.6 SocketMessage::SocketMessage (MessageKey *key*, const char ∗ *value*) [inline]

Here is the call graph for this function:



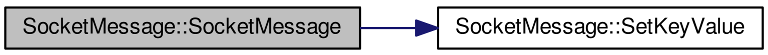
3.9.2.7 SocketMessage::SocketMessage (MessageKey *key*, std::string *value*) [inline]

Here is the call graph for this function:



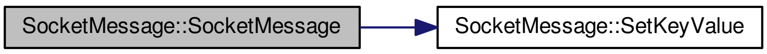
3.9.2.8 SocketMessage::SocketMessage (MessageKey *key*, const int *value*) [inline]

Here is the call graph for this function:



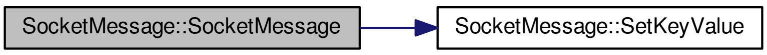
3.9.2.9 SocketMessage::SocketMessage (MessageKey *key*, const float *value*) `[inline]`

Here is the call graph for this function:



3.9.2.10 SocketMessage::SocketMessage (MessageKey *key*, const double *value*) `[inline]`

Here is the call graph for this function:



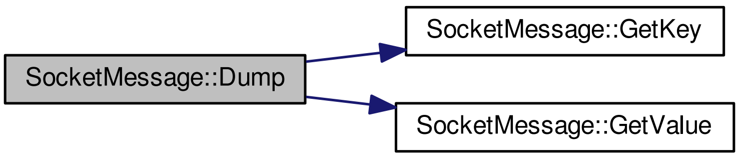
3.9.2.11 SocketMessage::SocketMessage (MessageMap *msg_m*) `[inline]`

3.9.2.12 SocketMessage::∼SocketMessage ( ) `[inline]`

3.9.3 Member Function Documentation

3.9.3.1 void SocketMessage::Dump (std::ostream & *os* = `std::cout`) const `[inline]`

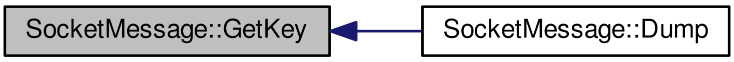
Here is the call graph for this function:



3.9.3.2 int SocketMessage::GetIntValue ( ) const `[inline]`

3.9.3.3 MessageKey SocketMessage::GetKey ( ) const [inline]

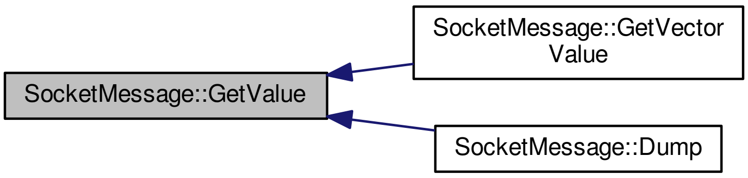
Here is the caller graph for this function:



3.9.3.4 std::string SocketMessage::GetString ( ) const [inline]

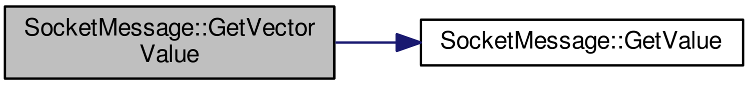
3.9.3.5 std::string SocketMessage::GetValue ( ) const [inline]

Here is the caller graph for this function:



3.9.3.6 VectorValue SocketMessage::GetVectorValue ( ) const [inline]

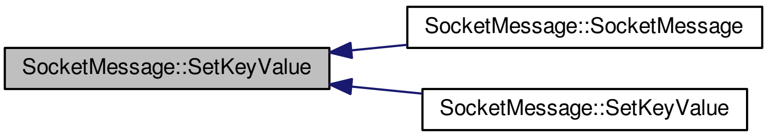
Here is the call graph for this function:



3.9.3.7 void SocketMessage::SetKeyValue (MessageKey *key*, std::string *value*) [inline]

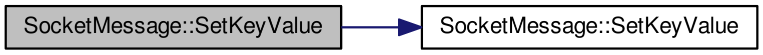
Send a string-valued message.

Here is the caller graph for this function:


SocketMessage::SetKeyValue
SocketMessage::SocketMessage
SocketMessage::SetKeyValue

3.9.3.8 void SocketMessage::SetKeyValue (MessageKey *key*, const char ∗ *value*) [inline]

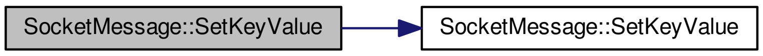
Here is the call graph for this function:



3.9.3.9 void SocketMessage::SetKeyValue (MessageKey *key*, int *int_value*) [inline]

Send an integer-valued message.

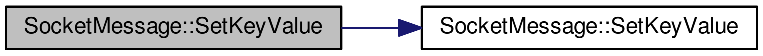
Here is the call graph for this function:



3.9.3.10 void SocketMessage::SetKeyValue (MessageKey *key*, float *float_value*) [inline]

Send an float-valued message.

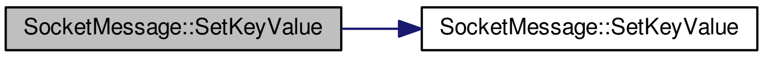
Here is the call graph for this function:



3.9.3.11 void SocketMessage::SetKeyValue (MessageKey *key,* double *double_value*) `[inline]`

Send an double-valued message.

Here is the call graph for this function:



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

- include/SocketMessage.h

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