

## SchweineSystem CMakePackage

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# Chapter 1

## CMakePackages

cmake packages

### 1.1 install

set CMAKE\_PREFIX\_PATH to include this directory

### 1.2 mocing Qt classes in cpp files

<https://doc.qt.io/qt-6/qt-wrap-cpp.html>





## Chapter 2

# Namespace Index

### 2.1 Namespace List

Here is a list of all namespaces with brief descriptions:

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### 3.1 Class Hierarchy

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

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## Chapter 6

# Namespace Documentation

### 6.1 AuthProvider Namespace Reference

#### Classes

- class [OAuth](#)
- class [Token](#)

### 6.2 Logger Namespace Reference

provide streams for logging messages and warnings

#### Classes

- class [Target](#)

#### Functions

- QTextStream [stream](#) (const Qt::GlobalColor &color=Qt::black)

#### 6.2.1 Detailed Description

provide streams for logging messages and warnings

#### 6.2.2 Function Documentation

### 6.2.2.1 stream()

```
QTextStream Logger::stream (
    const Qt::GlobalColor & color = Qt::black )
```

## 6.3 Managed Namespace Reference

### Classes

- class [TableView](#)
- class [TreeView](#)

## 6.4 Math Namespace Reference

### Classes

- class [Quaternion](#)
- class [Spherical](#)
- class [Vector3](#)
- class [Wave](#)

### Functions

- double [deg2Rad](#) (const double &degrees)
- double [rad2Deg](#) (const double &radians)
- bool [signChange](#) (const double &value1, const double &value2)
- std::ostream & [operator<<](#) (std::ostream &out, const [Spherical](#) &value)
- std::ostream & [operator<<](#) (std::ostream &out, const [Vector3](#) &value)

### 6.4.1 Function Documentation

#### 6.4.1.1 deg2Rad()

```
double Math::deg2Rad (
    const double & degrees ) [inline]
```

#### 6.4.1.2 operator<<() [1/2]

```
std::ostream & Math::operator<< (
    std::ostream & out,
    const Spherical & value ) [inline]
```

#### 6.4.1.3 operator<<() [2/2]

```
std::ostream & Math::operator<< (
    std::ostream & out,
    const Vector3 & value ) [inline]
```

#### 6.4.1.4 rad2Deg()

```
double Math::rad2Deg (
    const double & radians ) [inline]
```

#### 6.4.1.5 signChange()

```
bool Math::signChange (
    const double & value1,
    const double & value2 ) [inline]
```

## 6.5 Network Namespace Reference

### Classes

- class [StatusException](#)
- class [Settings](#)

## 6.6 RestApi Namespace Reference

### Classes

- class [Async](#)
- class [Blocking](#)



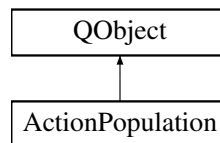
## Chapter 7

# Class Documentation

### 7.1 ActionPopulation Class Reference

```
#include <ActionPopulation.h>
```

Inheritance diagram for ActionPopulation:



#### Public Types

- using `ToolBarCreationFunction` = `std::function< QToolBar *(const QString &objectName)>`
- using `MenuCreationFunction` = `std::function< QMenu *(const QString &objectName, const QString &text, QMenu *parentMenu)>`

#### Public Member Functions

- `ActionPopulation` (`QWidget *parentWidget`, `ToolBarCreationFunction` `toolBarCreationFunction`, `MenuCreationFunction` `menuCreationFunction`)
- void `populateMenuAndToolBar` (`const QString &xmlResource`)

#### Static Public Member Functions

- static `QString` `writeExampleResource` (`const QString &xmlResource`)

#### 7.1.1 Member Typedef Documentation

#### 7.1.1.1 MenuCreationFunction

```
using ActionPopulation::MenuCreationFunction = std::function<QMenu*(const QString& objectName,  
const QString& text, QMenu* parentMenu)>
```

#### 7.1.1.2 ToolBarCreationFunction

```
using ActionPopulation::ToolBarCreationFunction = std::function<QToolBar*(const QString& objectName,  
Name)>
```

### 7.1.2 Constructor & Destructor Documentation

#### 7.1.2.1 ActionPopulation()

```
ActionPopulation::ActionPopulation (   
    QWidget * parentWidget,   
    ToolBarCreationFunction toolBarCreationFunction,   
    MenuCreationFunction menuCreationFunction )
```

### 7.1.3 Member Function Documentation

#### 7.1.3.1 populateMenuAndToolBar()

```
void ActionPopulation::populateMenuAndToolBar (   
    const QString & xmlResource )
```

#### 7.1.3.2 writeExampleResource()

```
QString ActionPopulation::writeExampleResource (   
    const QString & xmlResource ) [static]
```

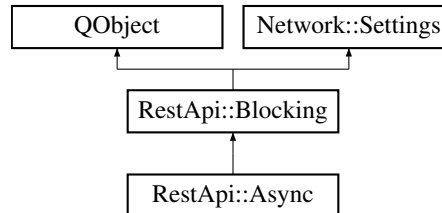
The documentation for this class was generated from the following files:

- [WaQt/ActionPopulation.h](#)
- [WaQt/src/ActionPopulation.cpp](#)

## 7.2 RestApi::Async Class Reference

```
#include <RestApiAsync.h>
```

Inheritance diagram for RestApi::Async:



### Public Types

- using [CallbackFunction](#) = std::function< void(QJsonObject result)>

### Public Member Functions

- [Async](#) (QObject \*parent, const QString &baseUrl)
- virtual void [getAsync](#) ([CallbackFunction](#) callback, const QString &endpoint, const QUrlQuery &params=QUrlQuery())
- virtual void [postAsync](#) ([CallbackFunction](#) callback, const QString &endpoint, const QJsonObject &payload=QJsonObject(), const QUrlQuery &params=QUrlQuery())
- virtual void [putAsync](#) ([CallbackFunction](#) callback, const QString &endpoint, const QJsonObject &payload=QJsonObject(), const QUrlQuery &params=QUrlQuery())

### Additional Inherited Members

#### 7.2.1 Member Typedef Documentation

##### 7.2.1.1 CallbackFunction

```
using RestApi::Async::CallbackFunction = std::function<void(QJsonObject result)>
```

#### 7.2.2 Constructor & Destructor Documentation

##### 7.2.2.1 Async()

```
RestApi::Async::Async (
    QObject * parent,
    const QString & baseUrl ) [inline]
```

## 7.2.3 Member Function Documentation

### 7.2.3.1 getAsync()

```
void RestApi::Async::getAsync (
    CallbackFunction callback,
    const QString & endpoint,
    const QUrlQuery & params = QUrlQuery() ) [inline], [virtual]
```

### 7.2.3.2 postAsync()

```
void RestApi::Async::postAsync (
    CallbackFunction callback,
    const QString & endpoint,
    const QJsonObject & payload = QJsonObject(),
    const QUrlQuery & params = QUrlQuery() ) [inline], [virtual]
```

### 7.2.3.3 putAsync()

```
void RestApi::Async::putAsync (
    CallbackFunction callback,
    const QString & endpoint,
    const QJsonObject & payload = QJsonObject(),
    const QUrlQuery & params = QUrlQuery() ) [inline], [virtual]
```

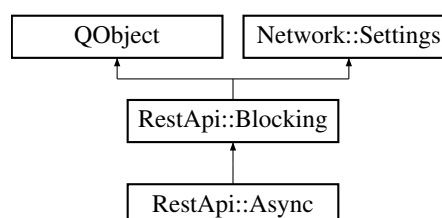
The documentation for this class was generated from the following files:

- WaNetwork/[RestApiAsync.h](#)
- WaNetwork/[RestApiAsync.hpp](#)

## 7.3 RestApi::Blocking Class Reference

```
#include <RestApiBlocking.h>
```

Inheritance diagram for RestApi::Blocking:





## Public Member Functions

- [Blocking](#) (QObject \*parent, const QString &[baseUrl](#))
- virtual QJsonObject [get](#) (const QString &endpoint, const QUrlQuery &params=QUrlQuery()) const
- virtual QJsonObject [post](#) (const QString &endpoint, const QJsonObject &payload=QJsonObject(), const QUrlQuery &params=QUrlQuery()) const
- virtual QJsonObject [put](#) (const QString &endpoint, const QJsonObject &payload=QJsonObject(), const QUrlQuery &params=QUrlQuery()) const
- const QString & [getbaseUrl](#) () const

## Protected Types

- using [ReplyGeneratorFunction](#) = std::function< QNetworkReply \*(QNetworkRequest request)>

## Protected Member Functions

- void [setAuthProvider](#) ([AuthProvider::Token](#) \*newProvider)
- void [setBaseUrl](#) (const QString &url)
- void [addUnauthorizedStatusCode](#) (int code)
- QNetworkRequest [createRequest](#) (const QString &endpoint, const QUrlQuery &params) const

## Protected Attributes

- QNetworkAccessManager \* [manager](#)
- QList< int > [unauthorizedStatusCodes](#)
- [AuthProvider::Token](#) \* [provider](#)
- QString [baseUrl](#)

## Friends

- class [Async](#)

## Additional Inherited Members

### 7.3.1 Member Typedef Documentation

#### 7.3.1.1 ReplyGeneratorFunction

```
using RestApi::Blocking::ReplyGeneratorFunction = std::function<QNetworkReply*(QNetworkRequest request)> [protected]
```

### 7.3.2 Constructor & Destructor Documentation

### 7.3.2.1 Blocking()

```
RestApi::Blocking::Blocking (
    QObject * parent,
    const QString & baseUrl ) [inline]
```

## 7.3.3 Member Function Documentation

### 7.3.3.1 addUnauthorizedStatusCode()

```
void RestApi::Blocking::addUnauthorizedStatusCode (
    int code ) [inline], [protected]
```

### 7.3.3.2 createRequest()

```
QNetworkRequest RestApi::Blocking::createRequest (
    const QString & endpoint,
    const QUrlQuery & params ) const [inline], [protected]
```

### 7.3.3.3 get()

```
QJsonObject RestApi::Blocking::get (
    const QString & endpoint,
    const QUrlQuery & params = QUrlQuery() ) const [inline], [virtual]
```

### 7.3.3.4 getbaseUrl()

```
const QString & RestApi::Blocking::getbaseUrl ( ) const [inline]
```

### 7.3.3.5 post()

```
QJsonObject RestApi::Blocking::post (
    const QString & endpoint,
    const QJsonObject & payload = QJsonObject(),
    const QUrlQuery & params = QUrlQuery() ) const [inline], [virtual]
```

#### 7.3.3.6 put()

```
QJsonObject RestApi::Blocking::put (
    const QString & endpoint,
    const QJsonObject & payload = QJsonObject(),
    const QUrlQuery & params = QUrlQuery() ) const [inline], [virtual]
```

#### 7.3.3.7 setAuthProvider()

```
void RestApi::Blocking::setAuthProvider (
    AuthProvider::Token * newProvider ) [inline], [protected]
```

#### 7.3.3.8 setBaseUrl()

```
void RestApi::Blocking::setBaseUrl (
    const QString & url ) [inline], [protected]
```

### 7.3.4 Friends And Related Function Documentation

#### 7.3.4.1 Async

```
friend class Async [friend]
```

### 7.3.5 Member Data Documentation

#### 7.3.5.1 baseUrl

```
QString RestApi::Blocking::baseUrl [protected]
```

#### 7.3.5.2 manager

```
QNetworkAccessManager* RestApi::Blocking::manager [protected]
```

### 7.3.5.3 provider

```
AuthProvider::Token* RestApi::Blocking::provider [protected]
```

### 7.3.5.4 unauthorizedStatusCodes

```
QList<int> RestApi::Blocking::unauthorizedStatusCodes [protected]
```

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

- WaNetwork/[RestApiBlocking.h](#)
- WaNetwork/[RestApiBlocking.hpp](#)

## 7.4 Bytes< DataType > Class Template Reference

```
#include <Bytes.h>
```

### Static Public Member Functions

- static QByteArray [toBytes](#) (const DataType &value, bool swap)
- static DataType [fromBytes](#) (const QByteArray &data, bool swap)

### 7.4.1 Member Function Documentation

#### 7.4.1.1 fromBytes()

```
template<typename DataType >
DataType Bytes< DataType >::fromBytes (
    const QByteArray & data,
    bool swap ) [static]
```

#### 7.4.1.2 toBytes()

```
template<typename DataType >
QByteArray Bytes< DataType >::toBytes (
    const DataType & value,
    bool swap ) [static]
```

## 7.4.2 Member Data Documentation

### 7.4.2.1 bytes

```
template<typename DataType >
char Bytes< DataType >::bytes[sizeof(DataType)]
```

### 7.4.2.2 value

```
template<typename DataType >
DataType Bytes< DataType >::value = 0
```

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

- [WaTools/Bytes.h](#)
- [WaTools/Bytes.hpp](#)

## 7.5 ColorSpace Class Reference

```
#include <ColorSpace.h>
```

### Classes

- struct [XYB](#)

### Static Public Member Functions

- static QColor [fromCIE](#) (const [XYB](#) &xyb)
- static [XYB toCIE](#) (const QColor &color)

## 7.5.1 Member Function Documentation

### 7.5.1.1 fromCIE()

```
QColor ColorSpace::fromCIE (
    const XYB & xyb ) [static]
```

### 7.5.1.2 toCIE()

```
ColorSpace::XYB ColorSpace::toCIE (
    const QColor & color ) [static]
```

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

- [WaQt/ColorSpace.h](#)
- [WaQt/src/ColorSpace.cpp](#)

## 7.6 CompileTimeString< N > Struct Template Reference

```
#include <CompileTimeString.h>
```

### Public Member Functions

- constexpr [CompileTimeString](#) (const char(&str)[N])
- std::string [text](#) () const

### Public Attributes

- char [value](#) [N]

### 7.6.1 Constructor & Destructor Documentation

#### 7.6.1.1 CompileTimeString()

```
template<size_t N>
constexpr CompileTimeString< N >::CompileTimeString (
    const char(&) str[N] ) [constexpr]
```

### 7.6.2 Member Function Documentation

#### 7.6.2.1 text()

```
template<size_t N>
std::string CompileTimeString< N >::text
```

### 7.6.3 Member Data Documentation

#### 7.6.3.1 value

```
template<size_t N>
char CompileTimeString< N >::value[N]
```

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

- WaTools/CompileTimeString.h
- WaTools/CompileTimeString.hpp

## 7.7 DoubleBuffer< DataType > Class Template Reference

```
#include <DoubleBuffer.h>
```

### Public Member Functions

- [DoubleBuffer](#) (const DataType &init1=DataType(), const DataType &init2=DataType())
- void [swap](#) ()
- DataType & [current](#) ()
- const DataType & [current](#) () const
- DataType & [previous](#) ()

### 7.7.1 Constructor & Destructor Documentation

#### 7.7.1.1 DoubleBuffer()

```
template<typename DataType >
DoubleBuffer< DataType >::DoubleBuffer (
    const DataType & init1 = DataType(),
    const DataType & init2 = DataType() ) [inline]
```

### 7.7.2 Member Function Documentation

### 7.7.2.1 `current()` [1/2]

```
template<typename DataType >  
DataType & DoubleBuffer< DataType >::current [inline]
```

### 7.7.2.2 `current()` [2/2]

```
template<typename DataType >  
const DataType & DoubleBuffer< DataType >::current [inline]
```

### 7.7.2.3 `previous()`

```
template<typename DataType >  
DataType & DoubleBuffer< DataType >::previous [inline]
```

### 7.7.2.4 `swap()`

```
template<typename DataType >  
void DoubleBuffer< DataType >::swap [inline]
```

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

- WaTools/[DoubleBuffer.h](#)
- WaTools/[DoubleBuffer.hpp](#)

## 7.8 `Logger::Target::Entry` Struct Reference

```
#include <Logger.h>
```

### Public Types

- using `Buffer` = `QList< Entry >`

### Public Attributes

- `QDateTime` `timeStamp`
- `QString` `text`
- `QColor` `color`



## 7.8.1 Member Typedef Documentation

### 7.8.1.1 Buffer

```
using Logger::Target::Entry::Buffer = QList<Entry>
```

## 7.8.2 Member Data Documentation

### 7.8.2.1 color

```
QColor Logger::Target::Entry::color
```

### 7.8.2.2 text

```
QString Logger::Target::Entry::text
```

### 7.8.2.3 timeStamp

```
QDateTime Logger::Target::Entry::timeStamp
```

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

- [WaLog/Logger.h](#)

## 7.9 FileTools Class Reference

```
#include <FileTools.h>
```

### Static Public Member Functions

- static QJsonObject [readJson](#) (const QString &filePath)
- static QJsonObject [parseBytes](#) (const QByteArray &data)
- static void [writeJson](#) (const QJsonObject &data, const QString &filePath)
- static QString [compileDropboxPath](#) (const QString &appName=QCoreApplication::applicationName())
- static QString [compileNextCloudPath](#) (const QString &appName=QCoreApplication::applicationName())
- static QJsonObject [readApiKeys](#) (const QString &appName)
- static QStringList [compileResourceNames](#) (const QStringList &ignoreList={"./qt-project.org"})

## 7.9.1 Member Function Documentation

### 7.9.1.1 compileDropboxPath()

```
QString FileTools::compileDropboxPath (
    const QString & appName = QCoreApplication::applicationName() ) [inline], [static]
```

### 7.9.1.2 compileNextCloudPath()

```
QString FileTools::compileNextCloudPath (
    const QString & appName = QCoreApplication::applicationName() ) [inline], [static]
```

### 7.9.1.3 compileResourceNames()

```
QStringList FileTools::compileResourceNames (
    const QStringList & ignoreList = {"/qt-project.org"} ) [inline], [static]
```

### 7.9.1.4 parseBytes()

```
QJsonObject FileTools::parseBytes (
    const QByteArray & data ) [inline], [static]
```

### 7.9.1.5 readApiKeys()

```
QJsonObject FileTools::readApiKeys (
    const QString & appName ) [inline], [static]
```

### 7.9.1.6 readJson()

```
QJsonObject FileTools::readJson (
    const QString & filePath ) [inline], [static]
```

### 7.9.1.7 writeJson()

```
void FileTools::writeJson (
    const QJsonObject & data,
    const QString & filePath ) [inline], [static]
```

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

- [WaTools/FileTools.h](#)
- [WaTools/FileTools.hpp](#)

## 7.10 Locker< tag > Class Template Reference

```
#include <Locker.h>
```

### Public Member Functions

- [Locker\(\)](#)
- [~Locker\(\)](#)

### Static Public Member Functions

- static bool [engaged\(\)](#)
- static bool [doOnce\(\)](#)

### 7.10.1 Constructor & Destructor Documentation

#### 7.10.1.1 Locker()

```
template<CompileTimeString tag>
Locker< tag >::Locker
```

#### 7.10.1.2 ~Locker()

```
template<CompileTimeString tag>
Locker< tag >::~~Locker
```

### 7.10.2 Member Function Documentation

### 7.10.2.1 doOnce()

```
template<CompileTimeString tag>
bool Locker< tag >::doOnce [static]
```

### 7.10.2.2 engaged()

```
template<CompileTimeString tag>
bool Locker< tag >::engaged [static]
```

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

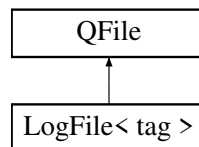
- WaTools/Locker.h
- WaTools/Locker.hpp

## 7.11 LogFile< tag > Class Template Reference

tag is used to create a unique instance of [LogFile](#) and provides a static text stream

```
#include <LogFile.h>
```

Inheritance diagram for LogFile< tag >:



### Public Member Functions

- [LogFile](#) (const QString &fileName)
- [~LogFile](#) ()
- void [changeFileName](#) (const QString &fileName)

### Static Public Member Functions

- static QTextStream [stream](#) ()

### 7.11.1 Detailed Description

```
template<CompileTimeString tag>
class LogFile< tag >
```

tag is used to create a unique instance of [LogFile](#) and provides a static text stream

## 7.11.2 Constructor & Destructor Documentation

### 7.11.2.1 LogFile()

```
template<CompileTimeString tag>
LogFile< tag >::LogFile (
    const QString & fileName ) [inline]
```

### 7.11.2.2 ~LogFile()

```
template<CompileTimeString tag>
LogFile< tag >::~~LogFile [inline]
```

## 7.11.3 Member Function Documentation

### 7.11.3.1 changeFileName()

```
template<CompileTimeString tag>
void LogFile< tag >::changeFileName (
    const QString & fileName )
```

### 7.11.3.2 stream()

```
template<CompileTimeString tag>
QTextStream LogFile< tag >::stream [inline], [static]
```

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

- [WaLog/LogFile.h](#)
- [WaLog/LogFile.hpp](#)

## 7.12 LogFileBase Struct Reference

```
#include <LogFile.h>
```

## Static Public Member Functions

- static QString [appendTimeStampToFileName](#) (const QString &fileName, const QDateTime &timestamp=QDate←  
Time::currentDateTime())

### 7.12.1 Member Function Documentation

#### 7.12.1.1 [appendTimeStampToFileName\(\)](#)

```
QString LogFileBase::appendTimeStampToFileName (
    const QString & fileName,
    const QDateTime & timestamp = QDateTime::currentDateTime() ) [static]
```

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

- [WaLog/LogFile.h](#)
- [WaLog/LogFile.hpp](#)

## 7.13 LogSymbol Struct Reference

```
#include <LogSymbol.h>
```

### Static Public Attributes

- static const QString [Warning](#) = QString::fromUtf8("\u2622")
- static const QString [Attention](#) = QString::fromUtf8("\u26a0")
- static const QString [Debug](#) = QString::fromUtf8("\u26ed")
- static const QString [Info](#) = QString::fromUtf8("\u2611")

### 7.13.1 Member Data Documentation

#### 7.13.1.1 [Attention](#)

```
const QString LogSymbol::Attention = QString::fromUtf8("\u26a0") [static]
```

#### 7.13.1.2 [Debug](#)

```
const QString LogSymbol::Debug = QString::fromUtf8("\u26ed") [static]
```

### 7.13.1.3 Info

```
const QString LogSymbol::Info = QString::fromUtf8("\u2611") [static]
```

### 7.13.1.4 Warning

```
const QString LogSymbol::Warning = QString::fromUtf8("\u2622") [static]
```

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

- [WaLog/LogSymbol.h](#)
- [WaLog/src/LogSymbol.cpp](#)

## 7.14 Look Struct Reference

```
#include <Look.h>
```

### Static Public Member Functions

- static void [applyStlyeSheet](#) (const QString &fileName, QWidget \*widget)
- static void [setDockLabel](#) (const QString &label)
- static void [updateDockIcon](#) (const QIcon &icon)

### 7.14.1 Member Function Documentation

#### 7.14.1.1 [applyStlyeSheet\(\)](#)

```
void Look::applyStlyeSheet (
    const QString & fileName,
    QWidget * widget ) [static]
```

#### 7.14.1.2 [setDockLabel\(\)](#)

```
void Look::setDockLabel (
    const QString & label ) [static]
```

### 7.14.1.3 updateDockIcon()

```
void Look::updateDockIcon (
    const QIcon & icon ) [static]
```

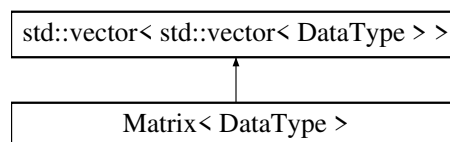
The documentation for this struct was generated from the following files:

- [WaQt/Look.h](#)
- [WaQt/src/linux/Look\\_linux.cpp](#)
- [WaQt/src/Look.cpp](#)
- [WaQt/src/mac/Look\\_mac.mm](#)
- [WaQt/src/win/Look\\_win.cpp](#)

## 7.15 Matrix< DataType > Class Template Reference

```
#include <Matrix.h>
```

Inheritance diagram for Matrix< DataType >:



### Public Member Functions

- [Matrix](#) (const [Size](#) &size, const DataType &initialValue=DataType())
- const [Size](#) & [getSize](#) () const
- void [appendRow](#) (const DataType &initialValue=DataType())
- void [removeRow](#) (const uint16\_t row)

### 7.15.1 Constructor & Destructor Documentation

#### 7.15.1.1 Matrix()

```
template<typename DataType >
Matrix< DataType >::Matrix (
    const Size & size,
    const DataType & initialValue = DataType() ) [inline]
```

### 7.15.2 Member Function Documentation



### 7.15.2.1 appendRow()

```
template<typename DataType >
void Matrix< DataType >::appendRow (
    const DataType & initialValue = DataType() )
```

### 7.15.2.2 getSize()

```
template<typename DataType >
const Size & Matrix< DataType >::getSize
```

### 7.15.2.3 removeRow()

```
template<typename DataType >
void Matrix< DataType >::removeRow (
    const uint16_t row )
```

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

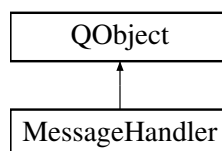
- WaTools/[Matrix.h](#)
- WaTools/[Matrix.hpp](#)

## 7.16 MessageHandler Struct Reference

override the default Qt message handler

```
#include <MessageHandler.h>
```

Inheritance diagram for MessageHandler:



### Static Public Member Functions

- template<typename HandlerClass >  
static bool [enable](#) (HandlerClass \*instance, void(HandlerClass::\*hanlderFunction)(QtMsgType, const QMessageLogContext &, const QString &))
- template<typename HandlerClass >  
static void [disable](#) (HandlerClass \*instance)

### 7.16.1 Detailed Description

override the default Qt message handler

### 7.16.2 Member Function Documentation

#### 7.16.2.1 disable()

```
template<typename HandlerClass >
void MessageHandler::disable (
    HandlerClass * instance ) [static]
```

#### 7.16.2.2 enable()

```
template<typename HandlerClass >
bool MessageHandler::enable (
    HandlerClass * instance,
    void(HandlerClass::*)(QtMsgType, const QMessageLogContext &, const QString &)
    handlerFunction ) [static]
```

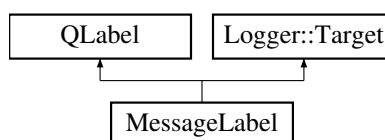
The documentation for this struct was generated from the following files:

- [WaLog/MessageHandler.h](#)
- [WaLog/src/MessageHandler.cpp](#)

## 7.17 MessageLabel Class Reference

```
#include <MessageLabel.h>
```

Inheritance diagram for MessageLabel:



### Public Member Functions

- [MessageLabel](#) (QWidget \*parent, int stackSize=10)
- void [setShowToolTip](#) (bool newShowToolTip)

## Additional Inherited Members

### 7.17.1 Constructor & Destructor Documentation

#### 7.17.1.1 MessageLabel()

```
MessageLabel::MessageLabel (
    QWidget * parent,
    int stackSize = 10 )
```

### 7.17.2 Member Function Documentation

#### 7.17.2.1 setShowToolTip()

```
void MessageLabel::setShowToolTip (
    bool newShowToolTip )
```

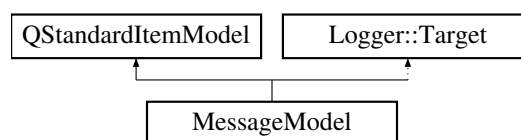
The documentation for this class was generated from the following files:

- [WaqT/MessageLabel.h](#)
- [WaqT/src/MessageLabel.cpp](#)

## 7.18 MessageModel Class Reference

```
#include <MessageModel.h>
```

Inheritance diagram for MessageModel:



## Signals

- void [contentUpdated](#) ()

## Public Member Functions

- [MessageModel](#) (QObject \*parent, int stackSize)

## 7.18.1 Constructor & Destructor Documentation

### 7.18.1.1 MessageModel()

```
MessageModel::MessageModel (
    QObject * parent,
    int stackSize )
```

## 7.18.2 Member Function Documentation

### 7.18.2.1 contentUpdated

```
void MessageModel::contentUpdated ( ) [signal]
```

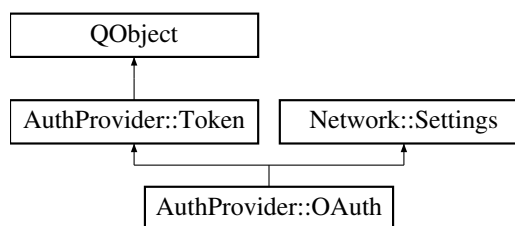
The documentation for this class was generated from the following files:

- [WaQt/MessageModel.h](#)
- [WaQt/src/MessageModel.cpp](#)

## 7.19 AuthProvider::OAuth Class Reference

```
#include <AuthProviderOAuth.h>
```

Inheritance diagram for AuthProvider::OAuth:



### Public Member Functions

- [OAuth](#) (QObject \*parent)
- void [setTokenInfoUrl](#) (const QString url)
- QJsonObject [getTokenInfo](#) (QByteArray token=QByteArray()) const
- void [setStandardFlow](#) (const QString &baseAuthUrl, const QString &clientId, const QString &clientSecret)
- void [setCustomFlow](#) (QOAuth2AuthorizationCodeFlow \*oauthFlow)
- void [setFinalRedirect](#) (const QString &url)
- void [setFinalHTML](#) (const QString &html)
- QOAuth2AuthorizationCodeFlow \* [getFlow](#) () const

## Protected Member Functions

- virtual bool [update](#) () override
- virtual bool [authorizeUser](#) ()
- virtual void [saveRefreshToken](#) (const QString &refreshToken)
- virtual QString [loadRefreshToken](#) ()

## Additional Inherited Members

### 7.19.1 Constructor & Destructor Documentation

#### 7.19.1.1 OAuth()

```
AuthProvider::OAuth::OAuth (
    QObject * parent ) [inline]
```

### 7.19.2 Member Function Documentation

#### 7.19.2.1 authorizeUser()

```
bool AuthProvider::OAuth::authorizeUser ( ) [inline], [protected], [virtual]
```

#### 7.19.2.2 getFlow()

```
QOAuth2AuthorizationCodeFlow * AuthProvider::OAuth::getFlow ( ) const [inline]
```

#### 7.19.2.3 getTokenInfo()

```
QJsonObject AuthProvider::OAuth::getTokenInfo (
    QByteArray token = QByteArray() ) const [inline]
```

#### 7.19.2.4 loadRefreshToken()

```
QString AuthProvider::OAuth::loadRefreshToken ( ) [inline], [protected], [virtual]
```

#### 7.19.2.5 saveRefreshToken()

```
void AuthProvider::OAuth::saveRefreshToken (
    const QString & refreshToken ) [inline], [protected], [virtual]
```

#### 7.19.2.6 setCustomFlow()

```
void AuthProvider::OAuth::setCustomFlow (
    OAuth2AuthorizationCodeFlow * oauthFlow ) [inline]
```

#### 7.19.2.7 setFinalHTML()

```
void AuthProvider::OAuth::setFinalHTML (
    const QString & html ) [inline]
```

#### 7.19.2.8 setFinalRedirect()

```
void AuthProvider::OAuth::setFinalRedirect (
    const QString & url ) [inline]
```

#### 7.19.2.9 setStandardFlow()

```
void AuthProvider::OAuth::setStandardFlow (
    const QString & baseAuthUrl,
    const QString & clientId,
    const QString & clientSecret ) [inline]
```

#### 7.19.2.10 setTokenInfoUrl()

```
void AuthProvider::OAuth::setTokenInfoUrl (
    const QString url ) [inline]
```

### 7.19.2.11 update()

```
bool AuthProvider::OAuth::update ( ) [inline], [override], [protected], [virtual]
```

Reimplemented from [AuthProvider::Token](#).

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

- WaNetwork/[AuthProviderOAuth.h](#)
- WaNetwork/[AuthProviderOAuth.hpp](#)

## 7.20 OscMessage Class Reference

```
#include <OscMessage.h>
```

### Public Member Functions

- [OscMessage](#) ()=delete
- [OscMessage](#) (const QString &path, const QVariant &value)
- [OscMessage](#) (const QString &path, const QVariantList &values)
- [OscMessage](#) (const QByteArray &data)
- QByteArray [pack](#) ()
- const QString & [getPath](#) () const
- const QVariantList & [getValues](#) () const

### 7.20.1 Constructor & Destructor Documentation

#### 7.20.1.1 OscMessage() [1/4]

```
OscMessage::OscMessage ( ) [delete]
```

#### 7.20.1.2 OscMessage() [2/4]

```
OscMessage::OscMessage (
    const QString & path,
    const QVariant & value ) [inline]
```

### 7.20.1.3 OscMessage() [3/4]

```
OscMessage::OscMessage (
    const QString & path,
    const QVariantList & values ) [inline]
```

### 7.20.1.4 OscMessage() [4/4]

```
OscMessage::OscMessage (
    const QByteArray & data ) [inline]
```

## 7.20.2 Member Function Documentation

### 7.20.2.1 getPath()

```
const QString & OscMessage::getPath ( ) const [inline]
```

### 7.20.2.2 getValues()

```
const QVariantList & OscMessage::getValues ( ) const [inline]
```

### 7.20.2.3 pack()

```
QByteArray OscMessage::pack ( ) [inline]
```

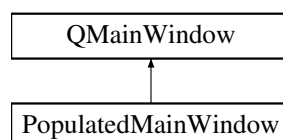
The documentation for this class was generated from the following files:

- WaNetwork/[OscMessage.h](#)
- WaNetwork/[OscMessage.hpp](#)

## 7.21 PopulatedMainWindow Class Reference

```
#include <PopulatedMainWindow.h>
```

Inheritance diagram for PopulatedMainWindow:





## Public Member Functions

- [PopulatedMainWindow](#) ()
- virtual [~PopulatedMainWindow](#) ()

## Static Public Member Functions

- static [PopulatedMainWindow](#) \* [the](#) ()
- static void [printSettingsLocation](#) ()
- static QAction \* [addAction](#) (QIcon icon, QString text, QString objectName, auto function)
- static QAction \* [addAction](#) (QIcon icon, QString text, QString objectName, QObject \*instance, auto slot↵Function)

## Protected Member Functions

- void [populateMenuAndToolBar](#) (const QString &xmlResource)
- QDockWidget \* [addDockWidget](#) (QWidget \*widget, const Qt::DockWidgetArea &area)
- virtual void [closeEvent](#) (QCloseEvent \*ce) override
- virtual QMenu \* [createPopupMenu](#) () override

## 7.21.1 Constructor & Destructor Documentation

### 7.21.1.1 PopulatedMainWindow()

```
PopulatedMainWindow::PopulatedMainWindow ( )
```

### 7.21.1.2 ~PopulatedMainWindow()

```
PopulatedMainWindow::~~PopulatedMainWindow ( ) [virtual]
```

## 7.21.2 Member Function Documentation

### 7.21.2.1 addAction() [1/2]

```
QAction * PopulatedMainWindow::addAction (
    QIcon icon,
    QString text,
    QString objectName,
    auto function ) [inline], [static]
```

### 7.21.2.2 addAction() [2/2]

```
QAction * PopulatedMainWindow::addAction (
    QIcon icon,
    QString text,
    QString objectName,
    QObject * instance,
    auto slotFunction ) [inline], [static]
```

### 7.21.2.3 addDockWidget()

```
QDockWidget * PopulatedMainWindow::addDockWidget (
    QWidget * widget,
    const Qt::DockWidgetArea & area ) [protected]
```

### 7.21.2.4 closeEvent()

```
void PopulatedMainWindow::closeEvent (
    QCloseEvent * ce ) [override], [protected], [virtual]
```

### 7.21.2.5 createPopupMenu()

```
QMenu * PopulatedMainWindow::createPopupMenu ( ) [override], [protected], [virtual]
```

### 7.21.2.6 populateMenuAndToolBar()

```
void PopulatedMainWindow::populateMenuAndToolBar (
    const QString & xmlResource ) [protected]
```

### 7.21.2.7 printSettingsLocation()

```
void PopulatedMainWindow::printSettingsLocation ( ) [static]
```

### 7.21.2.8 the()

```
PopulatedMainWindow * PopulatedMainWindow::the ( ) [static]
```

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

- [WaQt/PopulatedMainWindow.h](#)
- [WaQt/PopulatedMainWindow.hpp](#)
- [WaQt/src/PopulatedMainWindow.cpp](#)

## 7.22 Math::Quaternion Class Reference

```
#include <MathQuaternion.h>
```

### Public Member Functions

- [Quaternion](#) ()

### 7.22.1 Constructor & Destructor Documentation

#### 7.22.1.1 Quaternion()

```
Math::Quaternion::Quaternion ( ) [inline]
```

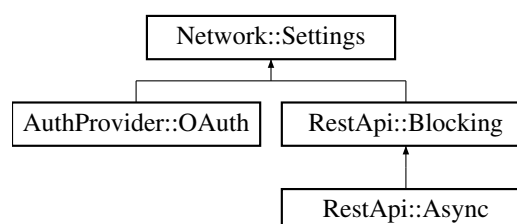
The documentation for this class was generated from the following files:

- [WaMath/MathQuaternion.h](#)
- [WaMath/MathQuaternion.hpp](#)

## 7.23 Network::Settings Class Reference

```
#include <NetworkSettings.h>
```

Inheritance diagram for Network::Settings:



## Public Member Functions

- [Settings](#) ()
- void [setVerbose](#) (bool enabled)
- bool [verbose](#) () const

## Static Public Member Functions

- static void [setUseExceptions](#) (bool enabled)
- static bool [useExceptions](#) ()

## 7.23.1 Constructor & Destructor Documentation

### 7.23.1.1 Settings()

```
Network::Settings::Settings ( ) [inline]
```

## 7.23.2 Member Function Documentation

### 7.23.2.1 setUseExceptions()

```
void Network::Settings::setUseExceptions (
    bool enabled ) [inline], [static]
```

### 7.23.2.2 setVerbose()

```
void Network::Settings::setVerbose (
    bool enabled ) [inline]
```

### 7.23.2.3 useExceptions()

```
bool Network::Settings::useExceptions ( ) [inline], [static]
```

### 7.23.2.4 verbose()

```
bool Network::Settings::verbose ( ) const [inline]
```

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

- WaNetwork/[NetworkSettings.h](#)
- WaNetwork/[NetworkSettings.hpp](#)

## 7.24 ShallowCrypt Class Reference

```
#include <ShallowCrypt.h>
```

### Public Member Functions

- [ShallowCrypt](#) (QByteArray key=QSysInfo::machineUniqueId(), QCryptographicHash::Algorithm algorithm=QCryptographicHash::Sha1) const
- QByteArray [bury](#) (const QString &plainText) const
- QString [revive](#) (const QByteArray encryptedText) const

### 7.24.1 Constructor & Destructor Documentation

#### 7.24.1.1 ShallowCrypt()

```
ShallowCrypt::ShallowCrypt (
    QByteArray key = QSysInfo::machineUniqueId(),
    QCryptographicHash::Algorithm algorithm = QCryptographicHash::Sha1 ) [inline]
```

### 7.24.2 Member Function Documentation

#### 7.24.2.1 bury()

```
QByteArray ShallowCrypt::bury (
    const QString & plainText ) const [inline]
```

### 7.24.2.2 `revive()`

```
QString ShallowCrypt::revive (
    const QByteArray encryptedText ) const [inline]
```

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

- [WaCrypt/ShallowCrypt.h](#)
- [WaCrypt/ShallowCrypt.hpp](#)

## 7.25 `Shared< AppName >` Struct Template Reference

```
#include <Shared.h>
```

### Static Public Member Functions

- static QString [appName](#) ()
- static QString [compileSharedFileName](#) (const QString &suffix, const QStandardPaths::StandardLocation &location=QStandardPaths::HomeLocation)
- static QString [socketName](#) ()
- static bool [isServerActive](#) ()
- static void [startApplication](#) ()

### 7.25.1 Member Function Documentation

#### 7.25.1.1 `appName()`

```
template<CompileTimeString AppName>
QString Shared< AppName >::appName [static]
```

#### 7.25.1.2 `compileSharedFileName()`

```
template<CompileTimeString AppName>
QString Shared< AppName >::compileSharedFileName (
    const QString & suffix,
    const QStandardPaths::StandardLocation & location = QStandardPaths::HomeLocation
) [static]
```

### 7.25.1.3 isServerActive()

```
template<CompileTimeString AppName>
bool Shared< AppName >::isServerActive [static]
```

### 7.25.1.4 socketName()

```
template<CompileTimeString AppName>
QString Shared< AppName >::socketName [static]
```

### 7.25.1.5 startApplication()

```
template<CompileTimeString AppName>
void Shared< AppName >::startApplication [static]
```

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

- WaTools/[Shared.h](#)
- WaTools/[Shared.hpp](#)

## 7.26 ShellClient Class Reference

```
#include <ShellClient.h>
```

### Static Public Member Functions

- static QByteArray [executeLocal](#) (const QString &command, QByteArray \*error=nullptr)
- static QByteArray [executeRemote](#) (const QString &host, const QString &command, QByteArray \*error=nullptr)

### 7.26.1 Member Function Documentation

#### 7.26.1.1 executeLocal()

```
QByteArray ShellClient::executeLocal (
    const QString & command,
    QByteArray * error = nullptr ) [static]
```

### 7.26.1.2 executeRemote()

```
QByteArray ShellClient::executeRemote (
    const QString & host,
    const QString & command,
    QByteArray * error = nullptr ) [static]
```

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

- WaQt/[ShellClient.h](#)
- WaQt/src/[ShellClient.cpp](#)

## 7.27 Size Struct Reference

```
#include <Size.h>
```

### Public Member Functions

- [Size](#) (const uint16\_t & [width](#)=0, const uint16\_t [height](#)=0)
- [Size](#) & [operator=](#) (const [Size](#) &other)
- bool [isZero](#) () const

### Public Attributes

- uint16\_t [width](#)
- uint16\_t [height](#)

## 7.27.1 Constructor & Destructor Documentation

### 7.27.1.1 Size()

```
Size::Size (
    const uint16_t & width = 0,
    const uint16_t height = 0 ) [inline]
```

## 7.27.2 Member Function Documentation

### 7.27.2.1 isZero()

```
bool Size::isZero ( ) const [inline]
```



### 7.27.2.2 operator=()

```
Size & Size::operator= (
    const Size & other ) [inline]
```

## 7.27.3 Member Data Documentation

### 7.27.3.1 height

```
uint16_t Size::height
```

### 7.27.3.2 width

```
uint16_t Size::width
```

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

- WaTools/[Size.h](#)
- WaTools/[Size.hpp](#)

## 7.28 Math::Spherical Class Reference

```
#include <MathVector3.h>
```

### Public Member Functions

- [Spherical](#) (const double &[az](#)=0.0, const double &[el](#)=0.0, const double &[radius](#)=1.0)
- bool [operator<](#) (const [Spherical](#) &other) const

### Public Attributes

- double [az](#) = 0.0
- double [el](#) = 0.0
- double [radius](#) = 0.0

### Friends

- std::ostream & [operator<<](#) (std::ostream &out, const [Spherical](#) &value)

## 7.28.1 Constructor & Destructor Documentation

### 7.28.1.1 Spherical()

```
Math::Spherical::Spherical (
    const double & az = 0.0,
    const double & el = 0.0,
    const double & radius = 1.0 ) [inline]
```

## 7.28.2 Member Function Documentation

### 7.28.2.1 operator<()

```
bool Math::Spherical::operator< (
    const Spherical & other ) const [inline]
```

## 7.28.3 Friends And Related Function Documentation

### 7.28.3.1 operator<<

```
std::ostream& operator<< (
    std::ostream & out,
    const Spherical & value ) [friend]
```

## 7.28.4 Member Data Documentation

### 7.28.4.1 az

```
double Math::Spherical::az = 0.0
```

### 7.28.4.2 el

```
double Math::Spherical::el = 0.0
```

### 7.28.4.3 radius

```
double Math::Spherical::radius = 0.0
```

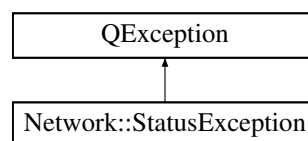
The documentation for this class was generated from the following files:

- [WaMath/MathVector3.h](#)
- [WaMath/MathVector3.hpp](#)

## 7.29 Network::StatusException Class Reference

```
#include <NetworkExceptions.h>
```

Inheritance diagram for Network::StatusException:



### Public Member Functions

- [StatusException](#) (int statusCode, const QJsonObject &content)

### 7.29.1 Constructor & Destructor Documentation

#### 7.29.1.1 StatusException()

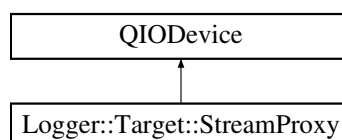
```
Network::StatusException::StatusException (
    int statusCode,
    const QJsonObject & content ) [inline]
```

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

- [WaNetwork/NetworkExceptions.h](#)
- [WaNetwork/NetworkExceptions.hpp](#)

## 7.30 Logger::Target::StreamProxy Class Reference

Inheritance diagram for Logger::Target::StreamProxy:



## Public Member Functions

- [StreamProxy](#) (const QColor &color)

### 7.30.1 Constructor & Destructor Documentation

#### 7.30.1.1 StreamProxy()

```
Logger::Target::StreamProxy::StreamProxy (
    const QColor & color )
```

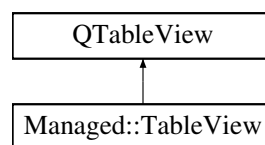
The documentation for this class was generated from the following file:

- [WaLog/src/Logger.cpp](#)

## 7.31 Managed::TableView Class Reference

```
#include <ManagedTableView.h>
```

Inheritance diagram for Managed::TableView:



## Public Member Functions

- [TableView](#) (QWidget \*parent)
- `template<typename TargetClass >`  
void [onSelected](#) (TargetClass \*instance, void(TargetClass::\*memberFunction)(const QModelIndex &))
- `template<typename TargetClass >`  
void [onDoubleClicked](#) (TargetClass \*instance, bool(TargetClass::\*memberFunction)(const QModelIndex &))
- `template<typename TargetClass >`  
void [onContextMenu](#) (TargetClass \*instance, QMenu \*(TargetClass::\*memberFunction)(const QModelIndex &))
- void [setModel](#) (QAbstractItemModel \*model) override
- QModelIndex [currentSourceIndex](#) () const

### 7.31.1 Constructor & Destructor Documentation

### 7.31.1.1 TableView()

```
Managed::TableView::TableView (  
    QWidget * parent )
```

## 7.31.2 Member Function Documentation

### 7.31.2.1 currentSourceIndex()

```
QModelIndex Managed::TableView::currentSourceIndex ( ) const
```

### 7.31.2.2 onContextMenu()

```
template<typename TargetClass >  
void Managed::TableView::onContextMenu (  
    TargetClass * instance,  
    QMenu *(TargetClass::*)(const QModelIndex &) memberFunction )
```

### 7.31.2.3 onDoubleClicked()

```
template<typename TargetClass >  
void Managed::TableView::onDoubleClicked (  
    TargetClass * instance,  
    bool(TargetClass::*)(const QModelIndex &) memberFunction )
```

### 7.31.2.4 onSelected()

```
template<typename TargetClass >  
void Managed::TableView::onSelected (  
    TargetClass * instance,  
    void(TargetClass::*)(const QModelIndex &) memberFunction )
```

### 7.31.2.5 setModel()

```
void Managed::TableView::setModel (
    QAbstractItemModel * model ) [override]
```

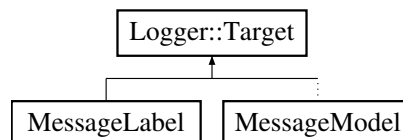
The documentation for this class was generated from the following files:

- [Waq/ManagedTableView.h](#)
- [Waq/ManagedTableView.hpp](#)
- [Waq/src/ManagedTableView.cpp](#)

## 7.32 Logger::Target Class Reference

```
#include <Logger.h>
```

Inheritance diagram for Logger::Target:



### Classes

- struct [Entry](#)
- class [StreamProxy](#)

### Public Member Functions

- [Target](#) (int stackSize)
- [~Target](#) ()

### Protected Member Functions

- virtual void [update](#) (const [Entry::Buffer](#) &buffer)=0
- void [clear](#) ()

## 7.32.1 Constructor & Destructor Documentation

### 7.32.1.1 Target()

```
Logger::Target::Target (
    int stackSize )
```

### 7.32.1.2 ~Target()

```
Logger::Target::~~Target ( )
```

## 7.32.2 Member Function Documentation

### 7.32.2.1 clear()

```
void Logger::Target::clear ( ) [protected]
```

### 7.32.2.2 update()

```
virtual void Logger::Target::update (
    const Entry::Buffer & buffer ) [protected], [pure virtual]
```

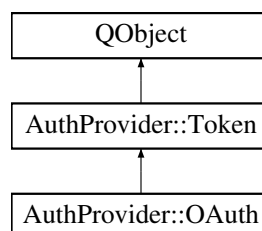
The documentation for this class was generated from the following files:

- [WaLog/Logger.h](#)
- [WaLog/src/Logger.cpp](#)

## 7.33 AuthProvider::Token Class Reference

```
#include <AuthProviderToken.h>
```

Inheritance diagram for AuthProvider::Token:



### Public Member Functions

- [Token](#) (QObject \*parent)
- const QByteArray & [getBearerToken](#) () const
- bool [isNull](#) () const
- void [setBearerToken](#) (const QByteArray &token)
- virtual bool [update](#) ()
- virtual void [setAuthorization](#) (QNetworkRequest &request) const

## Protected Attributes

- QByteArray [bearerToken](#)

## 7.33.1 Constructor & Destructor Documentation

### 7.33.1.1 Token()

```
AuthProvider::Token::Token (
    QObject * parent ) [inline]
```

## 7.33.2 Member Function Documentation

### 7.33.2.1 getBearerToken()

```
const QByteArray & AuthProvider::Token::getBearerToken ( ) const [inline]
```

### 7.33.2.2 isNull()

```
bool AuthProvider::Token::isNull ( ) const [inline]
```

### 7.33.2.3 setAuthorization()

```
void AuthProvider::Token::setAuthorization (
    QNetworkRequest & request ) const [inline], [virtual]
```

### 7.33.2.4 setBearerToken()

```
void AuthProvider::Token::setBearerToken (
    const QByteArray & token ) [inline]
```



### 7.33.2.5 update()

```
bool AuthProvider::Token::update ( ) [inline], [virtual]
```

Reimplemented in [AuthProvider::OAuth](#).

## 7.33.3 Member Data Documentation

### 7.33.3.1 bearerToken

```
QByteArray AuthProvider::Token::bearerToken [protected]
```

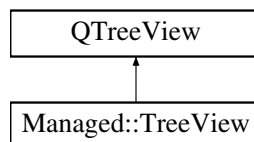
The documentation for this class was generated from the following files:

- WaNetwork/[AuthProviderToken.h](#)
- WaNetwork/[AuthProviderToken.hpp](#)

## 7.34 Managed::TreeView Class Reference

```
#include <ManagedTreeView.h>
```

Inheritance diagram for Managed::TreeView:



### Public Member Functions

- [TreeView](#) (QWidget \*parent)
- template<typename TargetClass >  
void [onSelected](#) (TargetClass \*instance, void(TargetClass::\*memberFunction)(QStandardItem \*))
- template<typename TargetClass >  
void [onDoubleClicked](#) (TargetClass \*instance, bool(TargetClass::\*memberFunction)(QStandardItem \*))
- template<typename TargetClass >  
void [onContextMenu](#) (TargetClass \*instance, QMenu \*(TargetClass::\*memberFunction)(QStandardItem \*))
- void [setModel](#) (QAbstractItemModel \*model) override
- QModelIndex [currentSourceIndex](#) () const

### 7.34.1 Constructor & Destructor Documentation

### 7.34.1.1 TreeView()

```
Managed::TreeView::TreeView (
    QWidget * parent )
```

## 7.34.2 Member Function Documentation

### 7.34.2.1 currentSourceIndex()

```
QModelIndex Managed::TreeView::currentSourceIndex ( ) const
```

### 7.34.2.2 onContextMenu()

```
template<typename TargetClass >
void Managed::TreeView::onContextMenu (
    TargetClass * instance,
    QMenu *(TargetClass::*)(QStandardItem *) memberFunction )
```

### 7.34.2.3 onDoubleClicked()

```
template<typename TargetClass >
void Managed::TreeView::onDoubleClicked (
    TargetClass * instance,
    bool(TargetClass::*)(QStandardItem *) memberFunction )
```

### 7.34.2.4 onSelected()

```
template<typename TargetClass >
void Managed::TreeView::onSelected (
    TargetClass * instance,
    void(TargetClass::*)(QStandardItem *) memberFunction )
```

### 7.34.2.5 setModel()

```
void Managed::TreeView::setModel (
    QAbstractItemModel * model ) [override]
```

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

- [WaQt/ManagedTreeView.h](#)
- [WaQt/ManagedTreeView.hpp](#)
- [WaQt/src/ManagedTreeView.cpp](#)

## 7.35 Math::Vector3 Class Reference

```
#include <MathVector3.h>
```

### Public Member Functions

- [Vector3](#) (const double &x=0.0, const double &y=0.0, const double &z=0.0)
- bool [operator==](#) (const [Vector3](#) &other) const
- bool [operator<](#) (const [Vector3](#) &other) const
- [Vector3](#) [operator+](#) (const [Vector3](#) &other) const
- [Vector3](#) & [operator+=](#) (const [Vector3](#) &other)
- const double & [operator\[\]](#) (const int index) const
- double & [operator\[\]](#) (const int index)
- const double & [getX](#) () const
- const double & [getY](#) () const
- const double & [getZ](#) () const
- [Spherical toSpherical](#) (const bool toDegree=true) const
- double [length](#) () const
- [Vector3](#) [norm](#) () const
- double [dot](#) (const [Vector3](#) &other) const
- double [dotAngle](#) (const [Vector3](#) &other, const bool toDegree=true) const
- [Vector3](#) [cross](#) (const [Vector3](#) &other) const
- double [crossAngle](#) (const [Vector3](#) &other, const bool toDegree=true) const

### Static Public Member Functions

- static [Vector3](#) [fromSpherical](#) (const [Spherical](#) &spherical, const bool fromDegree=true)

### Friends

- std::ostream & [operator<<](#) (std::ostream &out, const [Vector3](#) &value)

### 7.35.1 Constructor & Destructor Documentation

### 7.35.1.1 Vector3()

```
Math::Vector3::Vector3 (
    const double & x = 0.0,
    const double & y = 0.0,
    const double & z = 0.0 ) [inline]
```

## 7.35.2 Member Function Documentation

### 7.35.2.1 cross()

```
Math::Vector3 Math::Vector3::cross (
    const Vector3 & other ) const [inline]
```

### 7.35.2.2 crossAngle()

```
double Math::Vector3::crossAngle (
    const Vector3 & other,
    const bool toDegree = true ) const [inline]
```

### 7.35.2.3 dot()

```
double Math::Vector3::dot (
    const Vector3 & other ) const [inline]
```

### 7.35.2.4 dotAngle()

```
double Math::Vector3::dotAngle (
    const Vector3 & other,
    const bool toDegree = true ) const [inline]
```

### 7.35.2.5 fromSpherical()

```
Math::Vector3 Math::Vector3::fromSpherical (
    const Spherical & spherical,
    const bool fromDegree = true ) [inline], [static]
```

#### 7.35.2.6 getX()

```
const double & Math::Vector3::getX ( ) const [inline]
```

#### 7.35.2.7 getY()

```
const double & Math::Vector3::getY ( ) const [inline]
```

#### 7.35.2.8 getZ()

```
const double & Math::Vector3::getZ ( ) const [inline]
```

#### 7.35.2.9 length()

```
double Math::Vector3::length ( ) const [inline]
```

#### 7.35.2.10 norm()

```
Math::Vector3 Math::Vector3::norm ( ) const [inline]
```

#### 7.35.2.11 operator+()

```
Math::Vector3 Math::Vector3::operator+ (
    const Vector3 & other ) const [inline]
```

#### 7.35.2.12 operator+=( )

```
Math::Vector3 & Math::Vector3::operator+= (
    const Vector3 & other ) [inline]
```

#### 7.35.2.13 operator<()

```
bool Math::Vector3::operator< (
    const Vector3 & other ) const [inline]
```

#### 7.35.2.14 operator==( )

```
bool Math::Vector3::operator==(
    const Vector3 & other ) const [inline]
```

#### 7.35.2.15 operator[]() [1/2]

```
double & Math::Vector3::operator[] (
    const int index ) [inline]
```

#### 7.35.2.16 operator[]() [2/2]

```
const double & Math::Vector3::operator[] (
    const int index ) const [inline]
```

#### 7.35.2.17 toSpherical()

```
Math::Spherical Math::Vector3::toSpherical (
    const bool toDegree = true ) const [inline]
```

### 7.35.3 Friends And Related Function Documentation

#### 7.35.3.1 operator<<

```
std::ostream& operator<< (
    std::ostream & out,
    const Vector3 & value ) [friend]
```

### 7.35.4 Member Data Documentation

#### 7.35.4.1 data

```
double Math::Vector3::data[3]
```

#### 7.35.4.2 x

```
double Math::Vector3::x
```

#### 7.35.4.3 y

```
double Math::Vector3::y
```

#### 7.35.4.4 z

```
double Math::Vector3::z
```

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

- WaMath/[MathVector3.h](#)
- WaMath/[MathVector3.hpp](#)

## 7.36 Math::Wave Class Reference

```
#include <MathWave.h>
```

### Public Member Functions

- [Wave](#) (const [Size](#) &size, const int &threadCount=4)
- void [step](#) (const double &time, bool clamp=false)
- void [clampBoundaries](#) ()
- const [Matrix](#)< double > & [getHeightField](#) () const
- const [Size](#) & [getSize](#) () const
- const double & [getFrequency](#) () const
- void [setFrequency](#) (const double &value)
- const double & [getSpeed](#) () const
- void [setSpeed](#) (const double &value)
- [Matrix](#)< [Math::Vector3](#) > [compileNormals](#) () const

## Protected Attributes

- [Size](#) `size`
- double `frequency`
- double `speed`
- double `omega`
- [DoubleBuffer](#)< [Matrix](#)< double > > `heightField`

## 7.36.1 Constructor & Destructor Documentation

### 7.36.1.1 Wave()

```
Math::Wave::Wave (
    const Size & size,
    const int & threadCount = 4 ) [inline]
```

## 7.36.2 Member Function Documentation

### 7.36.2.1 clampBoundaries()

```
void Math::Wave::clampBoundaries ( ) [inline]
```

### 7.36.2.2 compileNormals()

```
Matrix< Math::Vector3 > Math::Wave::compileNormals ( ) const [inline]
```

### 7.36.2.3 getFrequency()

```
const double & Math::Wave::getFrequency ( ) const [inline]
```

### 7.36.2.4 getHeightField()

```
const Matrix< double > & Math::Wave::getHeightField ( ) const [inline]
```



#### 7.36.2.5 getSize()

```
const Size & Math::Wave::getSize ( ) const [inline]
```

#### 7.36.2.6 getSpeed()

```
const double & Math::Wave::getSpeed ( ) const [inline]
```

#### 7.36.2.7 setFrequency()

```
void Math::Wave::setFrequency (
    const double & value ) [inline]
```

#### 7.36.2.8 setSpeed()

```
void Math::Wave::setSpeed (
    const double & value ) [inline]
```

#### 7.36.2.9 step()

```
void Math::Wave::step (
    const double & time,
    bool clamp = false ) [inline]
```

### 7.36.3 Member Data Documentation

#### 7.36.3.1 frequency

```
double Math::Wave::frequency [protected]
```

#### 7.36.3.2 heightField

```
DoubleBuffer<Matrix<double> > Math::Wave::heightField [protected]
```

### 7.36.3.3 omega

```
double Math::Wave::omega [protected]
```

### 7.36.3.4 size

```
Size Math::Wave::size [protected]
```

### 7.36.3.5 speed

```
double Math::Wave::speed [protected]
```

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

- [WaMath/MathWave.h](#)
- [WaMath/MathWave.hpp](#)

## 7.37 ColorSpace::XYB Struct Reference

```
#include <ColorSpace.h>
```

### Public Attributes

- double [x](#) = 0.0
- double [y](#) = 0.0
- double [brightness](#) = 0.0

### 7.37.1 Member Data Documentation

#### 7.37.1.1 brightness

```
double ColorSpace::XYB::brightness = 0.0
```

#### 7.37.1.2 x

```
double ColorSpace::XYB::x = 0.0
```

#### 7.37.1.3 y

```
double ColorSpace::XYB::y = 0.0
```

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

- [WaQt/ColorSpace.h](#)

## Chapter 8

# File Documentation

### 8.1 README.md File Reference

### 8.2 WaCrypt/ShallowCrypt.h File Reference

```
#include <QCryptographicHash>
#include <QString>
#include <QSysInfo>
#include "ShallowCrypt.hpp"
```

#### Classes

- class [ShallowCrypt](#)

### 8.3 WaCrypt/ShallowCrypt.hpp File Reference

```
#include "ShallowCrypt.h"
#include <QRandomGenerator>
```

### 8.4 WaLog/LogFile.h File Reference

```
#include <CompileTimeString.h>
#include <QFile>
#include <QDateTime>
#include "LogFile.hpp"
```

## Classes

- struct [LogFileBase](#)
- class [LogFile< tag >](#)

*tag is used to create a unique instance of [LogFile](#) and provides a static text stream*

## 8.5 WaLog/LogFile.hpp File Reference

```
#include "LogFile.h"  
#include <QFileInfo>
```

## 8.6 WaLog/Logger.h File Reference

```
#include <QColor>  
#include <QDateTime>  
#include <QTextStream>
```

## Classes

- class [Logger::Target](#)
- struct [Logger::Target::Entry](#)

## Namespaces

- [Logger](#)  
*provide streams for logging messages and warnings*

## Functions

- QTextStream [Logger::stream](#) (const Qt::GlobalColor &color=Qt::black)

## 8.7 WaLog/LogSymbol.h File Reference

```
#include <QString>
```

## Classes

- struct [LogSymbol](#)

## 8.8 WaLog/MessageHandler.h File Reference

```
#include <QObject>
#include <functional>
#include <QMap>
```

### Classes

- struct [MessageHandler](#)  
*override the default Qt message handler*

## 8.9 WaLog/src/Logger.cpp File Reference

```
#include "Logger.h"
#include <QIODevice>
```

### Classes

- class [Logger::Target::StreamProxy](#)

## 8.10 WaLog/src/LogSymbol.cpp File Reference

```
#include "LogSymbol.h"
```

## 8.11 WaLog/src/MessageHandler.cpp File Reference

```
#include "MessageHandler.h"
#include <QThread>
```

## 8.12 WaMath/MathGeneral.h File Reference

```
#include "MathGeneral.hpp"
```

### Namespaces

- [Math](#)

## Functions

- double [Math::deg2Rad](#) (const double &degrees)
- double [Math::rad2Deg](#) (const double &radians)
- bool [Math::signChange](#) (const double &value1, const double &value2)

## 8.13 WaMath/MathGeneral.hpp File Reference

```
#include "MathGeneral.h"
#include <math.h>
```

## 8.14 WaMath/MathQtStreaming.h File Reference

```
#include <QDebug>
#include <QTextStream>
#include "MathVector3.h"
#include "MathQtStreaming.hpp"
```

## Functions

- QDebug [operator<<](#) (QDebug stream, const [Math::Vector3](#) &data)
- QDebug [operator<<](#) (QDebug stream, const [Math::Spherical](#) &data)
- QTextStream & [operator<<](#) (QTextStream &stream, const [Math::Vector3](#) &data)
- QTextStream & [operator>>](#) (QTextStream &stream, [Math::Vector3](#) &data)

### 8.14.1 Function Documentation

#### 8.14.1.1 [operator<<\(\)](#) [1/3]

```
QDebug operator<< (
    QDebug stream,
    const Math::Spherical & data ) [inline]
```

#### 8.14.1.2 [operator<<\(\)](#) [2/3]

```
QDebug operator<< (
    QDebug stream,
    const Math::Vector3 & data ) [inline]
```

**8.14.1.3 operator<<()** [3/3]

```
QTextStream& operator<< (
    QTextStream & stream,
    const Math::Vector3 & data ) [inline]
```

**8.14.1.4 operator>>()**

```
QTextStream& operator>> (
    QTextStream & stream,
    Math::Vector3 & data ) [inline]
```

**8.15 WaMath/MathQtStreaming.hpp File Reference**

```
#include "MathQtStreaming.h"
```

**Functions**

- QDebug [operator<<](#) (QDebug stream, const [Math::Vector3](#) &data)
- QDebug [operator<<](#) (QDebug stream, const [Math::Spherical](#) &data)
- QTextStream & [operator<<](#) (QTextStream &stream, const [Math::Vector3](#) &data)
- QTextStream & [operator>>](#) (QTextStream &stream, [Math::Vector3](#) &data)

**8.15.1 Function Documentation****8.15.1.1 operator<<()** [1/3]

```
QDebug operator<< (
    QDebug stream,
    const Math::Spherical & data ) [inline]
```

**8.15.1.2 operator<<()** [2/3]

```
QDebug operator<< (
    QDebug stream,
    const Math::Vector3 & data ) [inline]
```

#### 8.15.1.3 operator<<() [3/3]

```
QTextStream& operator<< (
    QTextStream & stream,
    const Math::Vector3 & data ) [inline]
```

#### 8.15.1.4 operator>>()

```
QTextStream& operator>> (
    QTextStream & stream,
    Math::Vector3 & data ) [inline]
```

### 8.16 WaMath/MathQuaternion.h File Reference

```
#include "MathQuaternion.hpp"
```

#### Classes

- class [Math::Quaternion](#)

#### Namespaces

- [Math](#)

### 8.17 WaMath/MathQuaternion.hpp File Reference

```
#include "MathQuaternion.h"
```

### 8.18 WaMath/MathVector3.h File Reference

```
#include <iostream>
#include "MathVector3.hpp"
```

#### Classes

- class [Math::Spherical](#)
- class [Math::Vector3](#)



## Namespaces

- [Math](#)

## Functions

- `std::ostream & Math::operator<< (std::ostream &out, const Spherical &value)`
- `std::ostream & Math::operator<< (std::ostream &out, const Vector3 &value)`

## 8.19 WaMath/MathVector3.hpp File Reference

```
#include "MathVector3.h"  
#include <cmath>  
#include "MathGeneral.h"
```

## 8.20 WaMath/MathWave.h File Reference

```
#include <list>  
#include <thread>  
#include <vector>  
#include "../WaTools/DoubleBuffer.h"  
#include "../WaTools/Matrix.h"  
#include "MathVector3.h"  
#include "MathWave.hpp"
```

## Classes

- class [Math::Wave](#)

## Namespaces

- [Math](#)

## 8.21 WaMath/MathWave.hpp File Reference

```
#include "MathWave.h"  
#include <cmath>
```

## 8.22 WaNetwork/AuthProviderOAuth.h File Reference

```
#include "AuthProviderToken.h"  
#include "NetworkSettings.h"  
#include <QJsonObject>  
#include <QOAuth2AuthorizationCodeFlow>  
#include "AuthProviderOAuth.hpp"
```

### Classes

- class [AuthProvider::OAuth](#)

### Namespaces

- [AuthProvider](#)

## 8.23 WaNetwork/AuthProviderOAuth.hpp File Reference

```
#include "AuthProviderOAuth.h"  
#include <QDesktopServices>  
#include <QEventLoop>  
#include <QNetworkAccessManager>  
#include <QNetworkReply>  
#include <QNetworkRequest>  
#include <QOAuthHttpServerReplyHandler>  
#include <QUrlQuery>  
#include <FileTools.h>  
#include "NetworkExceptions.h"
```

## 8.24 WaNetwork/AuthProviderToken.h File Reference

```
#include <QObject>  
#include <QNetworkRequest>  
#include "AuthProviderToken.hpp"
```

### Classes

- class [AuthProvider::Token](#)

### Namespaces

- [AuthProvider](#)

## 8.25 WaNetwork/AuthProviderToken.hpp File Reference

```
#include "AuthProviderToken.h"
```

## 8.26 WaNetwork/NetworkExceptions.h File Reference

```
#include <QException>
#include <QJsonObject>
#include "NetworkExceptions.hpp"
```

### Classes

- class [Network::StatusException](#)

### Namespaces

- [Network](#)

## 8.27 WaNetwork/NetworkExceptions.hpp File Reference

```
#include "NetworkExceptions.h"
```

## 8.28 WaNetwork/NetworkSettings.h File Reference

```
#include "NetworkSettings.hpp"
```

### Classes

- class [Network::Settings](#)

### Namespaces

- [Network](#)

## 8.29 WaNetwork/NetworkSettings.hpp File Reference

```
#include "NetworkSettings.h"
```

### 8.30 WaNetwork/OscMessage.h File Reference

```
#include <QVariant>
#include "OscMessage.hpp"
```

#### Classes

- class [OscMessage](#)

### 8.31 WaNetwork/OscMessage.hpp File Reference

```
#include "OscMessage.h"
#include <QColor>
#include <QVariant>
#include <Bytes.h>
```

### 8.32 WaNetwork/RestApiAsync.h File Reference

```
#include "RestApiBlocking.h"
#include "RestApiAsync.hpp"
```

#### Classes

- class [RestApi::Async](#)

#### Namespaces

- [RestApi](#)

### 8.33 WaNetwork/RestApiAsync.hpp File Reference

```
#include "RestApiAsync.h"
```

### 8.34 WaNetwork/RestApiBlocking.h File Reference

```
#include "NetworkSettings.h"
#include <QObject>
#include <QJsonObject>
#include <QNetworkAccessManager>
#include <QNetworkReply>
#include <QUrlQuery>
#include "RestApiBlocking.hpp"
```

## Classes

- class [RestApi::Blocking](#)

## Namespaces

- [AuthProvider](#)
- [RestApi](#)

## 8.35 WaNetwork/RestApiBlocking.hpp File Reference

```
#include "RestApiBlocking.h"
#include <QEventLoop>
#include <QJsonDocument>
#include <FileTools.h>
#include "AuthProviderToken.h"
#include "NetworkExceptions.h"
```

## 8.36 WaQt/ActionPopulation.h File Reference

```
#include <QObject>
#include <QDomElement>
#include <QToolBar>
```

## Classes

- class [ActionPopulation](#)

## 8.37 WaQt/ColorSpace.h File Reference

```
#include <QColor>
```

## Classes

- class [ColorSpace](#)
- struct [ColorSpace::XYB](#)

## 8.38 WaQt/Look.h File Reference

```
#include <QWidget>
```

## Classes

- struct [Look](#)

## 8.39 WaQt/ManagedTableView.h File Reference

```
#include <QTableView>
#include "ManagedTableView.hpp"
```

## Classes

- class [Managed::TableView](#)

## Namespaces

- [Managed](#)

## 8.40 WaQt/ManagedTableView.hpp File Reference

```
#include "ManagedTableView.h"
```

## 8.41 WaQt/ManagedTreeView.h File Reference

```
#include <QTreeView>
#include <QStandardItem>
#include "ManagedTreeView.hpp"
```

## Classes

- class [Managed::TreeView](#)

## Namespaces

- [Managed](#)

## 8.42 WaQt/ManagedTreeView.hpp File Reference

```
#include <ManagedTreeView.h>
```

## 8.43 WaQt/MessageLabel.h File Reference

```
#include <Logger.h>
#include <QLabel>
#include <QDateTime>
```

### Classes

- class [MessageLabel](#)

## 8.44 WaQt/MessageModel.h File Reference

```
#include <Logger.h>
#include <QStandardItemModel>
```

### Classes

- class [MessageModel](#)

## 8.45 WaQt/PopulatedMainWindow.h File Reference

```
#include <QMainWindow>
#include "ActionPopulation.h"
#include "PopulatedMainWindow.hpp"
```

### Classes

- class [PopulatedMainWindow](#)

## 8.46 WaQt/PopulatedMainWindow.hpp File Reference

```
#include "PopulatedMainWindow.h"
```

## 8.47 WaQt/ShellClient.h File Reference

```
#include <QObject>
```

## Classes

- class [ShellClient](#)

### 8.48 WaQt/src/ActionPopulation.cpp File Reference

```
#include "ActionPopulation.h"  
#include <QFile>  
#include <QFileInfo>  
#include <QLabel>  
#include <QMenu>
```

### 8.49 WaQt/src/ColorSpace.cpp File Reference

```
#include "ColorSpace.h"  
#include <QtMath>
```

### 8.50 WaQt/src/linux/Look\_linux.cpp File Reference

```
#include "Look.h"
```

### 8.51 WaQt/src/Look.cpp File Reference

```
#include "Look.h"  
#include <QFile>
```

### 8.52 WaQt/src/mac/Look\_mac.mm File Reference

```
#include "Look.h"  
#include <AppKit/NSApplication.h>  
#include <AppKit/NSDockTile.h>  
#include <AppKit/AppKit.h>
```

### 8.53 WaQt/src/ManagedTableView.cpp File Reference

```
#include "ManagedTableView.h"  
#include <QMenu>  
#include <QMouseEvent>  
#include <QSortFilterProxyModel>
```



## 8.54 WaQt/src/ManagedTreeView.cpp File Reference

```
#include "ManagedTreeView.h"
#include <QMenu>
#include <QMouseEvent>
#include <QSortFilterProxyModel>
#include <QStandardItemModel>
```

## 8.55 WaQt/src/MessageLabel.cpp File Reference

```
#include "MessageLabel.h"
#include <QEvent>
#include <QMouseEvent>
#include <QTimer>
#include <QToolTip>
#include "LogSymbol.h"
```

## 8.56 WaQt/src/MessageModel.cpp File Reference

```
#include "MessageModel.h"
```

## 8.57 WaQt/src/PopulatedMainWindow.cpp File Reference

```
#include "PopulatedMainWindow.h"
#include <QCloseEvent>
#include <QDockWidget>
#include <QMenu>
#include <QMenuBar>
#include <QSettings>
```

## 8.58 WaQt/src/ShellClient.cpp File Reference

```
#include "ShellClient.h"
#include <QProcess>
```

## 8.59 WaQt/src/win/Look\_win.cpp File Reference

```
#include "Look.h"
```

## 8.60 WaTools/Bytes.h File Reference

```
#include <QByteArray>
#include "Bytes.hpp"
```

### Classes

- class [Bytes< DataType >](#)

## 8.61 WaTools/Bytes.hpp File Reference

```
#include "Bytes.h"
```

## 8.62 WaTools/CompileTimeString.h File Reference

```
#include <string>
#include "CompileTimeString.hpp"
```

### Classes

- struct [CompileTimeString< N >](#)

## 8.63 WaTools/CompileTimeString.hpp File Reference

```
#include "CompileTimeString.h"
```

## 8.64 WaTools/DoubleBuffer.h File Reference

```
#include "DoubleBuffer.hpp"
```

### Classes

- class [DoubleBuffer< DataType >](#)

## 8.65 WaTools/DoubleBuffer.hpp File Reference

```
#include "DoubleBuffer.h"
```

## 8.66 WaTools/FileTools.h File Reference

```
#include <QCoreApplication>
#include "FileTools.hpp"
```

### Classes

- class [FileTools](#)

## 8.67 WaTools/FileTools.hpp File Reference

```
#include "FileTools.h"
#include <QDir>
#include <QDirIterator>
#include <QJsonDocument>
#include <QJsonObject>
#include <QSettings>
#include <QStandardPaths>
```

## 8.68 WaTools/Locker.h File Reference

```
#include "CompileTimeString.h"
#include "Locker.hpp"
```

### Classes

- class [Locker](#)< tag >

## 8.69 WaTools/Locker.hpp File Reference

```
#include "Locker.h"
```

## 8.70 WaTools/Matrix.h File Reference

```
#include <vector>
#include "Size.h"
#include "Matrix.hpp"
```

### Classes

- class [Matrix< DataType >](#)

## 8.71 WaTools/Matrix.hpp File Reference

```
#include "Matrix.h"
```

## 8.72 WaTools/Shared.h File Reference

```
#include "CompileTimeString.h"
#include <QStandardPaths>
#include "Shared.hpp"
```

### Classes

- struct [Shared< AppName >](#)

## 8.73 WaTools/Shared.hpp File Reference

```
#include "Shared.h"
#include <QDir>
#include <QFile>
#include <QLocalSocket>
#include <QProcess>
#include <QThread>
```

## 8.74 WaTools/Size.h File Reference

```
#include <inttypes.h>
#include "Size.hpp"
```

### Classes

- struct [Size](#)

## 8.75 WaTools/Size.hpp File Reference

```
#include "Size.h"
```

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