Telemotive AG

blue PiraT 2 Client Library 1.7.6

User's manual

Generated by Doxygen 1.8.0

Tue Dec 18 2012 10:38:38

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User's manual - blue PiraT 2 Client Library 1.7.6

1.1 General

This is the documentation for the C++ blue PiraT 2 Client library which is compatible with all Microsoft compilers. The library's interface class IBPNGClient uses only base data type parameters like *int*, *long* and *char*, pointers to those types and pointers to complex proprietary data objects that are entirely defined within the library. To access the data of such objects the library comes with own interface definitions for all of those complex data types (like e.g. IRdbEventList, see BPNGDefines.h). All library functions are blocking functions. Status and progress information is processed via listener callbacks (see IBPNGClientListener). Errors are processed by the functions' return values (see section Error handling for more details).

1.2 Functionality

The blue PiraT 2 client library provides methods for base functionality like:

- downloading the logger's raw trace data as offline data sets
- converting trace data to nearly all common file formats
- reading and reconfigurating the data logger
- updating the logger's firmware
- creating bug reports

Besides that there are several more functions for deleting data, setting the logger's time and marker, scanning the network for available loggers, etc.

1.2.1 Error handling and listener mechanism

All errors are processed by the functions' return values. If the return value states an error a call to getLastError() provides details about the error(s) occurred. Warnings are not intended to abort a process. That’s why they are reported via the function IBPNGClientListener::onWarning(). It’s up to the user to handle them or not.

Progress and status information is also processed via listener callbacks. You have to derive your own class from IBPNGClientListener and implement all functions you need. Register an object of your listener class at the executing IBPNGClient with IBPNGClient::addListener().

1.3 Compiler/Linker

The library is build with Microsoft Visual C++ and is linked to the C-Runtime Library with the Multi-threaded resp. Multi-threaded Debug compiler switch (/MT resp. /MTd). The user’s project must have the same settings. Applications with mixed runtime library linkage may cause errors that are difficult to diagnose and to handle. The debug version of the library is named with a "_d" suffix.

1.4 Thread safety

The library is thread safe when using different objects of IBPNGClient resp. the objects’ pointers in different threads. It is NOT thread safe for one IBPNGClient instance in several threads!

1.5 Demo project

The "sample" directory contains a demo project for the blue PiraT 2 Client library.
Beispiel zur Verwendung der Library:

```
/*
        Sample project for BPNGClientLib (blue PiraT 2 Client Library)

        Link static runtime library (/MTd resp. /MT)
*/
#include "BPNGDefines.h"
#include "IBPNGClient.h"
#include "IBPNGClientListener.h"

#include "BPNGLoggerDetector.hh"
#include "RdbEventList.hh"

#include <iostream>
#include <direct.h>
#include <errno.h>
#include <time.h>

using namespace std;

void sampleFunctionDownload(BP2Device device);
void sampleFunctionOnlineConversion(BP2Device device);
void sampleFunctionOfflineConversion();
void sampleFunctionConfiguration(BP2Device device);


void main()
{
        // Get list of all currently available blue PiraT 2 devices
        BPNGLoggerDetector detector;
        vector<BP2Device> devices = detector.getLoggerList(0);

        if (devices.size() == 0)
                return; // no logger found

        // select the device you want to work with
        BP2Device device = devices[0];

        sampleFunctionDownload(device);
        //sampleFunctionOnlineConversion(device);
        //sampleFunctionOfflineConversion();
        //sampleFunctionConfiguration(device);
}

// We want to download all traces since last startup to an offline data set
void sampleFunctionDownload(BP2Device device)
{
        IBPNGClient* client = getBPNGClient();
        // connect logger
        BOOL ret = client->connectLogger(device.ipAddress.c_str());
        if (ret == 0)
        {
                BPNGError err = client->getLastError();
                cout << "Failed to connect logger. " << endl;
                cout << "BPNGErrCode: " << err.code << ", " << err.msg << endl;
                client->release();
                return;
        }

        ret = client->initOnline();
        if (ret == 0)
        {
                BPNGError err = client->getLastError();
                cout << "Failed to init online." << endl;
                cout << "BPNGErrCode: " << err.code << ", " << err.msg << endl;
                client->disconnectLogger();
                client->release();
                return;
        }

        IRdbEventList* list = client->getEventList();
        RdbEventList eventList(list);

        if (eventList.size() == 0)
        {
                cout << "Empty event list" << endl;
                client->disconnectLogger();
                client->release();
                return;
        }

        uint64_t startupId = 0;
        uint64_t endId = -1; //max value for uint64 to include everything in
       the id range

        // search last startup
        for (int i = eventList.size() - 1; i >= 0; --i)
        {
                if (eventList[i].type == EVID_STARTUP)
                {
                        startupId = eventList[i].uniqueID;
                        break;
                }
        }

        DataSpan span;
        span.type = DST_IDSPAN;
        span.start = startupId;
        span.end = endId;

        // if you want to download several spans, put them in a vector
        vector<DataSpan> spanVec;
        spanVec.push_back(span);

        ret = _mkdir("..\\testoutdir");
        if (ret != 0 && errno != EEXIST)
        {
                cout << "Failed to create output directory" << endl;
                client->disconnectLogger();
                client->release();
                return;
        }

        ret = client->downloadDataSpans(spanVec.size(), &spanVec[0], "..\\
      testoutdir\\BP2_Offline.zip", 0);
        if (ret == 0)
        {
                BPNGError err = client->getLastError();
                cout << "Failed to dowload data." << endl;
                cout << "BPNGErrCode: " << err.code << ", " << err.msg << endl;
                client->disconnectLogger();
                client->release();
                return;
        }

        // disconnect
        client->disconnectLogger();
        // free memory
        client->release();
}

// We want to convert all CAN traces from the logger
// around the last Marker to CANoe asc and BLF format.
void sampleFunctionOnlineConversion(BP2Device device)
{
        IBPNGClient* client = getBPNGClient();

        // connect logger
        BOOL ret = client->connectLogger(device.ipAddress.c_str());
        if (ret == 0)
        {
                BPNGError err = client->getLastError();
                cout << "Failed to connect logger." << endl;
                cout << "BPNGErrCode: " << err.code << ", " << err.msg << endl;
                client->release();
                return;
        }

        ret = client->initOnline();
        if (ret == 0)
        {
                BPNGError err = client->getLastError();
                cout << "Failed to init online." << endl;
                cout << "BPNGErrCode: " << err.code << ", " << err.msg << endl;
                client->disconnectLogger();
                client->release();
                return;
        }

        IRdbEventList* list = client->getEventList();
        RdbEventList eventList(list);
        if (eventList.size() == 0)
        {
                cout << "Empty event list" << endl;
                client->disconnectLogger();
                client->release();
                return;
        }

        uint64_t markerTimeStamp = 0;
        // search last marker
        for (int i = eventList.size() - 1; i >= 0; --i)
        {
                if (eventList[i].type == EVID_MARKER)
                {
                        markerTimeStamp = eventList[i].timeStamp;
                        break;
                }
        }

        if (markerTimeStamp == 0)
        {
                cout << "No marker found." << endl;
                client->disconnectLogger();
                client->release();
                return;
        }

        // Ensure the out directory exists
        ret = _mkdir("..\\testoutdir");
        if (ret != 0 && errno != EEXIST)
        {
                cout << "Failed to create output directory" << endl;
                client->disconnectLogger();
                client->release();
                return;
        }

        // Get a conversion set
        IConversionSet* conversionSet = client->createNewConversionSet();

        // The time span has to be 60s before and 60s after the marker
        uint64_t startTime = markerTimeStamp - 60 * 1000000; // in usec
        uint64_t endTime = markerTimeStamp + 60 * 1000000; // in usec

        // If you want to convert more than one span,
        // call this function several times
        conversionSet->addTimeSpan(startTime, endTime);


        // CAN #1 and CAN #2 are supposed to be written to one asc output file
       each.
        // CAN #3 and CAN #4 are supposed to be written together in another asc
       file.
        // All other CAN channels are supposed to be written together in one
       BLF file.
        const IChannelList* channels = client->getLoggerChannels();
        for (int i = 0; i < channels->getSize(); ++i)
        {
                ChannelType type = channels->getChannel(i)->getType();
                if (type != CH_CANLS && type != CH_CANHS)
                        continue;

                // Note: channel indices are zero based
                int index =  channels->getChannel(i)->getIndex();
                if (index == 0 || index == 1)
                {
                        // CAN #1 and #2 in separate files
                        // -1 as fileId parameter creates a separate file for
       this channel
                        conversionSet->addChannel(type, index, CANOE, -1);
                }
                else if (index == 2 || index == 3)
                {
                        // CAN #3 and #4 in the same file.
                        // fileId != -1 will write all channels with the same
       format and same
                        // file Id to the same output file (if procurable in
       accordance with
                        // the format specification.
                        conversionSet->addChannel(type, index, CANOE, 10);
                }
                else
                {
                        // All other CAN channels to one BLF file.
                        conversionSet->addChannel(type, index, BLF, 20);
                }
        }

        ret = client->convertData(conversionSet, "..\\testoutdir");
        if (ret == 0)
        {
                BPNGError err = client->getLastError();
                cout << "Failed to convert data." << endl;
                cout << "BPNGErrCode: " << err.code << ", " << err.msg << endl;
                client->disconnectLogger();
                client->release();
                return;
        }

        // disconnect
        client->disconnectLogger();
        // free memory
        client->release();
}

// We want to convert all CAN traces from an Offline data set
// around the last Marker to CANoe asc and BLF format.
void sampleFunctionOfflineConversion()
{
        IBPNGClient* client = getBPNGClient();

        // We use the sample Offline Data Set that was downloaded
        // with sampleFunctionDownload().
        // Its up to you to ensure an existing file.
        BOOL ret = client->initOffline("..\\testoutdir\\BP2_Offline.zip");
        if (ret == 0)
        {
                BPNGError err = client->getLastError();
                cout << "Failed to init offline." << endl;
                cout << "BPNGErrCode: " << err.code << ", " << err.msg << endl;
                client->release();
                return;
        }

        IRdbEventList* list = client->getEventList();
        RdbEventList eventList(list);
        if (eventList.size() == 0)
        {
                cout << "Empty event list" << endl;
                client->release();
                return;
        }

        uint64_t markerTimeStamp = 0;
        // search last marker
        for (int i = eventList.size() - 1; i >= 0; --i)
        {
                if (eventList[i].type == EVID_MARKER)
                {
                        markerTimeStamp = eventList[i].timeStamp;
                        break;
                }
        }

        if (markerTimeStamp == 0)
        {
                cout << "No marker found." << endl;
                client->release();
                return;
        }

        // Ensure the out directory exists
        ret = _mkdir("..\\testoutdir");
        if (ret != 0 && errno != EEXIST)
        {
                cout << "Failed to create output directory" << endl;
                client->release();
                return;
        }

        // Get a conversion set
        IConversionSet* conversionSet = client->createNewConversionSet();

        // The time span has to be 60s before and 60s after the marker
        uint64_t startTime = markerTimeStamp - 60 * 1000000; // in usec
        uint64_t endTime = markerTimeStamp + 60 * 1000000; // in usec

        // If you want to convert more than one span,
        // call this function several times
        conversionSet->addTimeSpan(startTime, endTime);

        // CAN #1 and CAN #2 are supposed to be written to one asc output file
       each.
        // CAN #3 and CAN #4 are supposed to be written together in another asc
       file.
        // All other CAN channels are supposed to be written together in one
       BLF file.
        const IChannelList* channels = client->getLoggerChannels();
        for (int i = 0; i < channels->getSize(); ++i)
        {
                ChannelType type = channels->getChannel(i)->getType();
                if (type != CH_CANLS && type != CH_CANHS)
                        continue;

                // Note: channel indices are zero based
                int index =  channels->getChannel(i)->getIndex();
                if (index == 0 || index == 1)
                {
                        // CAN #1 and #2 in separate files
                        // -1 as fileId parameter creates a separate file for
       this channel
                        conversionSet->addChannel(type, index, CANOE, -1);
                }
                else if (index == 2 || index == 3)
                {
                        // CAN #3 and #4 in the same file.
                        // fileId != -1 will write all channels with the same
       format and same
                        // file Id to the same output file (if procurable in
       accordance with
                        // the format specification.
                        conversionSet->addChannel(type, index, CANOE, 10);
                }
                else
                {
                        // All other CAN channels to one BLF file.
                        conversionSet->addChannel(type, index, BLF, 20);
                }
        }

        ret = client->convertData(conversionSet, "..\\testoutdir");
        if (ret == 0)
        {
                BPNGError err = client->getLastError();
                cout << "Failed to convert data." << endl;
                cout << "BPNGErrCode: " << err.code << ", " << err.msg << endl;
                client->release();
                return;
        }

        // free memory
        client->release();
}

// This function shows how to:
//   - download the configuration
//   - reconfigurate the logger device
//   - set the default config
void sampleFunctionConfiguration(BP2Device device)
{
        IBPNGClient* client = getBPNGClient();

        BOOL ret = client->connectLogger(device.ipAddress.c_str());
        if (ret == 0)
        {
                BPNGError err = client->getLastError();
                cout << "Failed to connect logger." << endl;
                cout << "BPNGErrCode: " << err.code << ", " << err.msg << endl;
                client->release();
                return;
        }

        // save current config
        string targetPath = "..\\testoutdir\\Config_" + device.name + ".zip";
        ret = client->getConfig(targetPath.c_str());
        if (ret == 0)
        {
                BPNGError err = client->getLastError();
                cout << "Failed to download configuration." << endl;
                cout << "BPNGErrCode: " << err.code << ", " << err.msg << endl;
                client->disconnectLogger();
                client->release();
                return;
        }

        // here you could change the downloaded configuration
        // by extracting it and modifying the xml files
        // see documentation of IBPNGClient::getConfig()
        // or IBPNGClient::reconfigLogger().

        // We use the same config that we downloaded
        string newConfigPath = targetPath;
        ret = client->reconfigLogger(newConfigPath.c_str());
        if (ret == 0)
        {
                BPNGError err = client->getLastError();
                cout << "Failed to reconfigurate the logger." << endl;
                cout << "BPNGErrCode: " << err.code << ", " << err.msg << endl;
                client->disconnectLogger();
                client->release();
                return;
        }

        // Setting the default config
        ret = client->setDefaultConfig();
        if (ret == 0)
        {
                BPNGError err = client->getLastError();
                cout << "Failed to set default config to the logger." << endl;
                cout << "BPNGErrCode: " << err.code << ", " << err.msg << endl;
                client->disconnectLogger();
                client->release();
                return;
        }

        // disconnect
        client->disconnectLogger();
        // free memory
        client->release();
}
```

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Module Index

2.1 Modules

Here is a list of all modules:

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Class Index

3.1 Class Hierarchy

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

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Class Index

4.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

Kapitel 5

File Index

5.1 File List

Here is a list of all documented files with brief descriptions:

Kapitel 6

Module Documentation

6.1 Download Functions

This are all function needed for downloading an offline data set.

Functions

- virtual BOOL WINAPI IBPNGClient::connectLogger (const char ∗ipAddress)=0

  Connect to logger with passed IP address.

6.1.1 Detailed Description

This are all function needed for downloading an offline data set.

6.1.2 Function Documentation

6.1.2.1 virtual BOOL WINAPI **IBPNGClient::connectLogger** (const char ∗ *ipAddress*) `[pure virtual]`

Connect to logger with passed IP address.

,

```
While the logger is connected, it won’t go to standy mode until the last
IBPNGClient instance is disconnected.
If connect fails the function will return 0. On success the return value is 1.
In case of failure further information can be retrieved with getLastError().

@param ipAddress IP address of the logger that should be connected
@return 0 on failure, 1 on success
```

6.2 Conversion Functions

This are all function needed for converting data.

This are all function needed for converting data.

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Class Documentation

7.1 BP2Device Struct Reference

Public Member Functions

- **BP2Device** (OnlineLoggerInfo ∗logger)

Public Attributes

- std::string **ipAddress**
- std::string **name**
- std::string **mainboardNr**
- bool **connected**
- std::string **connectedUser**
- int **status**

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

- BPNGLoggerDetector.hh

7.2 BPNGError Struct Reference

Error struct with error code and optional error message.

`#include <BPNGDefines.h>`

Public Attributes

- BPNGErrCode code

    error code
- const char ∗ msg

    error message

7.2.1 Detailed Description

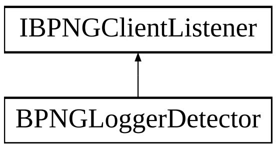
Error struct with error code and optional error message.

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

- BPNGDefines.h

7.3 BPNGLoggerDetector Class Reference

Inheritance diagram for BPNGLoggerDetector:



Public Member Functions

- std::vector< BP2Device > **getLoggerList** (unsigned searchTimeOut)
- virtual void WINAPI onBPNGDeviceDetected (OnlineLoggerInfo ∗info)

    Called to notify a detected logger in network.
- virtual void WINAPI onBPNGDeviceDisappeared (OnlineLoggerInfo ∗info)

    Called to notify a disappeared logger.
- virtual void WINAPI onBPNGDeviceStateChange (OnlineLoggerInfo ∗info)

    Called to notify a logger's state change.
- virtual int WINAPI onProgressDataDownload (int percentCompleted)

    Called to indicate the current progress of a file transfer.
- virtual int WINAPI onProgressConversion (int percentCompleted, const char ∗status)

    Called to indicate the current progress of file conversion.
- virtual void WINAPI onStatusMessage (const char ∗statusMsg)

    Called to send additional information of the current process to the calling app.
- virtual void WINAPI onWarning (BPNGWarningCode warningCode, const char ∗warnMsg)

    Called to inform about a warning.
- virtual int WINAPI onTargetPathTooLong (char ∗newTarget, int maxSize)

    Called on a too long target directory.
- virtual int WINAPI getOverwritingPermission (const char ∗filePath)

    Called on existing output trace files.
- virtual int WINAPI onCriticalDiskSpace (uint64_t freeSpace, uint64_t neededSpace, const char ∗drive, const char ∗msg)

    Called in case of not enough free diskspace.
- virtual void WINAPI onFirmwareUpdateProgress (int percentage, int stepId, int subStepId, const char ∗desc)

    Called on firmware update progress.
- virtual void WINAPI **onFirmwareUpdateError** (int errorId)
- virtual int WINAPI onGetLogReportProgress (int percentage, const char ∗desc)

7.3.1 Member Function Documentation

7.3.1.1 virtual int WINAPI BPNGLoggerDetector::getOverwritingPermission (const char * *filePath*) [inline, virtual]

Called on existing output trace files.

When an output trace file already exists this function is called. The listener has the possibility to return one of following values: -1: no, don't overwrite file -2: no, overwrite neither this nor any following file 1: yes, overwrite file 2: yes, overwrite this and all following files 0: cancel conversion

Implements IBPNGClientListener.

7.3.1.2 virtual void WINAPI BPNGLoggerDetector::onBPNGDeviceDetected (OnlineLoggerInfo * *info*) [virtual]

Called to notify a detected logger in network.

All char* of the passed OnlineLoggerInfo* are only valid for the time of the function call. Please ensure to copy the string values.

Implements IBPNGClientListener.

7.3.1.3 virtual void WINAPI BPNGLoggerDetector::onBPNGDeviceDisappeared (OnlineLoggerInfo * *info*) [virtual]

Called to notify a disappeared logger.

All char* of the passed OnlineLoggerInfo* are only valid for the time of the function call. Please ensure to copy the string values.

Implements IBPNGClientListener.

7.3.1.4 virtual void WINAPI BPNGLoggerDetector::onBPNGDeviceStateChange (OnlineLoggerInfo * *info*) [virtual]

Called to notify a logger's state change.

All char* of the passed OnlineLoggerInfo* are only valid for the time of the function call. Please ensure to copy the string values.

Implements IBPNGClientListener.

7.3.1.5 virtual int WINAPI BPNGLoggerDetector::onCriticalDiskSpace (uint64_t *freeSpace*, uint64_t *neededSpace*, const char * *drive*, const char * *msg*) [inline, virtual]

Called in case of not enough free diskspace.

This notifies the listener about not enough free disk space for data download or conversion. The user can continue or abort the process. Returning 0 will abort the process. In some cases continuing without providing more disk space will call this function immediately again.

Parameters

freeSpace	Amount of free space
neededSpace	Amount of needed space
drive	Name of the drive where to store data
msg	Additional message to display

Returns

return 0 when process should be aborted, 1 to ignore

Implements IBPNGClientListener.

7.3.1.6 virtual int WINAPI BPNGLoggerDetector::onGetLogReportProgress (int *percentage*, const char ∗ *desc*) [inline, virtual]

Called on creation of log report

Returns

return value 0 indicates an abort request from the implementing class

Implements IBPNGClientListener.

7.3.1.7 virtual int WINAPI BPNGLoggerDetector::onProgressConversion (int *percentCompleted*, const char ∗ *status*) [inline, virtual]

Called to indicate the current progress of file conversion.

This function notifies the listener about the conversion progress of the raw Telemotive trace data. If the *percentCompleted* value has changed, but the *status* is still the same, the application passes an empty string as status to the function.

Parameters

percent-Completed	Percent of the entire conversion process (from 0...100%), -1 indicates the same value as from last function call
status	Status of the conversion process (e.g. "Converting trace data. Block 5 of 32")

Returns

return value 0 indicates an abort request from the implementing class

Implements IBPNGClientListener.

7.3.1.8 virtual int WINAPI BPNGLoggerDetector::onProgressDataDownload (int *percentCompleted*) [inline, virtual]

Called to indicate the current progress of a file transfer.

This function notifies the listener about the download progress of the raw Telemotive trace data.

Parameters

percent-Completed	Percentage of the entire download process (from 0...100%)

Returns

return value 0 indicates an abort request from the implementing class

Implements IBPNGClientListener.

7.3.1.9 virtual void WINAPI BPNGLoggerDetector::onStatusMessage (const char ∗ *statusMsg*) `[inline, virtual]`

Called to send additional information of the current process to the calling app.

This function transmit message strings to the listener class. Those messages are only for imformation purpose. The receiver doesn't have to react on it but can display it on the screen.

Implements IBPNGClientListener.

7.3.1.10 virtual int WINAPI BPNGLoggerDetector::onTargetPathTooLong (char ∗ *newTarget,* int *maxSize*) `[inline, virtual]`

Called on a too long target directory.

Called when the resulting file name of the converted files is longer than the maximum allowed size of the file system (Windows 260). The lib user has to pass a new (shorter) base target directory to the passed char array with strcpy. The memory of the array is already allocated by the library and it's size is maxSize. When a new directory was set the value 1 must be returned. If a listener wants to ignore this function call 0 has to be returned.

Implements IBPNGClientListener.

7.3.1.11 virtual void WINAPI BPNGLoggerDetector::onWarning (BPNGWarningCode *warningCode,* const char ∗ *warnMsg*) `[inline, virtual]`

Called to inform about a warning.

This function transmit a warning message to the listener class. Warnings have a WARING_CODE and a warning message. Warnings do not interrupt the current process but should be noticed from the user to possibly initiate further provisions.

Implements IBPNGClientListener.

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

- BPNGLoggerDetector.hh

7.4 CANPseudoMessagesProperties Struct Reference

CAN pseudo messages can be written to the CANoe ASC format.

`#include <BPNGDefines.h>`

Public Attributes

- BOOL canTimeStampMessage

  Active flag for writing periodical CAN pseudo messages with absolute time stamps.
- int channelTS

  CAN channel for the time stamp pseudo messages.
- int dlcTS

  DLC for the time stamp pseudo messages.
- int canIdTS

  CAN ID for the time stamp pseudo messages.
- int hourBitPos

  Bit position for the hour (0..23, 5 bit length) value in the CAN data bytes.
- int minuteBitPos

  Bit position for the minute (0..59, 6 bit length) value in the CAN data bytes.
- int secondBitPos

  Bit position for the second (0..59, 6 bit length) value in the CAN data bytes.
- int dayBitPos

  Bit position for the day (0..31, 5 bit length) value in the CAN data bytes.
- int monthBitPos

  Bit position for the month (0..12, 4 bit length) value in the CAN data bytes.
- int yearBitPos

  Bit position for the year (8 bit length) value in the CAN data bytes.
- BOOL canTriggerMessage

  Active flag for writing CAN pseudo messages with trigger information.
- int channelTrigger

  CAN channel for the trigger pseudo messages.
- int dlcTrigger

  DLC for the trigger pseudo messages.
- int canIdTrigger

  CAN ID for the trigger pseudo messages.
- int triggerNumBitPos

  Bit position for the trigger's index (16 bit length)
- int reserved1

  reserved
- int reserved2

  reserved
- int reserved3

  reserved
- int reserved4

  reserved

7.4.1 Detailed Description

CAN pseudo messages can be written to the CANoe ASC format.

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

- BPNGDefines.h

7.5 ClientProperties Struct Reference

The ClientProperties are a combination of CommonProperties, CanPseudoMessageProperties and MostPseudoMessageProperties.

```
#include <BPNGDefines.h>
```

Public Attributes

- CommonProperties common
  The properties object for all general properties,.
- CANPseudoMessagesProperties canPseudoMessages
  The properties object for the CAN pseudo messages,.
- MOSTPseudoMessagesProperties mostPseudoMessages
  The properties object for the MOST pseudo messages,.

7.5.1 Detailed Description

The ClientProperties are a combination of CommonProperties, CanPseudoMessageProperties and MostPseudoMessageProperties.

7.5.2 Member Data Documentation

7.5.2.1 CANPseudoMessagesProperties ClientProperties::canPseudoMessages

The properties object for the CAN pseudo messages,.

See also

CANPseudoMessagesProperties

7.5.2.2 CommonProperties ClientProperties::common

The properties object for all general properties,.

See also

CommonProperties

7.5.2.3 MOSTPseudoMessagesProperties ClientProperties::mostPseudoMessages

The properties object for the MOST pseudo messages,.

See also

MOSTPseudoMessagesProperties

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

- BPNGDefines.h

7.6 CommonProperties Struct Reference

Common properties.

`#include <BPNGDefines.h>`

Public Attributes

- char ∗ nameOfTester
  Name of tester that is written to the converted file names.
- int maxOutputSizeMB
  Maximum file size for converted files. When this size is reached a new file is created.
- BOOL separatedTimeFormat
- BOOL separatedTimeFormatInOfflineSet
- char ∗ alternativeLoggerName
  The logger device's name is included in the converted files' names. An alternative logger name can be used.
- BOOL useAlternativeLoggerName
  Set this fied to 1 if the alternative logger name should be used in converted file names, 0 if not.
- BOOL useSubdirectories
  Set to 1 if converted files should be stored in subdirectories named be their start date, set 0 if they should not.
- BOOL midnightSplitting
  Set to 1 if converted files should be splitted at 00:00:00 of each date, set to 0 if they should not.
- BOOL fileTimeSpansLikeSelection
- BOOL markerNumbersInFileNames
  Specifies whether the indices of the marker included in a converted file should be appended to its file name.
- BOOL subfolderWithLoggerName
- int reserved1
  reserved
- int reserved2
  reserved
- int reserved3
  reserved
- int reserved4
  reserved

7.6.1 Detailed Description

Common properties.

7.6.2 Member Data Documentation

7.6.2.1 BOOL CommonProperties::fileTimeSpansLikeSelection

The file names of the converted files contain the time span of the included data. Setting this parameter to 1 will create time spans like they were specified in the IConversionSet. Setting this to 0 will create time spans according to the effectively included data.

7.6.2.2 BOOL CommonProperties::separatedTimeFormat

Specifies the time format that should be used for converted files. Set 1 for long format (e.g. [2011-12-20]_10.15.48) or 0 for short frmat (e.g. 20111220_101548)

7.6.2.3 BOOL CommonProperties::separatedTimeFormatInOfflineSet

Specifies the time format that should be used for offline conversion sets. Set 1 for long format (e.g. [2011-12-20]_10.15.48) or 0 for short format (e.g. 20111220_101548)

7.6.2.4 BOOL CommonProperties::subfolderWithLoggerName

Specifies whether the name of the subfolder the converted files are stored in should contain the logger name or not.

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

- BPNGDefines.h

7.7 DataSpan Struct Reference

Public Attributes

- uint8_t type
  set type to 0 for a id based range, set type to 1 for a time based range
- uint64_t start
  start time/id of data span
- uint64_t end
  end time/id of data span

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

- BPNGDefines.h

7.8 IBPNGClient Struct Reference

Interface class for the blue PiraT 2 client library.

`#include <IBPNGClient.h>`

Public Member Functions

- virtual void WINAPI scanNetworkForLogger ()=0
  Scan network for logger.
- virtual BOOL WINAPI connectLogger (const char ∗ipAddress)=0
  Connect to logger with passed IP address.

- virtual void WINAPI disconnectLogger ()=0

  Disconnect the currently connected logger.
- virtual BOOL WINAPI isConnected ()=0

  Check the logger connection, returns 1 for valid connection and 0 for no or broken connection.
- virtual BOOL WINAPI initOnline ()=0

  Initialisation of download and online conversion process.
- virtual BOOL WINAPI initOffline (const char ∗path)=0

  Initialisation of offline conversion process.
- virtual int WINAPI downloadDataSpans (uint16_t numSpans, DataSpan ∗dataSpans, const char ∗target, BOOL doSorting)=0

  Download trace data.
- virtual IConversionSet ∗WINAPI createNewConversionSet ()=0

  Returns the pointer to a new conversion set.
- virtual int WINAPI convertData (IConversionSet ∗conversionSet, const char ∗target)=0

  Convert all data specified by conversionSet.
- virtual BOOL WINAPI getConfig (const char ∗path)=0

  Download the current logger configuration to the passed path.
- virtual BOOL WINAPI reconfigLogger (const char ∗configZip)=0

  Reconfig logger with the zipped new configuration.
- virtual BOOL WINAPI setDefaultConfig ()=0

  Reconfig logger with the default configuration.
- virtual IRdbEventList ∗WINAPI getEventList ()=0

  Get list of all events from the RDB.
- virtual const char ∗WINAPI getInstanceName ()=0

  Return the instance name passed to the getBPNGClient() function.
- virtual const char ∗WINAPI getReferenceDataBasePath ()=0

  Get path to the reference data base.
- virtual const char ∗WINAPI getConfigPath ()=0

  Get path to the config directory (after calling one of the init functions)
- virtual const char ∗WINAPI getDeviceName ()=0

  Get name of device.
- virtual const IChannelList ∗WINAPI getLoggerChannels ()=0

  Returns pointer to a channel list interface.
- virtual const char ∗WINAPI getVersions ()=0

  Get the firmware and hardware version string.
- virtual BOOL WINAPI updateFirmware (const char ∗fwPath, BOOL force)=0

  Update firmware.
- virtual BOOL WINAPI updateLicenses (const char ∗licenseFilePath)=0

  Update licenses.
- virtual const char ∗WINAPI getLicenses ()=0

  Returns the license file's content as string.
- virtual BOOL WINAPI removeAllLicenses ()=0

  Removes the current license file from the logger.
- virtual int WINAPI deleteData (uint16_t numSpans, DataSpan ∗dataSpans)=0

  Delete trace data.
- virtual int WINAPI deleteAllData ()=0

  Delete all trace data on the logger.

- virtual BOOL WINAPI setInfoEvent (const char ∗msg)=0

  Set an info event with the passed string on the connected logger.
- virtual BOOL WINAPI setMarker ()=0

  Set a marker on the connected logger. Returns 0 on error.
- virtual uint64_t WINAPI getCurrentLoggerTime ()=0

  Returns the current loggertime in seconds since 01.01.1970 UTC.
- virtual BOOL WINAPI setTime (uint64_t time)=0

  Set logger time and date to the passed UTC time stamp.
- virtual void WINAPI keepLoggerAlive (const char ∗ip)=0

  Call this to keep logger alive.
- virtual void WINAPI stopKeepLoggerAlive (const char ∗ip)=0

  Called to stop sending keep alive pings to the logger specified via the passed ip.
- virtual IFormatList ∗WINAPI getAvailableFormats ()=0

  Return pointer to a format list interface. Returns null in case of error.
- virtual void WINAPI flashDeviceLED ()=0

  Let the connected device blink its front LEDs for identification.
- virtual int WINAPI createCCPXCPFiles (const char ∗dbcDir, const char ∗xsdDir, const char ∗xmlDir)=0

  and a Vector DBC file for each device
- virtual void WINAPI addListener (IBPNGClientListener ∗listener)=0

  Add a listener.
- virtual void WINAPI removeListener (IBPNGClientListener ∗listener)=0

  Remove a listener.
- virtual BPNGError WINAPI getLastError ()=0

  Get last error code.
- virtual int WINAPI getNumConversionErrors ()=0

  Returns the number of errors occured during the last conversion process.
- virtual BPNGError WINAPI getConversionError (int index)=0

  Returns the conversion error at index.
- virtual int WINAPI getNumDownloadErrors ()=0

  Returns the number of errors occured during the last download process.
- virtual BPNGError WINAPI getDownloadError (int index)=0

  Returns the download error at index.
- virtual const char ∗WINAPI getLibVersion ()=0

  Returns the current client library version.
- virtual void WINAPI release ()=0

  Free memory of this IBPNGClient instance.
- virtual ClientProperties ∗WINAPI getProperties ()=0

  Returns a pointer to the current properties.
- virtual void WINAPI setProperties (ClientProperties ∗val)=0

  Set client properties.
- virtual void WINAPI assignDBCFile (int channelIndexCAN, const char ∗dbcFilePath)=0

  Assign a DBC file to a CAN channel.
- virtual int WINAPI resetMarkerCounter ()=0

  Reset marker counter.
- virtual int WINAPI downloadBugReport (const char ∗targetPath, BPNGBugreportMode mode, uint64_t startTime, uint64_t endTime)=0

  Download bug report.

7.8.1 Detailed Description

Interface class for the blue PiraT 2 client library.

IBPNGClient is the interface class of the blue PiraT Client library. To get access to a blue PiraT 2 data logger you need a pointer to an inplementing instance of the IBPNGClient interface. Use getBPNGClient() to get such a pointer. This will create an implementing instance on the heap. To avoid conflict between different runtime libraries it is obligatory to release this object with its IBPNGClient::release() function when not needed any more. Don't call the delete operator directly on this pointer.

7.8.2 Member Function Documentation

7.8.2.1 virtual void WINAPI **IBPNGClient::assignDBCFile** (int *channelIndexCAN*, const char ∗ *dbcFilePath*) `[pure virtual]`

Assign a DBC file to a CAN channel.

Parameters

channelIndex-CAN	Zero based CAN channel index
dbcFilePath	Absolute path to the dbc file

7.8.2.2 virtual int WINAPI **IBPNGClient::convertData** (**IConversionSet** ∗ *conversionSet*, const char ∗ *target*) `[pure virtual]`

Convert all data specified by conversionSet.

Before data from a logger or an offline data set can be converted, IBPNGClient::initOnline() resp. IBPNGClient::initOffline() must have been called before.

The data specified by conversionSet is converted to the passed target directory.

Function will return 0 on failure, 1 on success and -1 on user abort. In case of failure further information can be retrieved with getLastError().

If getLastError() returns BPNG_CONVERSION_ERRORS several errors occured. Use getNumConversionErrors() and getConversionError(int index) for detailed information.

Parameters

conversionSet	conversion settings, see IConversionSet
target	target directory for the converted trace files. Depending on the passed Client-Properties the files may be stored in sub folders named by date

Returns

0 on failure, 1 on success and -1 on user abort.

7.8.2.3 virtual int WINAPI IBPNGClient::createCCPXCPFiles (const char * *dbcDir*, const char * *xsdDir*, const char * *xmlDir*) [pure virtual]

and a Vector DBC file for each device

Parse CCPXCPMeasurement.xml and CCPXCPConfiguration.xml and create CCPXCPSequence.-
xml

7.8.2.4 virtual int WINAPI IBPNGClient::deleteAllData ( ) [pure virtual]

Delete all trace data on the logger.

In case of failure further information can be retrieved with getLastError().

Returns

0 on failure, 1 on success and -1 on user abort.

7.8.2.5 virtual int WINAPI IBPNGClient::deleteData (uint16_t *numSpans*, DataSpan * *dataSpans*) [pure virtual]

Delete trace data.

Pass the size and the pointer to an array of DataSpan. Each span specifies either a time span or an index span from the reference data base's entry IDs (DataBaseEntryId). If you want to create spans with those IDs you have to call the initOnline() function first to get the current RDB file.

Function will return 0 on failure, 1 on success and -1 on user abort. In case of failure further information can be retrieved with getLastError().

Parameters

numSpans	Size of the passed DataSpan array in second parameter
dataSpans	Array of DataSpan, specifying the time or ID spans that should be downloaded

Returns

0 on failure, 1 on success and -1 on user abort.

7.8.2.6 virtual int WINAPI IBPNGClient::downloadBugReport (const char * *targetPath*, BPNGBugreportMode *mode*, uint64_t *startTime*, uint64_t *endTime*) [pure virtual]

Download bug report.

The downloaded bug report is a ZIP archive with several log data and system files for error analyzing purposes.

Parameters

targetPath	Path inclusive file name under that the bug report will be stored.
mode	that specifies what kind of data should be included in the report,

See also

BPNGBugreportMode

Parameters

startTime	Start time for the time span of trace data that should be included (usec since 01.01.1970 UTC). Only for mode BR_FULL_ALL_TRACES and BR_FULL_TIMESPAN_TRACES
endTime	End time for the time span of trace data that should be included (usec since 01.01.1970 UTC). Only for mode BR_FULL_ALL_TRACES and BR_FULL_TIMESPAN_TRACES

Returns

0 on failure, 1 on success and -1 on user abort.

7.8.2.7 virtual int WINAPI IBPNGClient::downloadDataSpans (uint16_t *numSpans*, DataSpan ∗ *dataSpans*, const char ∗ *target*, BOOL *doSorting*) [pure virtual]

Download trace data.

Pass the size and the pointer to an array of DataSpan. Each span specifies either a time span or an index span from the reference data base's entry IDs (DataBaseEntryId). IBPNGClient::initOnline() must have been called before.

Function will return 0 on failure, 1 on success and -1 on user abort. In case of failure further information can be retrieved with getLastError().

If getLastError() returns BPNG_DOWNLOAD_ERRORS several errors occured. Use getNumDownloadErrors() and getDownloadError(int index) for detailed information.

Parameters

numSpans	Size of the passed DataSpan array in second parameter
dataSpans	Array of DataSpan, specifying the time or ID spans that should be downloaded
target	Path to the target directory or ZIP file. A passed directory must be empty or not existing. A passed ZIP path must not exist.
doSorting	Specifies whether the traces from different logger-internal sources should be sorted to one output stream or not.

Returns

0 on failure, 1 on success and -1 on user abort.

7.8.2.8 virtual void WINAPI **IBPNGClient::flashDeviceLED** ( ) [pure virtual]

Let the connected device blink its front LEDs for identification.

You can use this function to identify you device if you can't identify it over the Name or IP address given from the IBPNGClientListener::onBPNGDeviceDetected callback function.

7.8.2.9 virtual **IFormatList**∗ WINAPI **IBPNGClient::getAvailableFormats** ( ) [pure virtual]

Return pointer to a format list interface. Returns null in case of error.

All formats returned by this function are available for data conversion.

See also

IFormatList, IFormatInfo

7.8.2.10 virtual BOOL WINAPI **IBPNGClient::getConfig** (const char ∗ *path*) [pure virtual]

Download the current logger configuration to the passed path.

If you download the current configuration from the data logger you get a zip Archive that contains all relevant XML and XSD files to modifiy the configuration in a valid way and reconfigurate the device with the reconfigLogger() function.

Please note: It is up to you to ensure a valid configuration if you want to modify it with your own tools. You should only modify the xml and not the xsd files. "DeviceConfiguration.xml" and "FirmwareConfiguration.xml" should also not be modified. They specifiy all xml files that are mandatory to reconfigurate the data logger. You can validate the xml files with the supplied xsd files and a XML library of your choice. One possibility would be the XERCES library, see `http://xerces.apache.org/xerces-c/`

Parameters

path	The path inclusive file name where to store the downloaded configuration ZIP file.

7.8.2.11 virtual **BPNGError** WINAPI **IBPNGClient::getConversionError** (int *index*) [pure virtual]

Returns the conversion error at *index*.

After getting the number of conversion errors with getNumConversionErrors() you can get all single errors with this function.

7.8.2.12 virtual const char∗ WINAPI **IBPNGClient::getDeviceName** ( ) [pure virtual]

Get name of device.

After calling one of the init functions IBPNGClient::initOnline() or IBPNGClient::initOffline() this function returns the currently configured device name.

Returns

The device name

See also

initOnline(), initOffline()

7.8.2.13 virtual BPNGError WINAPI IBPNGClient::getDownloadError (int *index*) [pure virtual]

Returns the download error at *index*.

After getting the number of download errors with getNumDownloadErrors() you can get all single errors with this function.

7.8.2.14 virtual IRdbEventList∗ WINAPI IBPNGClient::getEventList ( ) [pure virtual]

Get list of all events from the RDB.

If initOnline() was called before, the events of the logger's RDB is returned. If initOffline() was called before, the events of the RDB included in the offline data set is returned.

Returns

Pointer to a IRdbEventList

7.8.2.15 virtual BPNGError WINAPI IBPNGClient::getLastError ( ) [pure virtual]

Get last error code.

If any called BPNGClient function returns a value that indicates an error you can retrieve further information about that error with this function.

Returns

The error description with error code and optional string value.

See also

BPNGError

7.8.2.16 virtual const IChannelList∗ WINAPI IBPNGClient::getLoggerChannels ( ) [pure virtual]

Returns pointer to a channel list interface.

After calling one of the init functions IBPNGClient::initOnline() or IBPNGClient::initOffline() this function returns a pointer to the logger's resp. offline data set's channel list.

In case of error null is returned and further information can be retrieved with getLastError().

See also

IChannelList

7.8.2.17 virtual int WINAPI **IBPNGClient::getNumConversionErrors** ( ) `[pure virtual]`

Returns the number of errors occured during the last conversion process.

If convertData() fails, getLastError() can return different kinds of errors. There are types of errors that won't interrupt the conversion process but will be gathered during conversion and notified at the end. In that case the error code returned by getLastError() will be BPNG_CONVERSION_E-RRORS and you can get the number of errors with this function.

See also

getConversionError()

7.8.2.18 virtual int WINAPI **IBPNGClient::getNumDownloadErrors** ( ) `[pure virtual]`

Returns the number of errors occured during the last download process.

If downloadDataSpans() fails, getLastError() can return different kinds of errors. There are types of errors that won't interrupt the download process but will be gathered during download and notified at the end. In that case the error code returned by getLastError() will be BPNG_DOWN-LOAD_ERRORS and you can get the number of errors with this function.

See also

getDownloadError()

7.8.2.19 virtual **ClientProperties**∗ WINAPI **IBPNGClient::getProperties** ( ) `[pure virtual]`

Returns a pointer to the current properties.

See also

ClientProperties, setProperties()

7.8.2.20 virtual const char∗ WINAPI **IBPNGClient::getReferenceDataBasePath** ( ) `[pure virtual]`

Get path to the reference data base.

After calling one of the init functions IBPNGClient::initOnline() or IBPNGClient::initOffline() this function returns the path to the current Reference Data Base of the logger resp. the offline data set. For online processes, the RDB is downloaded from the logger to a tmp directory. For offline processes from a ZIP archive, the RDB is extracted to a tmp directory. For offline processes from a directory this function just returns the path to the RDB inside this directory.

Returns

Path to the downloaded or extracted RDB file

See also

initOnline(), initOffline()

7.8.2.21 virtual BOOL WINAPI IBPNGClient::initOffline (const char * *path*) [pure virtual]

Initialisation of offline conversion process.

For trace conversion from an offline data set this function must be called first.

Within this function the reference data base is read. Please note that reading a large RDB may take some time, espacially in debug mode.

Function will return 0 on failure and 1 on success. In case of failure further information can be retrieved with getLastError().

Returns

0 on failure, 1 on success

7.8.2.22 virtual BOOL WINAPI IBPNGClient::initOnline ( ) [pure virtual]

Initialisation of download and online conversion process.

For trace download and conversion directly from the device this function must be called after the logger is connected.

Within this function the reference data base is downloaded and read. Please note that reading a large RDB may take some time, espacially in debug mode.

Function will return 0 on failure and 1 on success. In case of failure further information can be retrieved with getLastError().

Returns

0 on failure, 1 on success

7.8.2.23 virtual void WINAPI IBPNGClient::keepLoggerAlive (const char * *ip*) [pure virtual]

Call this to keep logger alive.

The blue PiraT 2 data logger can be configured to go to standby after a specified timeout without any bus traffic on the connected interfaces. If you want to have access to a device without bus traffic, and you don't want to connect to it with connectLogger() you have to keep it alive by calling this function. This will start a separate thread that sends periodically ping messages to the passed IP address. Receiving these ping messages, the firmware will not shutdown the system.

Parameters

ip	The IP address of the logger that should be kept alive

See also

stopKeepLoggerAlive()

7.8.2.24 virtual BOOL WINAPI **IBPNGClient::reconfigLogger** (const char ∗ *configZip*) [pure virtual]

Reconfig logger with the zipped new configuration.

Reconfigurates the logger with the passed configuration. The ZIP archive can be either one that was downloaded with the getConfig() method, stored by the client software or a modified one. If you want to create your own configuration ZIP archive the structure of this file must be the same as of those mentioned above (xml files inside an "etc" directory). The abstract.txt file and all ∗.xsd files are optional.

Please note: It is up to you to ensure a valid configuration if you want to modify it with your own tools. You should only modify the xml and not the xsd files. "DeviceConfiguration.xml" and "FirmwareConfiguration.xml" should also not be modified. They specifiy all xml files that are mandatory to reconfigurate the data logger. You can validate the xml files with the supplied xsd files and a XML library of your choice. One possibility would be the XERCES library, see `http://xerces.apache.org/xerces-c/`

Parameters

configZip	Path to the zip file that contains the configuration.

Returns

0 on failure, 1 on success

7.8.2.25 virtual void WINAPI **IBPNGClient::release** ( ) [pure virtual]

Free memory of this IBPNGClient instance.

With the call of getBPNGClient() a new instance is created on the heap. The user is responsible to free its memory if it isn't needed any more. This function calls the delete operator on itself.

Important note: Any further function call on the IBPNGClient instance after release() was called will cause a memory access violation and will crash the application!

7.8.2.26 virtual void WINAPI **IBPNGClient::scanNetworkForLogger** ( ) [pure virtual]

Scan network for logger.

This function sends one broadcast UDP messages via all network adapters and notifies the calling application about responding devices with the listener functions onBPNGDeviceDetected(), onBPNGDeviceDisappeared() and onBPNGDeviceStateChange() (see IBPNGClientListener.h). For each broadcast message sent, the function waits for 100ms for responding devices

The first function call notifies about all found devices. All following calls on the same IBPNGClient instance will only notify about changes to the previous call.

7.8.2.27 virtual BOOL WINAPI **IBPNGClient::setDefaultConfig** ( ) `[pure virtual]`

Reconfig logger with the default configuration.

An invalid configuration will set the logger in error state. To fix this one possibility is to set the logger's default configuration.

Returns

0 on failure, 1 on success

7.8.2.28 virtual BOOL WINAPI **IBPNGClient::setInfoEvent** (const char * *msg*) `[pure virtual]`

Set an info event with the passed string on the connected logger.

You can set an info event to the RDB. This event will be from type INFO and the passed message is written to the event's comment column

Returns

Returns 0 on failure, 1 on success

7.8.2.29 virtual BOOL WINAPI **IBPNGClient::setMarker** ( ) `[pure virtual]`

Set a marker on the connected logger. Returns 0 on error.

You can set an marker to the RDB. The set event will be from type MARKER.

Returns

Returns 0 on failure, 1 on success

7.8.2.30 virtual void WINAPI **IBPNGClient::setProperties** (**ClientProperties** * *val*) `[pure virtual]`

Set client properties.

See also

ClientProperties, getProperties()

7.8.2.31 virtual BOOL WINAPI **IBPNGClient::setTime** (uint64_t *time*) `[pure virtual]`

Set logger time and date to the passed UTC time stamp.

The parameter time must be in seconds since 01.01.1970 UTC

Returns

0 on failure, 1 on success

7.8.2.32 virtual BOOL WINAPI **IBPNGClient::updateFirmware** (const char * *fwPath,* BOOL *force*) `[pure virtual]`

Update firmware.

This function updates the logger's firmware. An internal version check is done. If the second parameter *force* is 0 only firmware components with an older version then the component's version inside the firmware packet will be updated.

Parameters

fwPath	Path to the firmware packet file that should be installed.
force	Flag whether to update the components independently from the components' versions

Returns

0 on failure, 1 on success

7.8.2.33 virtual BOOL WINAPI **IBPNGClient::updateLicenses** (const char * *licenseFilePath*) `[pure virtual]`

Update licenses.

Overwrites the current license file with the new one.

Parameters

licenseFile-Path	Path to the new license file

Returns

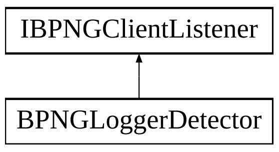
0 on failure, 1 on success

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

- IBPNGClient.h

7.9 IBPNGClientListener Struct Reference

Inheritance diagram for IBPNGClientListener:



Public Member Functions

- virtual void WINAPI onBPNGDeviceDetected (OnlineLoggerInfo ∗info)=0

  Called to notify a detected logger in network.
- virtual void WINAPI onBPNGDeviceDisappeared (OnlineLoggerInfo ∗info)=0

  Called to notify a disappeared logger.
- virtual void WINAPI onBPNGDeviceStateChange (OnlineLoggerInfo ∗info)=0

  Called to notify a logger's state change.
- virtual int WINAPI onProgressDataDownload (int percentCompleted)=0

  Called to indicate the current progress of a file transfer.
- virtual int WINAPI onProgressConversion (int percentCompleted, const char ∗status)=0

  Called to indicate the current progress of file conversion.
- virtual void WINAPI onStatusMessage (const char ∗statusMsg)=0

  Called to send additional information of the current process to the calling app.
- virtual void WINAPI onWarning (BPNGWarningCode warningCode, const char ∗warnMsg)=0

  Called to inform about a warning.
- virtual int WINAPI onTargetPathTooLong (char ∗newTarget, int maxSize)=0

  Called on a too long target directory.
- virtual int WINAPI getOverwritingPermission (const char ∗filePath)=0

  Called on existing output trace files.
- virtual int WINAPI onCriticalDiskSpace (uint64_t freeSpace, uint64_t neededSpace, const char ∗drive, const char ∗msg)=0

  Called in case of not enough free diskspace.
- virtual void WINAPI onFirmwareUpdateProgress (int percentage, int stepId, int subStepId, const char ∗desc)=0

  Called on firmware update progress.
- virtual void WINAPI **onFirmwareUpdateError** (int errorId)=0
- virtual int WINAPI onGetLogReportProgress (int percentage, const char ∗desc)=0

7.9.1 Member Function Documentation

7.9.1.1 virtual int WINAPI **IBPNGClientListener::getOverwritingPermission** (const char ∗ *filePath*) [pure virtual]

Called on existing output trace files.

When an output trace file already exists this function is called. The listener has the possibility to return one of following values: -1: no, don't overwrite file -2: no, overwrite neither this nor any following file 1: yes, overwrite file 2: yes, overwrite this and all following files 0: cancel conversion

Implemented in BPNGLoggerDetector.

7.9.1.2 virtual void WINAPI **IBPNGClientListener::onBPNGDeviceDetected** (**OnlineLoggerInfo** ∗ *info*) [pure virtual]

Called to notify a detected logger in network.

All char∗ of the passed OnlineLoggerInfo∗ are only valid for the time of the function call. Please ensure to copy the string values.

Implemented in BPNGLoggerDetector.

7.9.1.3 virtual void WINAPI **IBPNGClientListener::onBPNGDeviceDisappeared** (**OnlineLoggerInfo** ∗ *info*) `[pure virtual]`

Called to notify a disappeared logger.

All char∗ of the passed OnlineLoggerInfo∗ are only valid for the time of the function call. Please ensure to copy the string values.

Implemented in BPNGLoggerDetector.

7.9.1.4 virtual void WINAPI **IBPNGClientListener::onBPNGDeviceStateChange** (**OnlineLoggerInfo** ∗ *info*) `[pure virtual]`

Called to notify a logger's state change.

All char∗ of the passed OnlineLoggerInfo∗ are only valid for the time of the function call. Please ensure to copy the string values.

Implemented in BPNGLoggerDetector.

7.9.1.5 virtual int WINAPI **IBPNGClientListener::onCriticalDiskSpace** (uint64_t *freeSpace*, uint64_t *neededSpace*, const char ∗ *drive*, const char ∗ *msg*) `[pure virtual]`

Called in case of not enough free diskspace.

This notifies the listener about not enough free disk space for data download or conversion. The user can continue or abort the process. Returning 0 will abort the process. In some cases continuing without providing more disk space will call this function immediately again.

Parameters

freeSpace	Amount of free space
neededSpace	Amount of needed space
drive	Name of the drive where to store data
msg	Additional message to display

Returns

return 0 when process should be aborted, 1 to ignore

Implemented in BPNGLoggerDetector.

7.9.1.6 virtual int WINAPI **IBPNGClientListener::onGetLogReportProgress** (int *percentage*, const char ∗ *desc*) `[pure virtual]`

Called on creation of log report

Returns

return value 0 indicates an abort request from the implementing class

Implemented in BPNGLoggerDetector.

7.9.1.7 virtual int WINAPI IBPNGClientListener::onProgressConversion (int *percentCompleted*, const char ∗ *status*) [pure virtual]

Called to indicate the current progress of file conversion.

This function notifies the listener about the conversion progress of the raw Telemotive trace data. If the *percentCompleted* value has changed, but the *status* is still the same, the application passes an empty string as status to the function.

Parameters

percent-Completed	Percent of the entire conversion process (from 0...100%), -1 indicates the same value as from last function call
status	Status of the conversion process (e.g. "Converting trace data. Block 5 of 32")

Returns

return value 0 indicates an abort request from the implementing class

Implemented in BPNGLoggerDetector.

7.9.1.8 virtual int WINAPI IBPNGClientListener::onProgressDataDownload (int *percentCompleted*) [pure virtual]

Called to indicate the current progress of a file transfer.

This function notifies the listener about the download progress of the raw Telemotive trace data.

Parameters

percent-Completed	Percentage of the entire download process (from 0...100%)

Returns

return value 0 indicates an abort request from the implementing class

Implemented in BPNGLoggerDetector.

7.9.1.9 virtual void WINAPI IBPNGClientListener::onStatusMessage (const char ∗ *statusMsg*) [pure virtual]

Called to send additional information of the current process to the calling app.

This function transmit message strings to the listener class. Those messages are only for imformation purpose. The receiver doesn't have to react on it but can display it on the screen.

Implemented in BPNGLoggerDetector.

7.9.1.10 virtual int WINAPI IBPNGClientListener::onTargetPathTooLong (char ∗ *newTarget*, int *maxSize*) [pure virtual]

Called on a too long target directory.

Called when the resulting file name of the converted files is longer than the maximum allowed size of the file system (Windows 260). The lib user has to pass a new (shorter) base target directory to the passed char array with strcpy. The memory of the array is already allocated by the library and it's size is maxSize. When a new directory was set the value 1 must be returned. If a listener wants to ignore this function call 0 has to be returned.

Implemented in BPNGLoggerDetector.

7.9.1.11 virtual void WINAPI **IBPNGClientListener::onWarning** (**BPNGWarningCode** *warningCode*, const char ∗ *warnMsg*) `[pure virtual]`

Called to inform about a warning.

This function transmit a warning message to the listener class. Warnings have a WARING_CODE and a warning message. Warnings do not interrupt the current process but should be noticed from the user to possibly initiate further provisions.

Implemented in BPNGLoggerDetector.

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

- IBPNGClientListener.h

7.10 IChannel Struct Reference

Channel interface.

`#include <BPNGDefines.h>`

Public Member Functions

- virtual ChannelType getType () const =0

  Returns the ChannelType.
- virtual uint8_t getIndex () const =0

  Returns the channel's index.
- virtual const char ∗ getName () const =0

  Returns the channel's name.

7.10.1 Detailed Description

Channel interface.

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

- BPNGDefines.h

7.11 IChannelList Struct Reference

Channel list interface.

`#include <BPNGDefines.h>`

Public Member Functions

- virtual uint8_t getSize () const =0

  Returns the number of channels.
- virtual const IChannel ∗ getChannel (uint8_t index) const =0

  Returns the IChannel at index.

7.11.1 Detailed Description

Channel list interface.

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

- BPNGDefines.h

7.12 IConversionSet Struct Reference

A conversion set stores all conversion relevant settings.

`#include <BPNGDefines.h>`

Public Member Functions

- virtual void addChannel (ChannelType channelType, uint8_t channelIndex, FormatId formatId, int fileId=-1)=0

  Adds a channel to the conversion set and assigns the target format to it.
- virtual void addTimeSpan (uint64_t startTime, uint64_t endTime)=0

  Adds a time span to the conversion set.
- virtual void addRdbIdRange (uint64_t startId, uint64_t endId)=0

  Adds a ReferenceDB ID range to the conversion set.

7.12.1 Detailed Description

A conversion set stores all conversion relevant settings.

To convert trace data a conversion set must be created. Several channels can be added to one conversion set. The trace data of that channels are converted to the assigned formats. The conversion set also includes the data spans that has to be converted.

7.12.2 Member Function Documentation

7.12.2.1 virtual void IConversionSet::addChannel (ChannelType *channelType,* uint8_t *channelIndex,* FormatId *formatId,* int *fileId* = `-1`) `[pure virtual]`

Adds a channel to the conversion set and assigns the target format to it.

Use the IBPNGClient::getLoggerChannel() function to get all existing channels.

Parameters

channelType	must be one of the appropriate ChannelType enum.
channelIndex	zero-based channel index
formatId	must be one of the appropriate FormatId enum.
fileId	The data of all channels with same formatId and same fileId are written to the same output file. The default value -1 indicates always a separate file for each channel.

7.12.2.2 virtual void **IConversionSet::addRdbIdRange** (uint64_t *startId*, uint64_t *endId*) `[pure virtual]`

Adds a ReferenceDB ID range to the conversion set.

Passed parameter are IDs from the Reference Data Base (RDB). After calling on of the init functions IBPNGClient::initOnline() or IBPNGClient::initOffline() you can get the path to the RDB with IBPNGClient::getReferenceDataBasePath().

The RDB includes all occurred events like startups, shutdowns, etc. but also all recorded trace files. Each RDB entry has a unique DataBaseEntryID. With this function you can easily select data between arbitrary RDB entries. For example you can convert all data between index X (which is e.g. a startup) and index Y (which is e.g. a shutdown). When the DataBaseEntryId of a trace file is passed, this trace block will be included by the conversion.

Parameters

startId	DataBaseEntryId that inicates the start of the data range to be converted
endId	DataBaseEntryId that inicates the end of the data range to be converted

7.12.2.3 virtual void **IConversionSet::addTimeSpan** (uint64_t *startTime*, uint64_t *endTime*) `[pure virtual]`

Adds a time span to the conversion set.

The data within the time span will be converted to the specified formats.

Parameters

startTime	must be in usec since 01.01.1970 (UTC)
endTime	must be in usec since 01.01.1970 (UTC)

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

- BPNGDefines.h

7.13 IFormatInfo Struct Reference

FormatInfo interface.

```
#include <BPNGDefines.h>
```

Public Member Functions

- virtual FormatId getFormatId () const =0

  Returns the FormatId.
- virtual const char ∗ getName () const =0

  Returns the format's name.
- virtual BOOL isMultipleChannelSupport () const =0

  Returns whether the format supports multiple channels in one output file.
- virtual BOOL isBinaryFormat () const =0

  Returns whether the format is binary.
- virtual const char ∗ getExtension () const =0

  Returns the format's default extension.
- virtual int getNumSupportedChannelTypes () const =0

  Returns the number of supported channel types.
- virtual ChannelType getChannelType (int index) const =0

  Returns one supported ChannelType.

7.13.1 Detailed Description

FormatInfo interface.

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

- BPNGDefines.h

7.14 IFormatList Struct Reference

Format list interface.

```
#include <BPNGDefines.h>
```

Public Member Functions

- virtual int getSize () const =0

  Returns the number of available formats.
- virtual const IFormatInfo ∗ getFormatInfo (int index) const =0

  Returns the IFormat at index.

7.14.1 Detailed Description

Format list interface.

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

- BPNGDefines.h

7.15 IRdbEvent Struct Reference

Interface to an RDB event.

`#include <BPNGDefines.h>`

Public Member Functions

- virtual RdbEventType WINAPI getType ()=0

  Get type of event.
- virtual uint64_t WINAPI getUniqueId ()=0

  Returns the unique entry ID that can be set to DataSpans for data download and conversion.
- virtual uint64_t WINAPI getTimeStamp ()=0

  Returns the event's time stamp in usec since 01.01.1970 UTC.
- virtual const char ∗WINAPI getTimeZone ()=0

  Returns the logger's time zone that was active at the event's time stamp.
- virtual int WINAPI getIndex ()=0

  Returns the index of this event. Only used for marker events.
- virtual const char ∗WINAPI getComment ()=0

  Returns additional information. The meaning of this string depends on the event's type. See RDB specification document for more information.

7.15.1 Detailed Description

Interface to an RDB event.

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

- BPNGDefines.h

7.16 IRdbEventList Struct Reference

Interface to a list of rdb events.

`#include <BPNGDefines.h>`

Public Member Functions

- virtual int WINAPI getSize ()=0

  Returns the size of the event list.
- virtual IRdbEvent ∗WINAPI getEvent (int index)=0

  Returns a pointer to the IRdbEvent at index.

7.16.1 Detailed Description

Interface to a list of rdb events.

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

- BPNGDefines.h

7.17 MOSTPseudoMessagesProperties Struct Reference

MOST pseudo messages for each trigger can be written to MOST formats.

`#include <BPNGDefines.h>`

Public Attributes

- BOOL writeMessages

  Active flag for writing MOST pseudo messages for trigger.
- int source

  Source address.
- int target

  Target address.
- int functionBlockID

  Function block ID.
- int functionID

  Function ID.
- int reserved1

  reserved
- int reserved2

  reserved
- int reserved3

  reserved
- int reserved4

  reserved

7.17.1 Detailed Description

MOST pseudo messages for each trigger can be written to MOST formats.

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

- BPNGDefines.h

7.18 OnlineLoggerInfo Struct Reference

Struct with information about a logger found in LAN.

`#include <BPNGDefines.h>`

Public Attributes

- const char * ip
  the logger's ip address
- const char * name
  the logger's name
- const char * mbnr
  mainboard number
- uint8_t connected
  connected with client, 0=false, else true
- const char * currentUser
  user name of connected pc account
- uint8_t loggerStatus
  current logger status,

7.18.1 Detailed Description

Struct with information about a logger found in LAN.

7.18.2 Member Data Documentation

7.18.2.1 uint8_t OnlineLoggerInfo::loggerStatus

current logger status,

See also

BPNGLoggerStatus

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

- BPNGDefines.h

7.19 RdbEvent Struct Reference

Implementation class for a wrapper of IRdbEvent using STL classes.

`#include <RdbEventList.hh>`

Public Member Functions

- **RdbEvent** (IRdbEvent *rdbEvent)

Public Attributes

- RdbEventType **type**
- uint64_t **uniqueID**
- uint64_t **timeStamp**
- std::string **timeZone**
- int **index**
- std::string **comment**

7.19.1 Detailed Description

Implementation class for a wrapper of IRdbEvent using STL classes.

To achieve a compiler independend interface for the blue PiraT 2 client library only pointer to complex objects are returned from some functions. The IRdbEvent class is can be wrapped by this class RdbEvent to have access to its members in the usual way. You only have to pass a IRdbEvent pointer to the constructor.

See also

IRdbEvent, RdbEventList

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

- RdbEventList.hh

7.20 RdbEventList Class Reference

Implementation class for a wrapper of IRdbEventList using STL classes.

`#include <RdbEventList.hh>`

Public Member Functions

- **RdbEventList** (IRdbEventList ∗list)

7.20.1 Detailed Description

Implementation class for a wrapper of IRdbEventList using STL classes.

To achieve a compiler independend interface for the blue PiraT 2 client library only pointer to complex objects are returned from some functions. The class IRdbEventList is nothing else than a vector of IRdbEvent objects. Pass a pointer to IRdbEventList to the constructor of this wrapper class RdbEventList and you get a STL vector of RdbEvent objects which by itself is a wrapper to IRdbEvent

See also

RdbEvent, IRdbEventList, IRdbEvent

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

- RdbEventList.hh

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File Documentation

8.1 BPNGDefines.h File Reference

Defines for blue PiraT 2 Library.

```
#include "stdint.h"
#include "eventID.h"
```

Classes

- struct IChannel

  Channel interface.
- struct IChannelList

  Channel list interface.
- struct IFormatInfo

  FormatInfo interface.
- struct IFormatList

  Format list interface.
- struct IConversionSet

  A conversion set stores all conversion relevant settings.
- struct IRdbEvent

  Interface to an RDB event.
- struct IRdbEventList

  Interface to a list of rdb events.
- struct OnlineLoggerInfo

  Struct with information about a logger found in LAN.
- struct DataSpan
- struct BPNGError

  Error struct with error code and optional error message.
- struct CommonProperties

  Common properties.
- struct CANPseudoMessagesProperties

  CAN pseudo messages can be written to the CANoe ASC format.

- struct MOSTPseudoMessagesProperties

  MOST pseudo messages for each trigger can be written to MOST formats.
- struct ClientProperties

  The ClientProperties are a combination of CommonProperties, CanPseudoMessageProperties and MostPseudoMessageProperties.

Defines

- #define **WINAPI**
- #define **DECLDIR**
- #define **VOID** void

Typedefs

- typedef eventid_t **RdbEventType**
- typedef void(WINAPI ∗ onLogRequest)(const char ∗logRecord)

  Pointer to a function named onLogRequest with one parameter and no return value.

Enumerations

- enum BPNGErrCode {
  BPNG_NOERR = 0, BPNG_LOGGER_NOT_FOUND = 1, BPNG_NOT_CONNECTED = 2, BPNG_CONNECT_FTP_FAILED = 3,
  BPNG_CONNECT_TMPBUS_FAILED = 4, BPNG_TMPBUS_NOT_CONNECTED = 5, B-PNG_FTP_NOT_CONNECTED = 6, BPNG_FTP_SERVER_NOT_FOUND = 7,
  BPNG_FTP_LOGIN_FAILED = 8, BPNG_FTP_REMOTE_PATH_NOT_FOUND = 9, BPN-G_FTP_READ_REMOTE_FILE_ERROR = 10, BPNG_FTP_WRITE_REMOTE_FILE_ER-ROR = 11,
  BPNG_FTP_TRANSFER_USER_CANCELED = 12, BPNG_FTP_CREATE_REMOTE_DI-R_ERROR = 13, BPNG_FTP_REMOVE_REMOTE_DIR_ERROR = 14, BPNG_FTP_RE-MOVE_REMOTE_FILE_ERROR = 15,
  BPNG_FTP_CHANGE_CWD_ERROR = 16, BPNG_TMPBUS_COPYRDB_ERROR = 17, BPNG_TMPBUS_SEND_MSG_ERROR = 18, BPNG_TMPBUS_REQUEST_ERROR = 19,
  BPNG_FAILED_TO_CREATE_LOCAL_FILE_OR_DIRECTORY = 20, BPNG_LOCAL_PA-TH_NOT_FOUND = 21, BPNG_READ_LOCAL_FILE_ERROR = 22, BPNG_WRITE_LOC-AL_FILE_ERROR = 23,
  BPNG_FILE_EXISTS_ERROR = 24, BPNG_DIR_EXISTS_ERROR = 25, BPNG_TARGE-T_PATH_TOO_LONG = 26, BPNG_ZIP_EXCEEDS_FATFS_MAX = 27,
  BPNG_XML_PARSER_ERROR = 28, BPNG_INITIALISATION_ERROR = 29, BPNG_RD-B_SQLITE_QUERY_ERROR = 30, BPNG_RDB_OPEN_FAILED = 31,
  BPNG_CONVERSION_ERRORS = 32, BPNG_CONV_SET_NOT_FOUND = 33, BPNG_-NOTHING_TO_CONVERT = 34, BPNG_TMT_FILE_ID_ERROR = 35,
  BPNG_TMT_FORMAT_ERROR_VERSION = 36, BPNG_TMT_FORMAT_ERROR_TS = 37, BPNG_INVALID_MESSAGE_ERROR = 38, BPNG_INVALID_MESSAGE_ID = 39,
  BPNG_INVALID_MESSAGE_TS = 40, BPNG_INVALID_MESSAGE_SUBID = 41, BPNG-_INVALID_MESSAGE_LEN = 42, BPNG_CONV_FORMAT_ERROR = 43,
  BPNG_DOWNLOAD_ERRORS = 44, BPNG_NOTHING_TO_DOWNLOAD = 45, BPNG_-INVALID_OFFLINE_SET = 46, BPNG_PARAMETER_MISMATCH = 47,
  BPNG_FW_VERSION_CHECK_ERROR = 48, BPNG_USER_CANCELLED = 49, BPNG-

_MIN_VERSION_ERROR = 50, BPNG_EXCEPTION = 51, BPNG_INCOMPATIBLE_RDB = 52, BPNG_UNSPECIFIED_ERROR = 53, **BPNG_CCP_-XCP_PARSER_ERROR** = 54, **BPNG_CCP_XCP_DBC_GENERATOR_ERROR** = 55, **BPNG_CCP_XCP_SEQUENCE_GENERATOR_ERROR** = 56, **BPNG_INSUFFICIENT_-DISK_SPACE** = 57, **BPNG_FWUPDATE_FAILED** = 58 }

  enum Error codes

- enum BPNGWarningCode { **BPNG_NOWARNING**, BPNG_WARNING_CLOSE_TRACE_-FILES, BPNG_WARNING_MESSAGES_NOT_CONVERTED }

  Warning codes.

- enum LanguageID { BPNG_GERMAN, BPNG_ENGLISH }

  Languages.

- enum BPNGBugreportMode {
  BR_FULL_WO_TRACES = 0, BR_ONLY_LOGS = 1, BR_FDB_RDB = 2, BR_ONLY_CLI-ENT = 3,
  BR_FULL_ALL_TRACES = 4, BR_FULL_TIMESPAN_TRACES = 5 }

  Mode for the IBPNG::downloadBugReport() function.

- enum ChannelType {
  CH_UNDEFINED = 0, CH_CANLS, CH_CANHS, CH_LIN,
  CH_SERIAL, CH_ETHERNET, CH_FLEXRAY, CH_MOST25_CTRL,
  CH_MOST25_MDP, CH_MOST25_SYNC, CH_MOST150_CTRL, CH_MOST150_MDP,
  CH_MOST150_MEP, CH_ANALOG_IN, CH_DIGITAL_IN, CH_CAMERA,
  CH_CCPXCP, **CH_DIAG** }

  Currently supported interfaces.

- enum FormatId {
  UNDEFINED = 0, TMASC = 1, OP2 = 2, CANOE = 3,
  STA = 4, GNLOG = 5, TCLOG = 6, TCLOG_TS = 7,
  RAW_SERIAL = 8, RESERVED_1 = 9, IMG = 10, TMBIN = 11,
  CANCORDER = 12, APN = 13, ASCHEX = 14, WAV = 15,
  TCPDUMP = 16, BLF = 17, DLT_BMW = 18, MDF = 19,
  MDF_CAN_SIG = 20, MPEG4_BLOCKS = 21, MPEG4_JOINED = 22, SERIAL_DEBUG = 23,
  RAW_ETHERNET = 24, **INVALID** = 0xFF }

  Identifier for currently supported formats.

- enum BPNGLoggerStatus { **LS_OK** = 0, **LS_ERROR** = 1, **LS_NOSYNC** = 2, **LS_UNDEFI-NED** = -1 }

  Logger status.

- enum DataSpanType { **DST_IDSPAN** = 0, **DST_TIMESPAN** = 1 }

  Types for DataSpan.

8.1.1 Detailed Description

Defines for blue PiraT 2 Library.

Author

Markus van Pinxteren

Date

12.05.2010

8.1.2 Enumeration Type Documentation

8.1.2.1 enum BPNGBugreportMode

Mode for the IBPNG::downloadBugReport() function.

Enumerator:

- ***BR_FULL_WO_TRACES*** Full bug report without traces.
- ***BR_ONLY_LOGS*** Only log files are downloaded.
- ***BR_FDB_RDB*** only FDB and RDB are downloaded
- ***BR_ONLY_CLIENT*** only client logs are stored
- ***BR_FULL_ALL_TRACES*** Full bug report with all traces files.
- ***BR_FULL_TIMESPAN_TRACES*** Full bugreport with trace file of a specified time span.

8.1.2.2 enum BPNGErrCode

enum Error codes

An error is identified by one of the following error codes. Additional information may be found in the BPNGError::msg field (e.g. file path that causes a BPNG_LOCAL_PATH_NOT_FOUND error)

Enumerator:

- ***BPNG_NOERR*** no error
- ***BPNG_LOGGER_NOT_FOUND*** The IP address the lib wanted to connect was not found.
- ***BPNG_NOT_CONNECTED*** A function call failed because the logger was not connected.
- ***BPNG_CONNECT_FTP_FAILED*** Establishing the ftp connection failed.
- ***BPNG_CONNECT_TMPBUS_FAILED*** Establishing the TMP (Telemotive Protocol) bus connection failed.
- ***BPNG_TMPBUS_NOT_CONNECTED*** TMP bus is not connected.
- ***BPNG_FTP_NOT_CONNECTED*** FTP is not connected.
- ***BPNG_FTP_SERVER_NOT_FOUND*** FTP server is not fould.
- ***BPNG_FTP_LOGIN_FAILED*** FTP login failed.
- ***BPNG_FTP_REMOTE_PATH_NOT_FOUND*** A requested path on the FTP server is not found.
- ***BPNG_FTP_READ_REMOTE_FILE_ERROR*** Can't red a file on the FTP server.
- ***BPNG_FTP_WRITE_REMOTE_FILE_ERROR*** Can't write a file on the FTP server.
- ***BPNG_FTP_TRANSFER_USER_CANCELED*** FTP file transfer was canceled by the user.
- ***BPNG_FTP_CREATE_REMOTE_DIR_ERROR*** Can't create the directory on the FTP server.
- ***BPNG_FTP_REMOVE_REMOTE_DIR_ERROR*** Can't remove the directory on the FTP server.
- ***BPNG_FTP_REMOVE_REMOTE_FILE_ERROR*** Can't remove the file on the FTP server.
- ***BPNG_FTP_CHANGE_CWD_ERROR*** Can't change the current working directory on the FTP server.

BPNG_TMPBUS_COPYRDB_ERROR Failed to copy the reference data base to the logger's tmp directory.

BPNG_TMPBUS_SEND_MSG_ERROR Failed to send a TMP bus request message.

BPNG_TMPBUS_REQUEST_ERROR The TMP bus request execution failed.

BPNG_FAILED_TO_CREATE_LOCAL_FILE_OR_DIRECTORY Failed to create local file or directory.

BPNG_LOCAL_PATH_NOT_FOUND Local path not found.

BPNG_READ_LOCAL_FILE_ERROR Failed to read local file.

BPNG_WRITE_LOCAL_FILE_ERROR Failed to write local file.

BPNG_FILE_EXISTS_ERROR Local file already exists.

BPNG_DIR_EXISTS_ERROR Local directory already exists.

BPNG_TARGET_PATH_TOO_LONG Specified path exceeds the max. valid length (e.g. 260 for Windows systems)

BPNG_ZIP_EXCEEDS_FATFS_MAX ZIP file exceeds max size for FAT32 file systems.

BPNG_XML_PARSER_ERROR Error while parsing xml file.

BPNG_INITIALISATION_ERROR BPNGClient instance is not initialised or with the wrong function. Use IBPNGClient::initOnline for data download or conversion directly from the device and IBPNGclient::iniOffline for data conversion from an offline data set.

BPNG_RDB_SQLITE_QUERY_ERROR Error when trying to read data from the rdb.

BPNG_RDB_OPEN_FAILED Failed to open the reference data base.

BPNG_CONVERSION_ERRORS Multiple conversion errors. Use IBPNGClient::getNumConversionErrors() and IBPNGClient::getConversionError() for further information

BPNG_CONV_SET_NOT_FOUND The passed conversion set pointer was not created with this IBPNGClient instance and dus could not be found.

BPNG_NOTHING_TO_CONVERT There is no data available that could be converted. Check the specified time/id spans.

BPNG_TMT_FILE_ID_ERROR Invalid TMT/XTMT file id while trying to convert data.

BPNG_TMT_FORMAT_ERROR_VERSION The TMT/XTMT version of the trace file is not supported by this lib version.

BPNG_TMT_FORMAT_ERROR_TS Missing FileTimeMessage in header of TMT/XTMT file.

BPNG_INVALID_MESSAGE_ERROR Invalid messages found in trace file(s).

BPNG_INVALID_MESSAGE_ID Invalid message id found in trace file(s).

BPNG_INVALID_MESSAGE_TS Invalid message ts found in trace file(s).

BPNG_INVALID_MESSAGE_SUBID Invalid message sub id found in trace file(s).

BPNG_INVALID_MESSAGE_LEN Invalid message length found in trace file(s).

BPNG_CONV_FORMAT_ERROR Invalid format assignment or mismatching recorded trace data for the specified conversion format.

BPNG_DOWNLOAD_ERRORS Multiple download errors. Use IBPNGClient::getNumDownloadErrors() and IBPNGClient::getDownloadError() for further information

BPNG_NOTHING_TO_DOWNLOAD There is no data available that could be downoaded. Check the specified time/id spans.

BPNG_INVALID_OFFLINE_SET Failed to initialise the IBPNGClient from the passed offline data set.

BPNG_PARAMETER_MISMATCH currently not used

BPNG_FW_VERSION_CHECK_ERROR The verification of the new firmware at the end of a firmware update failed.

BPNG_USER_CANCELLED currently not used

BPNG_MIN_VERSION_ERROR The current library version does not suffice the the reuired min version written to BPNGError::msg.

BPNG_EXCEPTION Some kind of unhandled exception was thrown.

BPNG_INCOMPATIBLE_RDB The logger's or offline data set's RDB-Verison is incompatible to this library version.

BPNG_UNSPECIFIED_ERROR An unspecified error occurred.

8.1.2.3 enum BPNGWarningCode

Warning codes.

Warnings are notified by listener calls to the function IBPNGClientListener::onWarning()

Enumerator:

BPNG_WARNING_CLOSE_TRACE_FILES no warning Failed to close the current trace files on the logger device when trying to execute IBPNGClient::initOnline()

BPNG_WARNING_MESSAGES_NOT_CONVERTED In case of protocol mismatch between recorded data and target format or unsupported message sub types, it is possible that some messages can not be converted to the selected format.

8.1.2.4 enum ChannelType

Currently supported interfaces.

Enumerator:

CH_UNDEFINED	undefined channel type
CH_CANLS	CAN low speed interface.
CH_CANHS	CAN high speed interface.
CH_LIN	LIN interface.
CH_SERIAL	Serial interface.
CH_ETHERNET	Ethernet interface.
CH_FLEXRAY	Flexray interface.
CH_MOST25_CTRL	MOST 25 control channel.
CH_MOST25_MDP	MOST 25 data packet channel (MDP)
CH_MOST25_SYNC	MOST 25 synchroneous channel (streaming data)
CH_MOST150_CTRL	MOST 150 control channel.
CH_MOST150_MDP	MOST 150 data packet channel (MDP)
CH_MOST150_MEP	MOST 150 ethernet packet channel (MEP)
CH_ANALOG_IN	Analog in.
CH_DIGITAL_IN	Digital in.
CH_CAMERA	Camera channel.
CH_CCPXCP	CCP XCP.

8.1.2.5 enum FormatId

Identifier for currently supported formats.

Enumerator:

TMASC	Telemotive ASCII format.
OP2	MOST OPformat.
CANOE	CANOE ASCII format.
STA	Serial Trace Analyser format.
GNLOG	GNLog format.
TCLOG	Trace Client format.
TCLOG_TS	Trace Client format plus time stamps.
RAW_SERIAL	Raw Serial Format.
RESERVED_1	Reserved, formerly xml.
IMG	DataAnalyser IMG format.
TMBIN	Telemotive binary format.
CANCORDER	CANCorder format.
APN	APN serial format.
ASCHEX	ASCII format that writes binary data as hex values.
WAV	Wave PCM Format, use this for MOST Sync.
TCPDUMP	TCP dump ($*$.pcap) format.
BLF	Binary Logging Format - Vector Informatik.
DLT_BMW	BMW specific DLT Format.
MDF	Measurement data format - Vector Informatik.
MDF_CAN_SIG	MDF format based on CAN signals.
MPEG4_BLOCKS	Camera format seperated blocks.
MPEG4_JOINED	Camera joined videos.
SERIAL_DEBUG	Serial Format with "new Line"-packaging.
RAW_ETHERNET	Raw ethernet format.

8.1.2.6 enum LanguageID

Languages.

ID for specifiying the language in that the library handles process and error information. Default language is english.

Enumerator:

BPNG_GERMAN	english
BPNG_ENGLISH	german

8.2 IBPNGClient.h File Reference

Interface class for the BPNGClient DLL.

```
#include "BPNGDefines.h"
#include "IBPNGClientListener.h"
```

Classes

- struct IBPNGClient

    Interface class for the blue PiraT 2 client library.

Functions

- DECLDIR IBPNGClient ∗WINAPI getBPNGClient (const char ∗name="")

    Factory function that creates instances of BPNGClient givin away ownership.
- DECLDIR void WINAPI setLanguageID (LanguageID id)

    Sets the language for status messages.
- DECLDIR void WINAPI addLogListener (onLogRequest logFunc)

    Adds a log listener to the library.
- DECLDIR void WINAPI removeLogListener (onLogRequest logFunc)

    Removes a log listener from the library.

8.2.1 Detailed Description

Interface class for the BPNGClient DLL.

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21.04.2010

8.2.2 Function Documentation

8.2.2.1 DECLDIR void WINAPI addLogListener (onLogRequest *logFunc*)

Adds a log listener to the library.

The BPNG library writes debug traces to std::cout. If you want to process the debug outputs additionally (e.g. write to file) you can set a log listener to the lib. All set listeners get the log outputs from all BPNGClient instances.

All log outputs are forwarded to the registered listeners by calling the onLogRequest function that was added.

See also

onLogRequest

8.2.2.2 DECLDIR **IBPNGClient**∗ WINAPI **getBPNGClient** (const char ∗ *name* = "")

Factory function that creates instances of BPNGClient givin away ownership.

The instance is created on the heap and the allocated memory must be freed by the calling application. You can pass a name to this function. This will be the name of the created instance.

See also

IBPNGClient::release(), IBPNGClient::getInstanceName()

8.3 IBPNGClientListener.h File Reference

Interface class for the BPNGClient listener.

```
#include "BPNGDefines.h"
```

Classes

- struct IBPNGClientListener

8.3.1 Detailed Description

Interface class for the BPNGClient listener.

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12.05.2010

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