



blue PiraT 2 Client Library 1.8.1

User's manual

Generated by Doxygen 1.8.0

Thu Jun 20 2013 14:32:22

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Kapitel 1

User's manual - blue PiraT 2 Client Library

1.8.1

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 reconfiguring 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 == 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 == 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_CAN)
            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 << "BPNGLrCode: " << 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 == 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_CAN)
            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)
{
    BPNError err = client->getLastError();
    cout << "Failed to convert data." << endl;
    cout << "BPNError: " << err.code << ", " << err.msg << endl;
    client->release();
    return;
}

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

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

    BOOL ret = client->connectLogger(device.ipAddress.c_str());
    if (ret == 0)
    {
        BPNError err = client->getLastError();
        cout << "Failed to connect logger." << endl;
        cout << "BPNError: " << 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)
    {
        BPNError err = client->getLastError();
        cout << "Failed to download configuration." << endl;
        cout << "BPNError: " << 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 IBPNClient::getConfig()
    // or IBPNClient::reconfigLogger().

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

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

```

```
        client->release();
        return;
    }

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

Kapitel 2

Hierarchical Index

2.1 Class Hierarchy

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

BP2Device	13
BPNGError	13
CANPseudoMessagesProperties	18
ClientProperties	19
CommonProperties	20
ConversionProperties	22
DataSpan	22
IBPNGClient	22
IBPNGClientListener	35
BPNGLoggerDetector	14
IChannel	39
IChannelList	39
IConversionSet	40
IFalseMeasureSignal	41
IFalseMeasureSignalList	42
IFormatInfo	42
IFormatList	43
IRdbEvent	44
IRdbEventList	44
MOSTPseudoMessagesProperties	45
OnlineLoggerInfo	45
RdbEvent	46
vector	
RdbEventList	47

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Class Index

3.1 Class List

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

BP2Device	13
BPNGError	
Error struct with error code and optional error message	13
BPNGLoggerDetector	14
CANPseudoMessagesProperties	
CAN pseudo messages can be written to the CANoe ASC format	18
ClientProperties	
The ClientProperties are a combination of CommonProperties , CanPseudo- MessageProperties and MostPseudoMessageProperties	19
CommonProperties	
Common properties	20
ConversionProperties	
Special conversion properties for some output formats	22
DataSpan	22
IBPNGClient	
Interface class for the blue PiraT 2 client library	22
IBPNGClientListener	35
IChannel	
Channel interface	39
IChannelList	
Channel list interface	39
IConversionSet	
A conversion set stores all conversion relevant settings	40
IFalseMeasureSignal	
False measure signal interface	41
IFalseMeasureSignalList	
False measure signal list interface	42
IFormatInfo	
FormatInfo interface	42
IFormatList	
Format list interface	43
IRdbEvent	
Interface to an RDB event	44

IRdbEventList	
Interface to a list of rdb events	44
MOSTPseudoMessagesProperties	
MOST pseudo messages for each trigger can be written to MOST formats . .	45
OnlineLoggerInfo	
Struct with information about a logger found in LAN	45
RdbEvent	
Implementation class for a wrapper of IRdbEvent using STL classes	46
RdbEventList	
Implementation class for a wrapper of IRdbEventList using STL classes	47

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File Index

4.1 File List

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

BPNGDefines.h	
Defines for blue PiraT 2 Library	49
BPNGLoggerDetector.hh	??
IBPNGClient.h	
Interface class for the BPNGClient DLL	57
IBPNGClientListener.h	
Interface class for the BPNGClient listener	58
RdbEventList.hh	??

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Class Documentation

5.1 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

5.2 BPNGError Struct Reference

Error struct with error code and optional error message.

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

Public Attributes

- [BPNGErrCode](#) *code*
- const char * [msg](#)
error message

5.2.1 Detailed Description

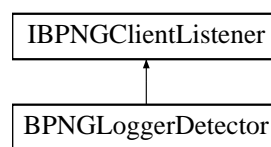
Error struct with error code and optional error message.

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

- [BPNGDefines.h](#)

5.3 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)
- 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)

- virtual int WINAPI [onCriticalDiskSpace](#) (uint64_t freeSpace, uint64_t neededSpace, const char *drive, const char *msg)

Called in case of not enough free disk space.

5.3.1 Member Function Documentation

5.3.1.1 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](#).

5.3.1.2 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](#).

5.3.1.3 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](#).

5.3.1.4 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](#).

5.3.1.5 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 disk space.

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

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

Returns

return 0 when process should be aborted, 1 to ignore

Implements [IBPNGClientListener](#).

5.3.1.6 `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](#).

5.3.1.7 `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

<i>percent-Completed</i>	Percent of the entire conversion process (from 0...100%), -1 indicates the same value as from last function call
<i>status</i>	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](#).

5.3.1.8 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

<i>percent-Completed</i>	Percentage of the entire download process (from 0...100%). A negative value can be passed if we only want to check a abort request
--------------------------	--

Returns

return value 0 indicates an abort request from the implementing class

Implements [IBPNGClientListener](#).

5.3.1.9 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 information purpose. The receiver doesn't have to react on it but can display it on the screen.

Implements [IBPNGClientListener](#).

5.3.1.10 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](#).

5.3.1.11 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 WARNING_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

5.4 CANPseudoMessagesProperties Struct Reference

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

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

Public Attributes

- uint8_t [canTimeStampMessage](#)
Active flag for writing periodical CAN pseudo messages with absolute time stamps.
- uint32_t [channelTS](#)
CAN channel for the time stamp pseudo messages.
- uint32_t [dlcTS](#)
DLC for the time stamp pseudo messages.
- uint32_t [canIdTS](#)
CAN ID for the time stamp pseudo messages.
- uint32_t [hourBitPos](#)
Bit position for the hour (0..23, 5 bit length) value in the CAN data bytes.
- uint32_t [minuteBitPos](#)
Bit position for the minute (0..59, 6 bit length) value in the CAN data bytes.
- uint32_t [secondBitPos](#)
Bit position for the second (0..59, 6 bit length) value in the CAN data bytes.
- uint32_t [dayBitPos](#)
Bit position for the day (0..31, 5 bit length) value in the CAN data bytes.
- uint32_t [monthBitPos](#)
Bit position for the month (0..12, 4 bit length) value in the CAN data bytes.
- uint32_t [yearBitPos](#)
Bit position for the year (8 bit length) value in the CAN data bytes.
- uint8_t [canTriggerMessage](#)
Active flag for writing CAN pseudo messages with trigger information.
- uint32_t [channelTrigger](#)
CAN channel for the trigger pseudo messages.
- uint32_t [dlcTrigger](#)
DLC for the trigger pseudo messages.
- uint32_t [canIdTrigger](#)
CAN ID for the trigger pseudo messages.
- uint32_t [triggerNumBitPos](#)
Bit position for the trigger's index (16 bit length)
- uint32_t [reserved1](#)
reserved
- uint32_t [reserved2](#)
reserved
- uint32_t [reserved3](#)
reserved
- uint32_t [reserved4](#)
reserved

5.4.1 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](#)

5.5 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,.
- [ConversionProperties conversionProp](#)
The properties object for specification of some special format settings,.

5.5.1 Detailed Description

The [ClientProperties](#) are a combination of [CommonProperties](#), [CanPseudoMessageProperties](#) and [MostPseudoMessageProperties](#).

5.5.2 Member Data Documentation

5.5.2.1 [CANPseudoMessagesProperties](#) ClientProperties::canPseudoMessages

The properties object for the CAN pseudo messages,.

See Also

[CANPseudoMessagesProperties](#)

5.5.2.2 [CommonProperties](#) ClientProperties::common

The properties object for all general properties,.

See Also

[CommonProperties](#)

5.5.2.3 ConversionProperties ClientProperties::conversionProp

The properties object for specification of some special format settings,.

See Also

[ConversionProperties](#)

5.5.2.4 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](#)

5.6 CommonProperties Struct Reference

Common properties.

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

Public Attributes

- char * [nameOfTester](#)
Name of tester that is written to the converted file names.
- uint32_t [maxOutputSizeMB](#)
Maximum file size for converted files. When this size is reached a new file is created.
- uint8_t [separatedTimeFormat](#)
- uint8_t [separatedTimeFormatInOfflineSet](#)
- char * [alternativeLoggerName](#)
The logger device's name is included in the converted files' names. An alternative logger name can be used.
- uint8_t [useAlternativeLoggerName](#)
Set this field to 1 if the alternative logger name should be used in converted file names, 0 if not.
- uint8_t [useSubdirectories](#)
Set to 1 if converted files should be stored in subdirectories named by their start date, set 0 if they should not.
- uint8_t [midnightSplitting](#)
Set to 1 if converted files should be splitted at 00:00:00 of each date, set to 0 if they should not.
- uint8_t [fileTimeSpansLikeSelection](#)
- uint8_t [markerNumbersInFileNames](#)
Specifies whether the indices of the marker included in a converted file should be appended to its file name.

- uint8_t [subfolderWithLoggerName](#)
- uint32_t [reserved1](#)
reserved
- uint32_t [reserved2](#)
reserved
- uint32_t [reserved3](#)
reserved
- uint32_t [reserved4](#)
reserved

5.6.1 Detailed Description

Common properties.

5.6.2 Member Data Documentation

5.6.2.1 uint8_t 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.

5.6.2.2 uint8_t 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 format (e.g. 20111220_101548)

5.6.2.3 uint8_t 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)

5.6.2.4 uint8_t 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](#)

5.7 ConversionProperties Struct Reference

Special conversion properties for some output formats.

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

Public Attributes

- `uint8_t` [useSatelliteTimeForGPSFormats](#)
Flag for using the satellite time in gps formats instead of the logger time stamp.

5.7.1 Detailed Description

Special conversion properties for some output formats.

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

- [BPNGDefines.h](#)

5.8 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](#)

5.9 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 int WINAPI [getInstanceId](#) ()=0
- Returns the instance ID that is unique for all [IBPNGClient](#) instances in one process.*

 - 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 [createCCPXCPSeqFile](#) (const char *xsdDir, const char *xmlDir, bool forceFlag)=0
- Parse CCPXCPMeasurement.xml and CCPXCPConfiguration.xml and create CCPXCPSquence.xml.*

 - virtual int WINAPI [createCCPXCPDbcFiles](#) (const char *dbcDir, const char *xsdDir, const char *xmlDir)=0
- Parse CCPXCPMeasurement.xml and CCPXCPConfiguration.xml and create a Vector DBC file for each device.*

 - virtual const [IFalseMeasureSignalList](#) *WINAPI [getFalseMeasureSignals](#) ()=0
- Return pointer to a false measure signal list interface.*

 - 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 occurred 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 occurred 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 [saveProperties](#) (const char *pathToIniFile)=0
Save properties to ini file.
- virtual void WINAPI [loadProperties](#) (const char *pathToIniFile)=0
Load properties from ini file.
- virtual void WINAPI [clearDBCFileAssignments](#) ()=0
Remove all DBC file assignments.
- virtual void WINAPI [assignDBCFile](#) (int channelIndexCAN, const char *dbcFilePath)=0
Assign a DBC file to a CAN channel. Multiple files for one CAN channel are allowed, but double used message IDs will ignored.
- 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.

5.9.1 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 implementing 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.

5.9.2 Member Function Documentation

5.9.2.1 virtual void WINAPI [IBPNGClient::assignDBCFile](#) (int *channelIndexCAN*, const char * *dbcFilePath*) [pure virtual]

Assign a DBC file to a CAN channel. Multiple files for one CAN channel are allowed, but double used message IDs will ignored.

Parameters

<i>channelIndexCAN</i>	Zero based CAN channel index
<i>dbcFilePath</i>	Absolute path to the dbc file

5.9.2.2 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 standby 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\(\)](#).

Parameters

<i>ipAddress</i>	IP address of the logger that should be connected
------------------	---

Returns

0 on failure, 1 on success

5.9.2.3 `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 occurred. Use [getNumConversionErrors\(\)](#) and [getConversionError\(int index\)](#) for detailed information.

Parameters

<i>conversionSet</i>	conversion settings, see IConversionSet
<i>target</i>	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.

5.9.2.4 `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.

5.9.2.5 `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

<i>numSpans</i>	Size of the passed DataSpan array in second parameter
<i>dataSpans</i>	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.

5.9.2.6 `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

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

See Also

[BPNGBugreportMode](#)

Parameters

<i>startTime</i>	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
<i>endTime</i>	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.

5.9.2.7 `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 occurred. Use [getNumDownloadErrors\(\)](#) and [getDownloadError\(int index\)](#) for detailed information.

Parameters

<i>numSpans</i>	Size of the passed DataSpan array in second parameter
<i>dataSpans</i>	Array of DataSpan , specifying the time or ID spans that should be downloaded
<i>target</i>	Path to the target directory or ZIP file. A passed directory must be empty or not existing. A passed ZIP path must not exist.
<i>doSorting</i>	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.

5.9.2.8 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.

5.9.2.9 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](#)

5.9.2.10 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 modify the configuration in a valid way and reconfigure 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 specify all xml files that are mandatory to reconfigure 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

<i>path</i>	The path inclusive file name where to store the downloaded configuration ZIP file.
-------------	--

5.9.2.11 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.

5.9.2.12 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\(\)](#)

5.9.2.13 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.

5.9.2.14 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](#)

5.9.2.15 virtual const **IFalseMeasureSignalList*** WINAPI IBPNGClient::getFalseMeasureSignals () [pure virtual]

Return pointer to a false measure signal list interface.

After calling the `IBPNGClient::createCCPXCPDbcFiles()` this function returns a pointer to a list with all measure signals which were ignored at DBC file generation.

See Also

[IFalseMeasureSignal](#)

5.9.2.16 `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](#)

5.9.2.17 `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](#)

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

Returns the number of errors occurred 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_ERRORS` and you can get the number of errors with this function.

See Also

[getConversionError\(\)](#)

5.9.2.19 virtual int WINAPI IBPNGClient::getNumDownloadErrors () [pure virtual]

Returns the number of errors occurred 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_DOWNLOAD_ERRORS and you can get the number of errors with this function.

See Also

[getDownloadError\(\)](#)

5.9.2.20 virtual ClientProperties* WINAPI IBPNGClient::getProperties () [pure virtual]

Returns a pointer to the current properties.

See Also

[ClientProperties](#), [setProperties\(\)](#)

5.9.2.21 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\(\)](#)

5.9.2.22 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, especially 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

5.9.2.23 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, especially 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

5.9.2.24 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

<i>ip</i>	The IP address of the logger that should be kept alive
-----------	--

See Also

[stopKeepLoggerAlive\(\)](#)

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

Reconfig logger with the zipped new configuration.

Reconfigures 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 specify all xml files that are mandatory to reconfigure 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

<i>configZip</i>	Path to the zip file that contains the configuration.
------------------	---

Returns

0 on failure, 1 on success

5.9.2.26 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!

5.9.2.27 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.

5.9.2.28 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

5.9.2.29 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

5.9.2.30 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

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

Set client properties.

See Also

[ClientProperties](#), [getProperties\(\)](#)

5.9.2.32 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

5.9.2.33 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

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

Returns

0 on failure, 1 on success

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

Update licenses.

Overwrites the current license file with the new one.

Parameters

<i>licenseFilePath</i>	Path to the new license file
------------------------	------------------------------

Returns

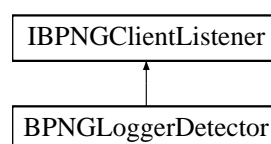
0 on failure, 1 on success

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

- [IBPNGClient.h](#)

5.10 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 disk space.

- 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

5.10.1 Member Function Documentation

5.10.1.1 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](#).

5.10.1.2 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](#).

5.10.1.3 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](#).

5.10.1.4 `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](#).

5.10.1.5 `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 disk space.

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

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

Returns

return 0 when process should be aborted, 1 to ignore

Implemented in [BPNGLoggerDetector](#).

5.10.1.6 `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](#).

5.10.1.7 `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

<i>percent-Completed</i>	Percent of the entire conversion process (from 0...100%), -1 indicates the same value as from last function call
<i>status</i>	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](#).

5.10.1.8 `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

<i>percent-Completed</i>	Percentage of the entire download process (from 0...100%). A negative value can be passed if we only want to check a abort request
--------------------------	--

Returns

return value 0 indicates an abort request from the implementing class

Implemented in [BPNGLoggerDetector](#).

5.10.1.9 `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 information purpose. The receiver doesn't have to react on it but can display it on the screen.

Implemented in [BPNGLoggerDetector](#).

5.10.1.10 `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](#).

5.10.1.11 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 WARNING_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](#)

5.11 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.

5.11.1 Detailed Description

Channel interface.

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

- [BPNGDefines.h](#)

5.12 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.

5.12.1 Detailed Description

Channel list interface.

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

- [BPNGDefines.h](#)

5.13 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 [addRdbldRange](#) (uint64_t startId, uint64_t endId)=0
Adds a ReferenceDB ID range to the conversion set.
- virtual bool [loadFormats](#) (const char *pathToIniFile)=0
Loads the format settings from an ini file.
- virtual bool [saveFormats](#) (const char *pathToIniFile)=0
Saves the format settings to an ini file.

5.13.1 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.

5.13.2 Member Function Documentation

- 5.13.2.1 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

<i>channelType</i>	must be one of the appropriate ChannelType enum.
<i>channelIndex</i>	zero-based channel index
<i>formatId</i>	must be one of the appropriate FormatId enum.
<i>fileId</i>	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.

5.13.2.2 `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

<i>startId</i>	DataBaseEntryId that indicates the start of the data range to be converted
<i>endId</i>	DataBaseEntryId that indicates the end of the data range to be converted

5.13.2.3 `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

<i>startTime</i>	must be in usec since 01.01.1970 (UTC)
<i>endTime</i>	must be in usec since 01.01.1970 (UTC)

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

- [BPNGDefines.h](#)

5.14 IFalseMeasureSignal Struct Reference

False measure signal interface.

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

Public Member Functions

- virtual uint16_t [getDeviceId](#) () const =0
Returns the device Id.
- virtual uint16_t [getSignalNo](#) () const =0
Returns the signal number.
- virtual [Reason](#) [getIgnoreReason](#) () const =0
Returns the ignore reason.

5.14.1 Detailed Description

False measure signal interface.

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

- [BPNGDefines.h](#)

5.15 IFalseMeasureSignalList Struct Reference

False measure signal list interface.

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

Public Member Functions

- virtual size_t [getSize](#) () const =0
Returns the number of signals.
- virtual const [IFalseMeasureSignal](#) * [getSignal](#) (size_t index) const =0
Returns the [IFalseMeasureSignal](#) at index.

5.15.1 Detailed Description

False measure signal list interface.

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

- [BPNGDefines.h](#)

5.16 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.
- virtual const char * [getRequiredLicense](#) () const =0
Returns the required license for the format, an empty string for free formats.

5.16.1 Detailed Description

FormatInfo interface.

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

- [BPNGDefines.h](#)

5.17 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.

5.17.1 Detailed Description

Format list interface.

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

- [BPNGDefines.h](#)

5.18 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 [getUniqueld](#) ()=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.

5.18.1 Detailed Description

Interface to an RDB event.

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

- [BPNGDefines.h](#)

5.19 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.

5.19.1 Detailed Description

Interface to a list of rdb events.

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

- [BPNGDefines.h](#)

5.20 MOSTPseudoMessagesProperties Struct Reference

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

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

Public Attributes

- `uint8_t` [writeMessages](#)
Active flag for writing MOST pseudo messages for trigger.
- `uint32_t` [source](#)
Source address.
- `uint32_t` [target](#)
Target address.
- `uint32_t` [functionBlockID](#)
Function block ID.
- `uint32_t` [functionID](#)
Function ID.
- `uint32_t` [reserved1](#)
reserved
- `uint32_t` [reserved2](#)
reserved
- `uint32_t` [reserved3](#)
reserved
- `uint32_t` [reserved4](#)
reserved

5.20.1 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](#)

5.21 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,
- `uint8_t wlan`
Flag for connection type. 0 = ethernet, 1 = wlan.

5.21.1 Detailed Description

Struct with information about a logger found in LAN.

5.21.2 Member Data Documentation

5.21.2.1 `uint8_t OnlineLoggerInfo::loggerStatus`

current logger status,

See Also

[BPNGLoggerStatus](#)

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

- [BPNGDefines.h](#)

5.22 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**

5.22.1 Detailed Description

Implementation class for a wrapper of [IRdbEvent](#) using STL classes.

To achieve a compiler independent 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:

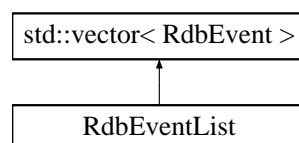
- `RdbEventList.hh`

5.23 RdbEventList Class Reference

Implementation class for a wrapper of [IRdbEventList](#) using STL classes.

```
#include <RdbEventList.hh>
```

Inheritance diagram for `RdbEventList`:



Public Member Functions

- **RdbEventList** ([IRdbEventList](#) *list)

5.23.1 Detailed Description

Implementation class for a wrapper of [IRdbEventList](#) using STL classes.

To achieve a compiler independent 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](#)

Kapitel 6

File Documentation

6.1 BPNGDefines.h File Reference

Defines for blue PiraT 2 Library.

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

Classes

- struct [IFalseMeasureSignal](#)
False measure signal interface.
- struct [IFalseMeasureSignalList](#)
False measure signal list interface.
- 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 [ConversionProperties](#)
Special conversion properties for some output formats.
- struct [ClientProperties](#)
The [ClientProperties](#) are a combination of [CommonProperties](#), [CanPseudoMessageProperties](#) and [MostPseudoMessageProperties](#).

Macros

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

Typedefs

- 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, [BPNG_FTP_NOT_CONNECTED](#) = 6, [BPNG_FTP_SERVER_NOT_FOUND](#) = 7,
[BPNG_FTP_LOGIN_FAILED](#) = 8, [BPNG_FTP_REMOTE_PATH_NOT_FOUND](#) = 9, [BPNG_FTP_READ_REMOTE_FILE_ERROR](#) = 10, [BPNG_FTP_WRITE_REMOTE_FILE_ERROR](#) = 11,
[BPNG_FTP_TRANSFER_USER_CANCELED](#) = 12, [BPNG_FTP_CREATE_REMOTE_DIR_ERROR](#) = 13, [BPNG_FTP_REMOVE_REMOTE_DIR_ERROR](#) = 14, [BPNG_FTP_REMOVE_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_PATH_NOT_FOUND](#) = 21, [BPNG_READ_LOCAL_FILE_ERROR](#) = 22, [BPNG_WRITE_LOCAL_FILE_ERROR](#) = 23,
[BPNG_FILE_EXISTS_ERROR](#) = 24, [BPNG_DIR_EXISTS_ERROR](#) = 25, [BPNG_TARGET_PATH_TOO_LONG](#) = 26, [BPNG_ZIP_EXCEEDS_FATFS_MAX](#) = 27,
[BPNG_XML_PARSER_ERROR](#) = 28, [BPNG_INITIALISATION_ERROR](#) = 29, [BPNG_RDB_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](#) =

```

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BPNG_INVALID_MESSAGE_TS = 40, BPNG_INVALID_MESSAGE_SUBID = 41, BPNG_
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_XCP_PARSER_ERROR = 54, BPNG_CCP_XCP_DBC_GENERATOR_ERROR = 55,
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_DISK_SPACE = 57, BPNG_FWUPDATE_FAILED = 58, BPNG_INDEX_OUT_OF_RAN-
GE_ERR = 59 }

```

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, **OBSOLETE_CH_CANLS**, **CH_CAN**, **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**, **CH_GPS**, **CH_ECL** }

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, **NMEA** = 23,
KML = 24, **KMZ** = 25, **SERIAL_DEBUG** = 26, **RAW_ETHERNET** = 27,
ESO_TRACE = 28, **XTMT** = 29, **GPX** = 30, **INVALID** = 0xFF }

Identifier for currently supported formats.

- enum **Reason** {
R_UNSUPPORTED_BIT_MASK, **R_BIT_MASK_OVERLAP**, **R_UNSUPPORTED_COMP-**
U_TAB, **R_FORBIDDEN_TAB_VALUE**,
R_UNKNOWN }
- enum **RdbEventType** {
UNKNOWN = 0, **STARTUP** = 0x01, **SHUTDOWN** = 0x02, **MARKER** = 0x03,
INFO = 0x05, **SLAVE_OFFSET** = 0x06, **SLAVE_TO_MASTER** = 0x07, **DATA_DELETED**
= 0x08,
TIME_SET = 0x09, **NEW_TIME** = 0x0A, **SUDDEN_DEATH** = 0x0B }
- 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](#).

6.1.1 Detailed Description

Defines for blue PiraT 2 Library.

Author

Markus van Pinxteren

Date

12.05.2010

6.1.2 Enumeration Type Documentation

6.1.2.1 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.

6.1.2.2 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 found.

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 read 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::initOffline](#) 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 thus 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 downloaded. 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 required 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-Version is incompatible to this library version.
- BPNG_UNSPECIFIED_ERROR** An unspecified error occurred.

6.1.2.3 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.

6.1.2.4 enum ChannelType

Currently supported interfaces.

Enumerator

- CH_UNDEFINED** undefined channel type

OBSOLETE_CH_CANLS CAN low speed interface.
CH_CAN 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 synchronuous 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.
CH_DIAG Diagnose, currently not used.
CH_GPS Global Positioning System.
CH_ECL Electronic Control Line.

6.1.2.5 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.
NMEA Raw format for GPS data.
KML KML format for GPS data.
KMZ KMZ format for GPS data.
SERIAL_DEBUG Serial Format with "new Line"-packaging.
RAW_ETHERNET Raw ethernet format.
ESO_TRACE Audi specific ESO Format.
XTMT Extended Telemotive Trace File format.
GPX GPS Exchange format.

6.1.2.6 enum LanguageID

Languages.

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

Enumerator

BPNG_GERMAN english
BPNG_ENGLISH german

6.1.2.7 enum RdbEventType

Enumerator

STARTUP bp2 startup
SHUTDOWN bp2 shutdown
MARKER Marker set.
INFO Info is set.
SLAVE_OFFSET cascading slave offset
SLAVE_TO_MASTER cascading slave to master
DATA_DELETED All data and data space is deleted.
TIME_SET bp2 time was set
NEW_TIME new time
SUDDEN_DEATH no "real" shutdown was found after startup.

6.1.2.8 enum Reason

Enumerator

- R_UNSUPPORTED_BIT_MASK** DBC file don't support bit operations with a bit mask.
- R_BIT_MASK_OVERLAP** Bit mask is incorrect and cause a overlap with at least one other signal.
- R_UNSUPPORTED_COMPU_TAB** DBC file don't support all compu tab types; only tab will ignored, not the signal itself!
- R_FORBIDDEN_TAB_VALUE** DBC file don't support all possible values of a compu tab; only tab will ignored, not the signal itself!
- R_UNKNOWN** Unknown reason.

6.2 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.

6.2.1 Detailed Description

Interface class for the BPNGClient DLL.

Author

Markus van Pinxteren

Date

21.04.2010

6.2.2 Function Documentation

6.2.2.1 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.

IMPORTANT NOTE: Don't write anything to `cout` or `cerr` in your implementation of `onLogRequest`! This would lead to a recursive call of the forwarding function.

See Also

[onLogRequest](#)

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

Factory function that creates instances of BPNGClient giving 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\(\)](#)

6.3 IBPNGClientListener.h File Reference

Interface class for the BPNGClient listener.

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

Classes

- struct [IBPNGClientListener](#)

6.3.1 Detailed Description

Interface class for the BPNGClient listener.

Author

Markus van Pinxteren

Date

12.05.2010

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