Software 35.04

Release Notes

API

python

We have introduced the **msr_capture** and **pcap_capture** classes for application developers who wish to control an msr during their runs. The msr_capture captures in the 4links native format and pcap_capture captures in a pcap form.

The constructor takes 4 parameters

- The hostname / ip address of the msr
- The target file / directory
- The capture configuration file (as generated by the GUI program
- File Size, if you want the capture to split the data into multiple files please specify the file size that you want the capture to be split into, this size is in MB. If you don't want file splitting then specify 0

We have supplied the python examples msr and msr_cap.

Python API Performance

We have updated the python API guide discussing implications of pythons threading model.

The python interpreter has some known issues with respect to threading, whilst python uses system threads to implement threading, the actual interpreter can only run in one thread at a time, if other threads are not waiting on I/O they will be waiting for the python interpreter to be assigned to that thread.

Essentially python code in python threads is run co-operatively.

A more elegant way of putting this, is that currently you will never get more than a single cores worth of python code running at any instant.

If you need to have more than a single cores worth of code running. then your application must be process based as opposed to thread based.

Java Read Application

This program displayed false EOP's at the end of packet captures. This has now been resolved.

Software 35.00

Release Notes

API

C

EtherSpaceLink_open does not check the result code of the asynchronous connect call correctly and will try and negotiate on a connection which is not connected resulting in a somewhat incorrect error code being returned. You will still get an error, but with this correction or more applicable error.

C

Introduction of **EtherSpaceLink_request_link_status_port** which requests port status without switching active link on DSI/MSR and 3U devices. On ESL devices it will switch the active port.

C++/ python

request_link_status_port method added which performs the same as the function above for the connection class

The timetag callbacks on Windows would report incorrect wall times thus prdocuing incorrect pcap packet timestamps.

msr

Corrected usage of the /f parameter so as not to error.

The msr program has the ability to break large captures into smaller configurable chunks. Currently they are incrementally numbered, the file name is now the start and end times of the capture. If you want the chunks to be incrementally file numbered set the environment varable **ESL_FILE_INDEX**

PCAP capture

The offset from UTC in the PCAP header is now populated ensuring consistent timing when reading pcap files in different timezones..

Software 34.98

Release Notes

New Linux Platform

We now support **Ubuntu 20.04** with this release comes for support for both python 2.7 and python 3.

The default is for python 2.7 (as this is the install default) but if you wish to use python 3 then set the environment variable **ESL_PYTHON_VER** to **3**

Software 34.96

Release Notes

msr capture program

The msr capture program allows users to capture traffic on specific ports, currently it captures traffic on all ports irrespective of this parameter. This has now been rectified.

Software 34.94

Release Notes

spwio Documentation

The PDF for spwio was incorrectly printed in landscape as opposed to portrait.

esl_srscfg

We have introduced the **esl_srscfg** utility in order to make configuring SRS routers simpler.

esl_spw

We have introduced **esl_rspw** a utility which allows one to send and receive RMAP/CCSDS and raw messages without resort to complex programming.

spwio RMAP plugin

This plugin displayed "..." when either more than 8 bytes of data were received or if the increment address flag was set, this caused a degree of confusion. Instead, if the increment address flag is set the plugin displays the token "AI"

Software 34.87

Release Notes

MSR Capture

When requested to capture NULLS (ESC-FCT) the msr capture program generates the appropriate records whilst recording to PCAP formatted files.

Java Read Program

The Java read program now displays NULLS (ESC FCT) when encountered.

Wireshark Plugin

The wireshark plugins now display ESC FCT (NULL) and FCT frame data.

Spw program

We now allow a spin up period in the average throughput calculations

SRS Configuration

We have improved error reporting when configuring SRS routers.

Software 34.86

Release Notes

CentOS-8

We now provide support for CentOS-8

Apple Mac 19.0.0

We now provide support for MacOS Catalina (19.0.0)

API Change

EtherSpaceLink_dump_status

> This function provides a means of dumping given context to stderr for help in debugging applications.

Software 34.83

Release Notes

Wireshark / PCAP Integration

When using packet aggregation with the final EOP being preserved (ESL_PCAP_RECORD_EOP_TS) we didn't preserve the final EOP if short timestamps were sent by the msr. This is now rectified.

API Change

The EthersSpaceLink_close, EthersSpaceLink_shutdown, EthersSpaceLink_abort calls now shutdown the spacewire ports automatically, user applications no longer have to.

Documentation

The documentation for the 3U was missing, this is now included in the doc package.

Software 34.82

Release Notes

Graphical Capture program

When running capture recording to multiple files, the file size limit is now respected.

Software 34.81

Release Notes

Version Number change

We have now added patch release numbers to the version identification.

The version numbering is now of the format

<ReleaseNumber>.<VersionNumber><PatchLevel>

The first patch to this version will be known as 34.82.

C++ RMAP

The C++ API for RMAP has been corrected with respect to the endianness of the command byte, previously the bit positions of command flags were reversed causing corrupt RMAP messages.

READ program

The java read program did not load the RMAP plugin correctly.

RMAP plugin

Support for Read Modify Write verb has been added

MSR capture program

The msr capture program places waveforms in the current directory if the environment variable ESL_WF_DIR is not set. ESL_WF_DIR is an environment variable that controls where waveform files are saved.

Waveform files

When a waveform file is saved by the msr program, the name of the file is printed to stdout and the waveform file is prefixed with the epoch time. Allowing easy identification of the capture file in any logs.

SVG Waveform files

These are now scaled correctly, so there are no longer have large blocks of unreadable color.

Python 3.7 Support on Windows

Support for Python 3.7 on windows. If python 3.7 is required, set ESL_PYTHON_VER to 3.7 prior to running 4linksvars.

Python timecode example

examples/python/timecode is an example of how to send and listen for Spacewire timecodes.

Graphical Capture program on Windows

The graphical capture program uses GTK, however the GTK runtime ships with a DLL used by other packages and this can stop the program starting. The environment program 4linksvars.bat puts the GTK libraries in the path before other libraries.

Change of License for example programs

All examples are now shipped with the BSD license making copying and reuse of the examples easier.

Graphical Capture program / WIreshark Integration

It is now possible to capture directly into Wireshark from within the graphical capture program

Improved PCAP buffering

The PCAP file buffer has been made an optimal size.

API Changes

Return Values

Throughout a return value of –1 was used to indicate an error, this has been changed. If a function returns a value < 0 an error has occurred, the returned value being the error code as described in EtherSpaceLink_Constants.h. This change does not affect the C++ or Python bindings as error handling is now by exception.

EtherSpaceLink_read_packet_full

When called with **EtherSpaceLink_REPORT_SPECIAL_DATA** and **EtherSpaceLink_REPORT_EXTENSION_DATA** this function used to return –2 – <number of bytes>. This conflicts with the error handling as defined above. Instead the returned flags indicate whether a size is being returned. If the returned flags are **EtherSpaceLink_SPECIAL_SIZE** or **EtherSpaceLink_EXTENSION_SIZE** then the returned value is the number of special or extension bytes.

Example:

```
  unsigned char rxbuf[4096];
  int bytes_received, extension, ii;
  int flags;
  int active_port;

  EtherSpaceLink esldev = EtherSpaceLink_open("1.1.1.1:1234");
  if (!esldev)
  {
      printf( "Unable to connect\n");
      return 1;
  }

  bytes_received = EtherSpaceLink_read_packet_full ( esldev,
                                        rxbuf,
                                        sizeof(rxbuf),
                                        &flags,
                                        EtherSpaceLink_REPORT_EXTENSION_DATA
                                        | EtherSpaceLink_REPORT_SPECIAL_DATA
                                       );
If (bytes_received < 0)
{
    // Error condition
    fprintf (stderr, “Error %d \n”, bytes_received);
    return 1;
}
switch (flags)
{
    case EtherSpaceLink_SPECIAL_SIZE:
    case EtherSpaceLink_EXTENSION_SIZE:
          fprintf (stdout, “%d bytes of special data\n”, bytes_received);
}
```

receivePacket (java)

This function no longer reports the size of extension or special data as a negative number. Instead one must check the context of the return value by calling **get_terminator.** If this function returns **SPECIAL_SIZE** or **EXTENSION_SIZE** then the size returned is the extension size. Note that if **enable_callbacks** is called the application developer does not have to perform analysis of special and extension_data, and instead you get high level callbacks (e.g. link changed, error, or waveform data);

EtherspaceLink_fastclose

Introduced new API verb which shuts down the connection as soon as possible using SO_LINGER with a timeout of 0.

Language Implementations

C++ method fastclose

Java method fastclose

Python method fastclose

EtherspaceLink_sendtimecode

Explicit function to send a Spacewire timecode.

Language Implementations

C++ method send_timecode(timecode)

Java method send_timecode(timecode)

Python method send_timecode(timecode)

EtherspaceLink_get_error

This returns the last error to occur in the **current thread** in the EtherSpaceLink library, mostly it should not be required to call this as functions return the error code directly. This change ensures that error codes are thread safe between receiver and transmit threads.

EtherspaceLink_get_error_text

This returns a string description of the error last error to occur in the **current thread.**

This change ensures that error codes are thread safe between receiver and transmit threads.