

PAUL SCHERRER INSTITUT

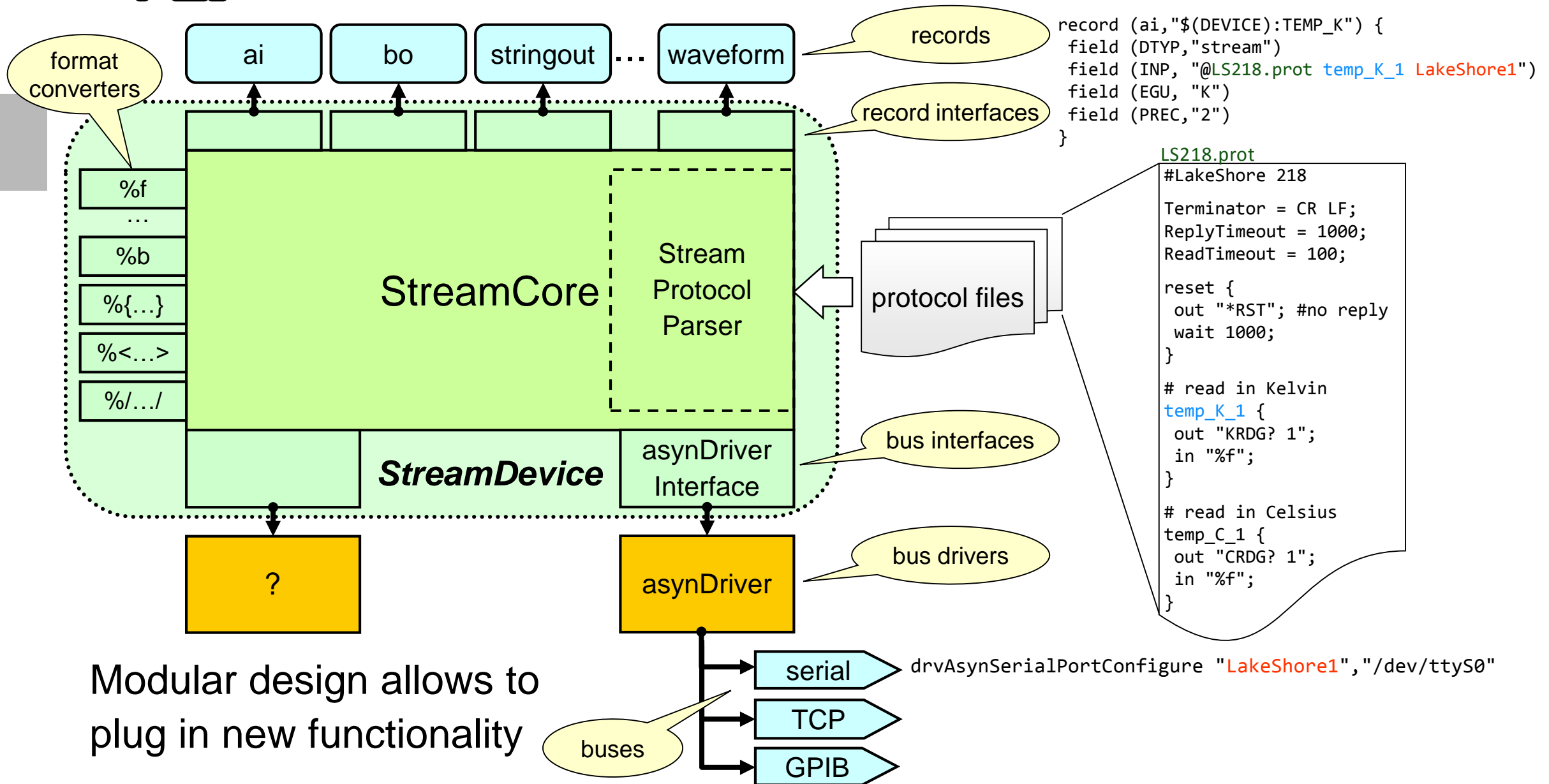


Dirk Zimoch :: Control Systems :: Paul Scherrer Institut

News from StreamDevice

EPICS Collaboration Meeting ITER June 2019

Flashback: What was StreamDevice again?



What's New?

- EPICS 7 support
 - New data types: INT64 and UINT64 for arrays (aai, aao, waveform)
 - New record types: int64in, int64out, lsi, lso
(64 bit I/O probably works only on systems, where long has 64 bits)
- Connection handling (only when supported by asynOctet driver)
 - Set .STAT to COMM when disconnected
 - Run @init handler (again) when reconnecting
- Error Messages
 - Errors switched off after ioclnit to prevent message flooding
 - Controllable with var streamError
 - Repeating asyn errors suppressed (thanks to Benjamin Franksen)
 - Does not mess with asynTraceMask any more

Repo and Build system

- GIT: <https://github.com/paulscherrerinstitute/StreamDevice>
 - Old "master" branch renamed to "2.7", new "master" is version 2.8.
(Was probably not the best idea. Sorry. I did not know what I was doing.)
- Documentation: <https://paulscherrerinstitute.github.io/StreamDevice>

```
<top>/  
  configure/  
  StreamDevice/  
    configure/  
    Makefile  
    GNUmakefile  
  src/  
  docs/
```

- Have now a standard `configure/` directory
 - Compatible with "standard EPICS" way to build
 - Still supports being in external `<top>/` directory like before
 - PSI specific `GNUmakefile` calls "standard EPICS" `Makefile` if no PSI environment is found
 - Documentation moved to `docs/` for github.io compatibility
 - Directory `srcSynApps/` removed
 - `sCalcout` record support moved to `src/`

- Dynamic libraries supported
 - Fixed epicsExport.h and epicsShare* usage (I hope)
- Color support for error output like on Linux console
 - Required some console setup call
- Problems to build with VS 2010
 - Cannot test as I have no VS 2010
 - No problem with VS 2017
- Dropped support for old Cygwin version
 - Used old cygnus-2.7.2 gcc which fails to compile some code
 - required preprocessor switches

Regular expressions

- Normal regex: `%/expression/` returns a string
 - E.g. find keyword in long text: `in "%.1/(?im)<title>(.*?)</title>/";`
- Regsubst: `%#/expression/substitution/` rewrites input/output
 - Make strange input readable:
 - 1.23- → -1.23 in `"%#/([^-])*([-])/\\2\\1/%f";`
 - 86+3 → 8.6e+3 in `"%#/([0-9])([0-9]*)([-+][0-9]+)/\\1.\\2e\\3/%f";`
 - Convert certain characters:
 - Lower case hex checksum out `"%0<xor>%#-2/.*\\/L&/";`
 - Text 1 → TEXT_1 out `"%s%#/.*\\/U&%#/ /_/"`;
 - `\\path\\x\\y` → `/path/x/y` out `"%s%\\/\\//\\//";`
- Future plan: implement "translate characters" format
 - `%|charset|replacement|`, e.g. `"%|[a-z] \\|[A-Z]_|/|"`

More Future Plans

- Error/Debug message handling
 - Filter messages per record (pattern)
 - Send messages through driver layer (asyn)
- Propagate errors along redirections
- Support interlaced arrays (aka tables)
- Syntax improvements
 - Include other protocol files
 - Call other protocols with parameters
 - Load-time and run-time calculations (e.g. `0x10+$1`, `"%(VAL*0.01)f"`)
 - Conditionals (e.g. `$1?"ADDR=\$1"`)
- Change settings dynamically, in particular number of bytes to read (MaxInput)
 - Support dynamic array sizes, e.g. GPIB `"#6008000..."`
- Other interfaces than asynOctet
 - records (string fields or char arrays)
 - sysfs (Linux)

1.234	4.233	3.424
2.321	6.342	3.121
1.122	5.324	2.134
↓	↓	↓
record A	record B	record C



What else?

- Motor record support ?
- Unicode ?
- ...

Many Thanks to the EPICS Community

- Thanks to all contributors:
 - Krisztián Löki
 - Scott Stubbs
 - Mark Rivers
 - Jeong Han Lee
 - Benjamin Frankesen
 - Mike Westfall
 - Klemen Vodopivec
 - Hugo Slepicka
 - Davide Marcato
 - (whoever I missed)

