

# The 'myData' User's Guide

Version 3.0; by Chris Slominski

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## Introduction

The *myData* command line utility extracts archived data from *Mya* for a set of user requested channels. It creates a time slice table of channel history in the same format as the commonly used *mySampler* utility. Users of *myData* provide a date span of interest and a list of channel names. The utility will generate a time slice sampling of each channel at each time where there is a value change for at least one of the specified channels. This potentially provides a very significant reduction in output compared to *mySampler*; especially in the case where the time span is long and the channels of interest do not change often.

```
myData -b 2014-04-01 -e^+1h INJ:dpp_bpm IBC0L02Current -f '$abs(a) < 1e-6 & a != 0'
```

Date	INJ:dpp_bpm	IBC0L02Current
2014-04-01 00:54:03	-1.15588e-07	1.30451
2014-04-01 00:54:04	-1.15588e-07	1.30646
2014-04-01 00:54:05	-1.15588e-07	1.30812
2014-04-01 00:54:39	3.84959e-07	1.31053
2014-04-01 00:54:40	3.84959e-07	1.29837
2014-04-01 00:54:41	3.84959e-07	1.27702
2014-04-01 00:54:55	6.80169e-07	1.29598
2014-04-01 00:54:56	6.80169e-07	1.28987
2014-04-01 00:55:05	6.74107e-07	1.29986
2014-04-01 00:55:05	6.74107e-07	1.31129
2014-04-01 00:55:06	6.74107e-07	1.30887
2014-04-01 00:55:17	-7.65156e-07	1.30842
2014-04-01 00:55:18	-7.65156e-07	1.31023
2014-04-01 00:55:19	-7.65156e-07	1.31189
2014-04-01 00:55:35	-9.15813e-07	1.28173
2014-04-01 00:55:36	-9.15813e-07	1.271

## Usage

Enter “myData -h” to get a brief description of the command line syntax. The dates may be entered as “YYYY-MM-DD[HH:MM[:SS]]” or “HH:MM[:SS]”, where the square brackets denote optional fields. The second format assumes “today”. Like all *Mya* utilities that accept a date/time string, relative times are also accepted. The relative time format is “<number>[<units>]” and is interpreted relative to now. For example -10h means ten hours ago. The various unit characters are ‘s’, ‘m’, ‘h’, ‘d’, and ‘w’ for seconds, minutes, hours, days, and weeks respectively. Seconds are assumed when no units are provided in a

relative time. The relative time format can also be interpreted as relative to the other supplied time, by entering the '^' character. For example; "-b 2012-01-01 -e ^+1d" specifies a span of one day starting at the beginning of the year 2012 and "-b ^-1w -e -1d" means one week leading up to a day ago.

By default, when the value of a channel transitions between known and unknown, a time slice row will be generated. The value column will show '<undefined>'. This can happen when an IOC goes down. You can change the default behavior using a command line switch. When used, a known/unknown transition will not cause a time slice to be included in the output. Note however, that a '<undefined>' may still appear in a time slice row when the command line switch is used. This will happen when a real value change occurs for one channel in the set, and the value of another channel is unknown at that time.

By default, any change in a channel's value is considered significant and will cause a time slice row to be added to the output. Users may provide a threshold that defines the magnitude of change that they consider significant. To define a value change threshold append a threshold value to the channel name on the command line, separating the two by a ',' character. For example, "R123GSET,0.1" means the value of the channel R123GSET must change by at least 0.1 to be merit a time slice row in the output.

### Channel expression filtering

The example at the start of this document shows using the '-f' option to filter results by a logical expression. The expression may contain variables, which appear as substitution placeholders; the letter 'A' corresponding to the first channel specified in the list and 'B' the second. A snapshot of channel values is written to output when the expression evaluates to non-zero. The expression always evaluates to zero if any of the referenced channels have an unknown value for a time slice. The syntax for expressions is provided by the *cpplib::Expression* class found in the cpplib library. The documentation is available on the [web](#).

### Time step threshold

Often channel event timestamps are not identical to others, even when the value update is instigated by the same physical event. Lines of output from *myData* can bunch up in sets of changes that span a very short time, with only one channel's value changing per line.

The *myData* app accepts a command line argument that will merge lines of output that have small differences in timestamp. The default value of zero means no lines will be merged. Users should never specify a time threshold such that a single channel could update twice within the span, or value updates could be missed. The example output that follows demonstrates the capability. The first set of output uses the default zero threshold; the second uses 0.05.

Date	IPM1H04B.XPOS	IPM1H04C.XPOS
2018-12-16 18:44:52.000	-0.366229	0.0117511
2018-12-16 18:44:52.411	-0.312053	0.0117511
2018-12-16 18:44:52.419	-0.312053	0.273435
2018-12-16 18:44:53.411	-0.801444	0.273435
2018-12-16 18:44:53.419	-0.801444	-0.123362
2018-12-16 18:44:54.431	-0.24179	-0.123362

2018-12-16 18:44:54.459	-0.24179	0.35775
2018-12-16 18:44:55.411	-0.330856	0.35775
2018-12-16 18:44:55.419	-0.330856	0.237507
2018-12-16 18:44:56.411	-0.0732442	0.237507
2018-12-16 18:44:56.419	-0.0732442	0.205257
2018-12-16 18:44:57.411	-0.305968	0.205257
2018-12-16 18:44:57.419	-0.305968	0.328127
2018-12-16 18:44:58.431	-0.160531	0.328127
2018-12-16 18:44:58.459	-0.160531	0.0132616
2018-12-16 18:44:59.411	-0.325627	0.0132616
2018-12-16 18:44:59.419	-0.325627	0.504796

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Date	IPM1H04B.XPOS	IPM1H04C.XPOS
2018-12-16 18:44:52.000	-0.366229	0.0117511
2018-12-16 18:44:52.419	-0.312053	0.273435
2018-12-16 18:44:53.419	-0.801444	-0.123362
2018-12-16 18:44:54.459	-0.24179	0.35775
2018-12-16 18:44:55.419	-0.330856	0.237507
2018-12-16 18:44:56.419	-0.0732442	0.205257
2018-12-16 18:44:57.419	-0.305968	0.328127
2018-12-16 18:44:58.459	-0.160531	0.0132616
2018-12-16 18:44:59.419	-0.325627	0.504796