

## artdaq - Idea #24375

### Look into possible performance improvements due to using byte as the basic Fragment data type

05/04/2020 01:40 PM - Eric Flumerfelt

<b>Status:</b>	New	<b>Start date:</b>	05/04/2020
<b>Priority:</b>	Normal	<b>Due date:</b>	
<b>Assignee:</b>		<b>% Done:</b>	0%
<b>Category:</b>		<b>Estimated time:</b>	0.00 hour
<b>Target version:</b>			
<b>Experiment:</b>	-		
<b>Description</b>			
In a recent DUNE Application Framework meeting, it came up that many kernel components and system libraries are optimized to deal with bytes as opposed to long words. We should investigate if there are any performance improvements if the artdaq Fragment RawDataType is a uint8_t instead of a uint64_t.			

### History

#### #1 - 05/04/2020 01:41 PM - Eric Flumerfelt

I've made a minimal set of changes to artdaq-core to make Fragment use uint8\_t as RawDataType on artdaq-core:feature/24375\_RawDataType\_ByteTest

#### #2 - 05/05/2020 03:05 PM - Eric Flumerfelt

I have added branches to artdaq (feature/24375\_ByteTest\_FixesForArtdaq) and artdaq-utilities-daqinterface (feature/24375\_ByteTest\_SettingsForByteTest) which have some changes needed for the demo system to work with byte-based Fragments.

#### #3 - 05/19/2020 04:43 PM - Ron Rechenmacher

Latest tests seem to show that there is no difference when writing ROOT files:  
Baseline:

```
/home/ron/work/artdaqPrj/demo4-e19-s96
ron@mu2edaq13 :^) for xx in `seq 3`;do date;time taskset -c 20 artdaqDriver -c srcs/artdaq_demo/tools/fcl/test
_10Mx30000_root3null.fcl | wc -l;done
Tue May 19 12:28:25 CDT 2020
152

real    3m1.645s
user    2m58.651s
sys     0m1.270s
Tue May 19 12:31:27 CDT 2020
159

real    3m7.640s
user    3m0.215s
sys     0m6.134s
Tue May 19 12:34:35 CDT 2020
152

real    3m1.612s
user    2m59.160s
sys     0m1.446s
--2020-05-19_12:37:36--
```

With byte array (via issue 24375 branches:

```
/home/ron/work/artdaqPrj/demo1-e19-s96-24375_ByteTest-artdaqDriver-null
ron@mu2edaq13 :^) for xx in `seq 3`;do date;time taskset -c 20 artdaqDriver -c srcs/artdaq_demo/tools/fcl/test
_10Mx30000_root3null.fcl | wc -l;done
Tue May 19 14:09:48 CDT 2020
159

real    3m2.602s
user    2m59.784s
sys     0m1.210s
```

Tue May 19 14:12:51 CDT 2020  
152

real 3m1.703s  
user 2m59.410s  
sys 0m1.297s

Tue May 19 14:15:52 CDT 2020  
159

real 3m1.649s  
user 2m59.495s  
sys 0m1.264s

--2020-05-19\_14:18:54--