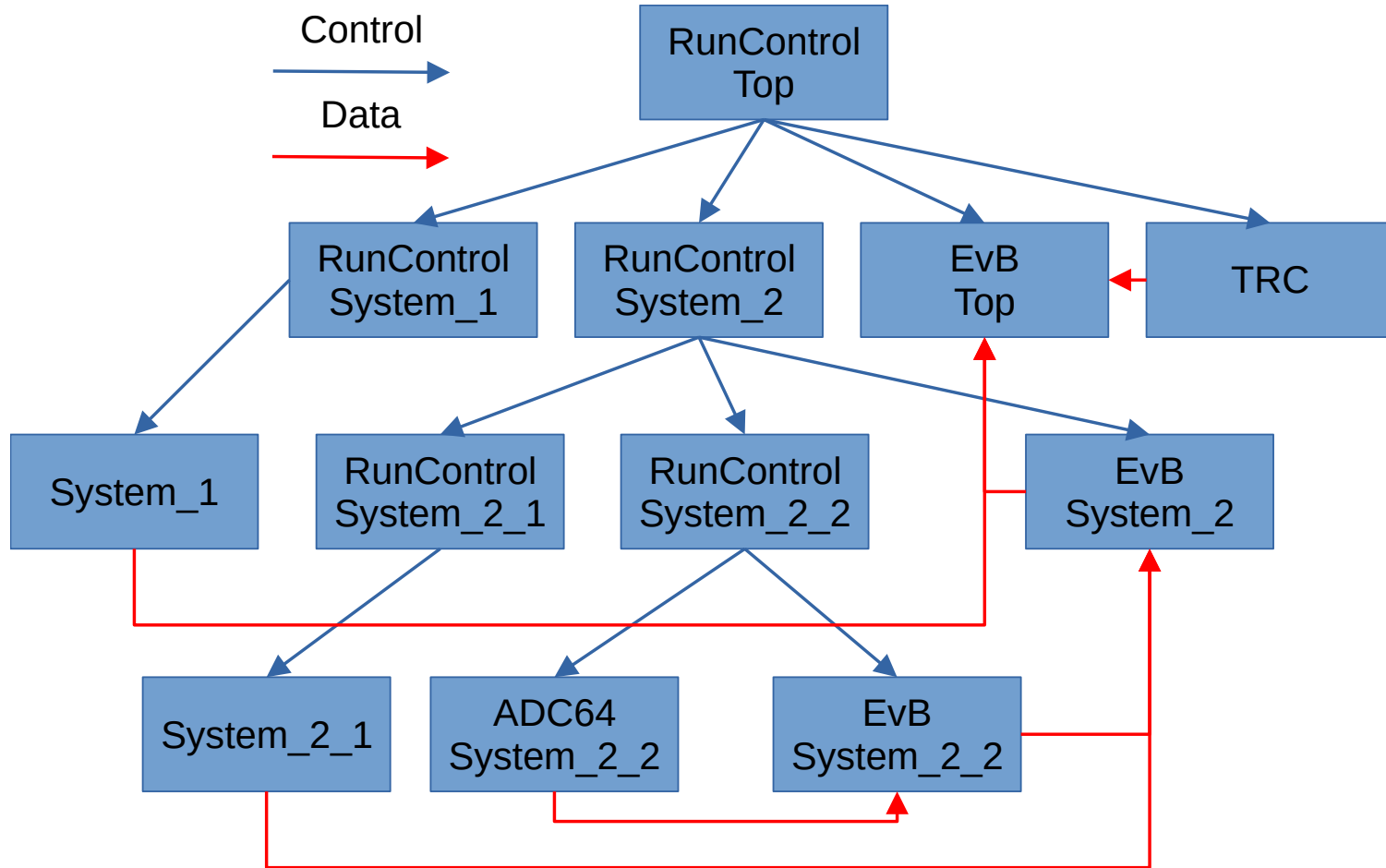


RunControl System



RunControl Trigger Configuration

RunControl #ivan (on afi-daq-2)

File Options Tools Help

▶ Start Run ■ Stop Run Run started: ivan 42

Trigger Configuration Clients TMWR modules Log

Trigger Source

External TTL 1 External TTL 2
 External TTL 3 External TTL 4
 LVDS
 Timer 0.2 Hz
 Random 1,000.0 Hz
Dead Time 1.000 us

Standby time 0:00:37.013
Run time 0:00:07.000
Run Readout time 0:00:06.994
Run XOFF time 0:00:00.009

Ch#	Descr	XOff	XOff time
1			
2	tqdc	<input checked="" type="checkbox"/>	1 μ s
3			
4	adc	<input checked="" type="checkbox"/>	1.14 μ s
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			

Trig 43,518
Trig & Run 6,966
Trig & Spill 43,475
Trig & R & S 6,959
Trig Accepted 6,952

Trigger State

Open Close

Spill Source

Auto Timer 0 ms
 External TTL
 External Gate
 Infinite

WAIT ACCEL PRE READ POST FLUSH

Spill Phases

Acceleration 1 ms
Prepare 0 ms
Readout 1001 ms
Post-readout 0 ms
Flush 0 ms

Accepted 10 ms All channels

2,000
1,500
1,000
500
0
0 200 400 600 800 1,000
Spill time, ms

1,000
100
10
1
0.1
1 10 100 1,000 10,000
Busy time and Trigger intervals, μ s

Run ivan 42
Spill 44
Event 7,051
Deadtime Missed 0.07 %
Readout Missed 0.03 %
Dead Time 0.14 %

RcFsm: Run TrgFsm: Run ClientFsm: Run VmeTrigFsm: Run
SlowControl: disabled Device status: unknown UT24VE 07A9-24EE 39.3 f/w:1.4-21-g599e13d

RunControl Clients

RunControl #ivan (on afi-daq-2)

File Options Tools Help

▶ Start Run ■ Stop Run Run started: ivan 42

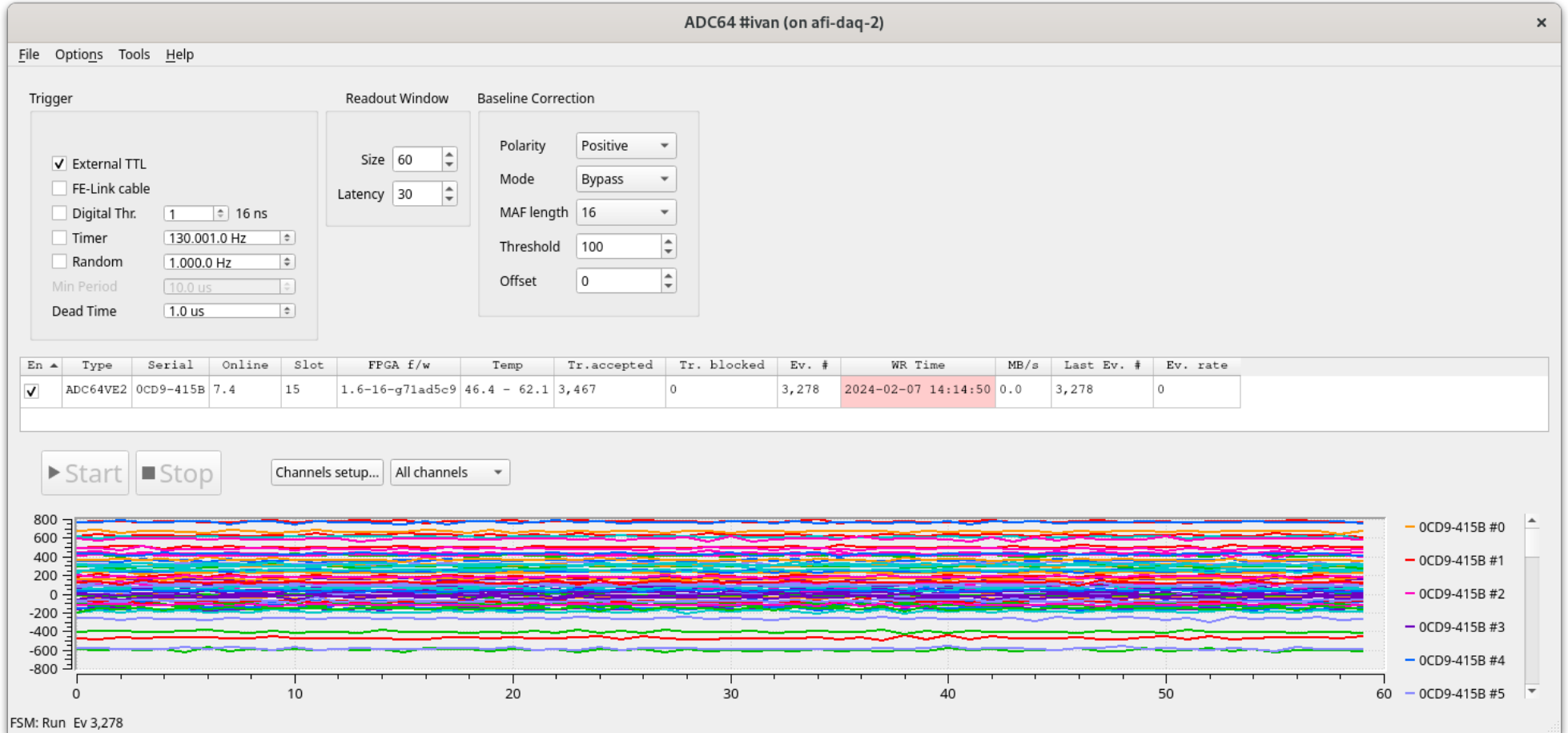
Trigger Configuration Clients TMWR modules Log

Add Remove

En	Type	Index	Host	Status	FSM
<input checked="" type="checkbox"/>	Adc64	ivan	10.18.15.22	Connected	Run
<input checked="" type="checkbox"/>	EvB	ivan	afi-daq-2	Connected	Run
<input checked="" type="checkbox"/>	TQDC2	ivan	afi-daq-2	Connected	Run

RCFsm: Run TrigFsm: Run ClientFsm: Run VmeTrigFsm: Run SlowControl: disabled Device status: unknown UT24VE 07A9-24EE 39.2 f/w:1.4-21-g599e13d

ADC64



TQDC

TQDC #ivan

File Options Tools Debug Help

Start Stop

Run Logic

Time 1.000s 15.38

Events 1 3,278

Reset **Start**

Running

0%

En	Type	Serial	Online	Slot	IP Address	FPGA f/w	Temp	Deser.	Tr. accepted	Tr. blocked	Busy	Ev. #	MB/s	Last Ev. #	Ev. rate
<input checked="" type="checkbox"/>	TQDC16VS_E	0CD0-CB21	6.3	11	10.18.69.211	2.9-0-gc3e322d	45.3 - 66.7	Ok	59,675	0	0000	3,278	0.0	3,278	0

Trigger Source

External TTL

VXS FE-Link VXS pulse

Analog Thr. 2 48 ns

Digital Thr. 1 24 ns

Timer 10,000.0 Hz

Random 10.0 Hz

Min Period 10.0 us

Dead Time 1.0 us

Baseline Correction

Polarity Positive

Mode Bypass

MAF length 16

Threshold 100

Offset 0

Digital Shaper

Mode Bypass

Truncate 0

Filter Design...

Set filter...

Name	TdcEn	AdcEn	Inv	Anlg Thr	DigTrigEn	DigTrigEdge	DigTrigThr	ZsDigEn	ZsDigEdge	ZsDigThr	Rate, Hz	Level
<input checked="" type="checkbox"/> All	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	100 mV	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0		
<input checked="" type="checkbox"/> 0CD0-CB21	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	100 mV	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0		
<input checked="" type="checkbox"/> 0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	100 mV	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0.0	.
<input checked="" type="checkbox"/> 1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	100 mV	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0.0	.
<input checked="" type="checkbox"/> 2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	100 mV	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0.0	.
<input checked="" type="checkbox"/> 3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	100 mV	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0.0	.
<input checked="" type="checkbox"/> 4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	100 mV	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0.0	.
<input checked="" type="checkbox"/> 5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	100 mV	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0.0	.
<input checked="" type="checkbox"/> 6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	100 mV	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0.0	.
<input checked="" type="checkbox"/> 7	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	100 mV	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0.0	.
<input checked="" type="checkbox"/> 8	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	100 mV	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0.0	.
<input checked="" type="checkbox"/> 9	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	100 mV	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0.0	.
<input checked="" type="checkbox"/> 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	100 mV	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0.0	.
<input checked="" type="checkbox"/> 11	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	100 mV	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0.0	.
<input checked="" type="checkbox"/> 12	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	100 mV	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0.0	.
<input checked="" type="checkbox"/> 13	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	100 mV	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0.0	.
<input checked="" type="checkbox"/> 14	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	100 mV	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0.0	.
<input checked="" type="checkbox"/> 15	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	100 mV	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0.0	.

TTL Setup

LEMO #1 Out: Busy

LEMO #2 In: Trigger

LEMO #3 In: EvNumReset

LEMO #4 Out: Pps

Readout Setup

ADC Gain x1 x4

ZS mode Disabled

Latency: 180 4320 ns

Match win: 10 240 ns

ADC win: 8 64 ns

Leading

FSM: Run

Event Builder

The screenshot shows the Event Builder application window titled "EventBuilder #ivan (on afi-daq-2)". The interface includes a menu bar (File, Options, Tools, Help), a status bar (Mon: 30000 (free) (0%)), and a control panel with buttons for Start, Stop, Starting, Stopping, and Started. The control panel also features radio buttons for Output (TCP, File, Idle) and buttons for add client and remove client. A red warning message "Idle mode (all data will be trashed)" is displayed. Below the control panel is a table with columns: readout, type, index, Online, host, state, evNum, trashed, all, flushedSize, Time distr, Raw data buff, and Ev. meta-info. The table contains two rows of data. At the bottom, a log window displays system messages, and a status bar at the very bottom shows the status of various components: EvbFsm: Run, CombinerFsm: Run, ClientManagerFsm: Run, and reg:3278;skip:0;eob:0;clients:0-1 ;nextEv:3279 monitor:0.

EventBuilder #ivan (on afi-daq-2)

File Options Tools Help

Output: Mon: 30000 (free) (0%)

Start Stopped

Stop Starting Stopping

Started

add client remove client

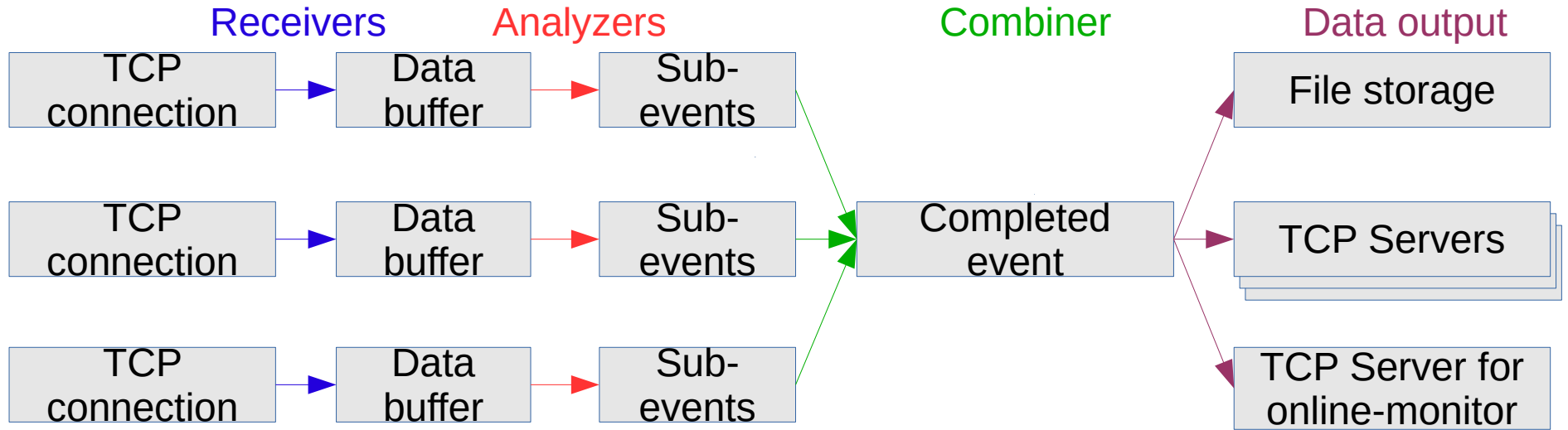
Idle mode (all data will be trashed)

readout	type	index	Online	host	state	evNum	trashed	all	flushedSize	Time distr	Raw data buff	Ev. meta-info
1	TQDC16VS_E	0x0cd0cb21	✓	afi-daq-2	178 packages received; load=0.0%	3,278	0	3,278	3.53 MiB		100.0/ 0.0/ 0.0	80000/0/0
2	ADC64VE2	0x0cd9415b	✓	afi-daq-2	504 packages received; load=0.0%	3,278	0	3,278	26.53 MiB		100.0/ 0.0/ 0.0	80000/0/0

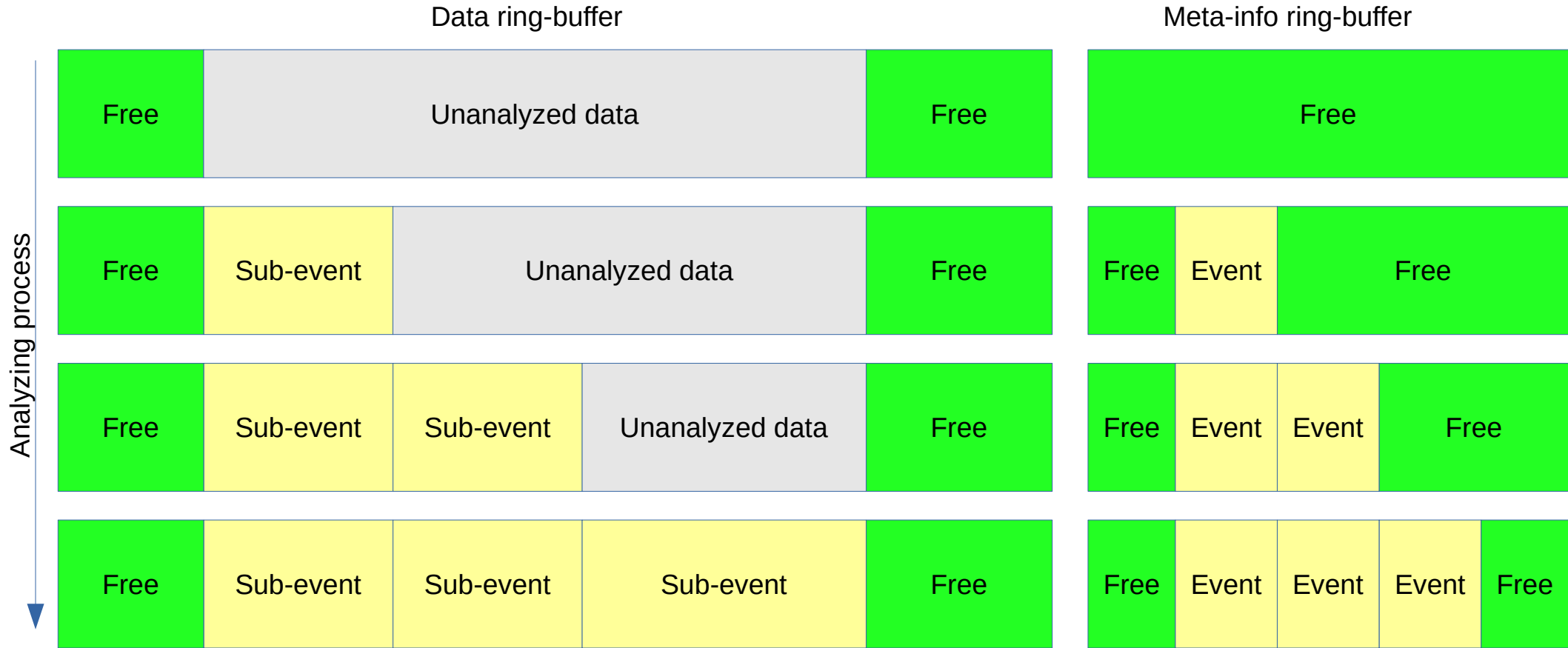
```
[17:13:57] [tcpCl #MStream#0x0cd9415b] "TcpClient:MStream#0x0cd9415b" disconnected.
[17:13:57] [tcpCl #MStream#0x0cd9415b] afi.fsm: "[TcpClient:MStream#0x0cd9415b] state change Ready to Error (time: 702)"
[17:13:57] [GUI thread] afi.fsm: "[Client:MStream#0x0cd9415b] state change Ready to Error (time: 702)"
[17:13:57] [GUI thread] afi.fsm: "[ClientManagerFsm] state change Ready to Error (time: 702)"
[17:13:57] [GUI thread] [EventBuilderFsm] curState:Ready; requestState:(none); combiner:Ready;clientManager:Error;lookForStopEvNum:false;
[17:13:57] [GUI thread] afi.fsm: "[EventBuilderFsm] state change Ready to Error (time: 702)"
[17:14:11] [tcpCl #MStream#0x0cd9415b] "TcpClient:MStream#0x0cd9415b" connected.
[17:14:21] [GUI thread] "Got remote request to start ivan 103"
[17:14:22] [combinerThread] prevEventIncomplet suppressed canceled; curEvNum= 3
[17:14:22] [combinerThread] "Initialied: minNumber=1"
```

EvbFsm: Run CombinerFsm: Run ClientManagerFsm: Run reg:3278;skip:0;eob:0;clients:0-1 ;nextEv:3279 monitor:0

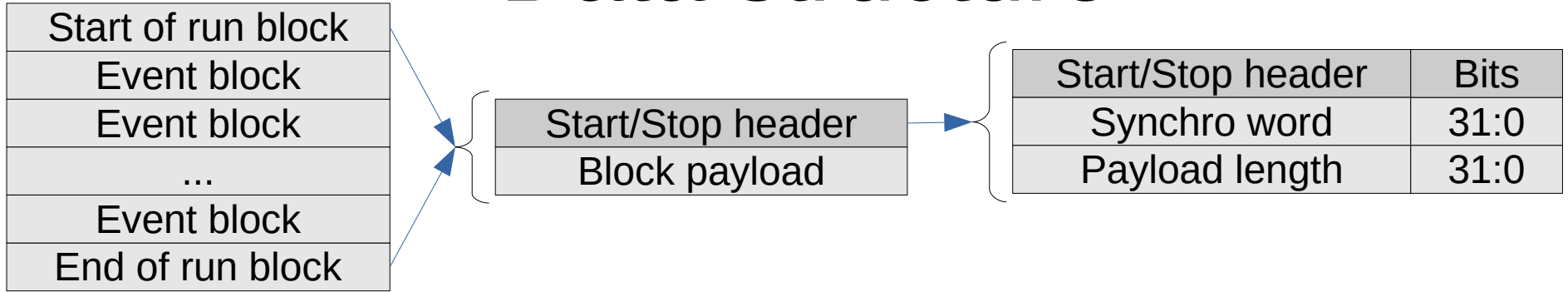
EvB single arch.



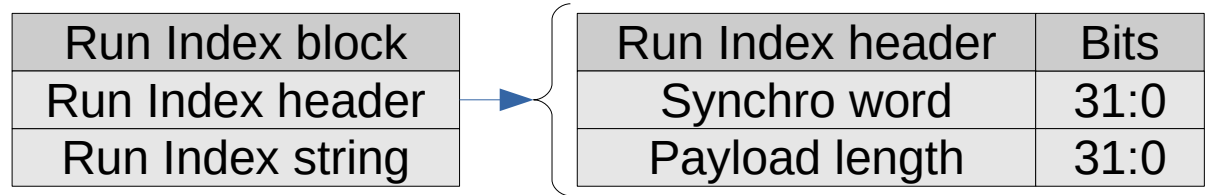
EvB Analyzer work



Data structure

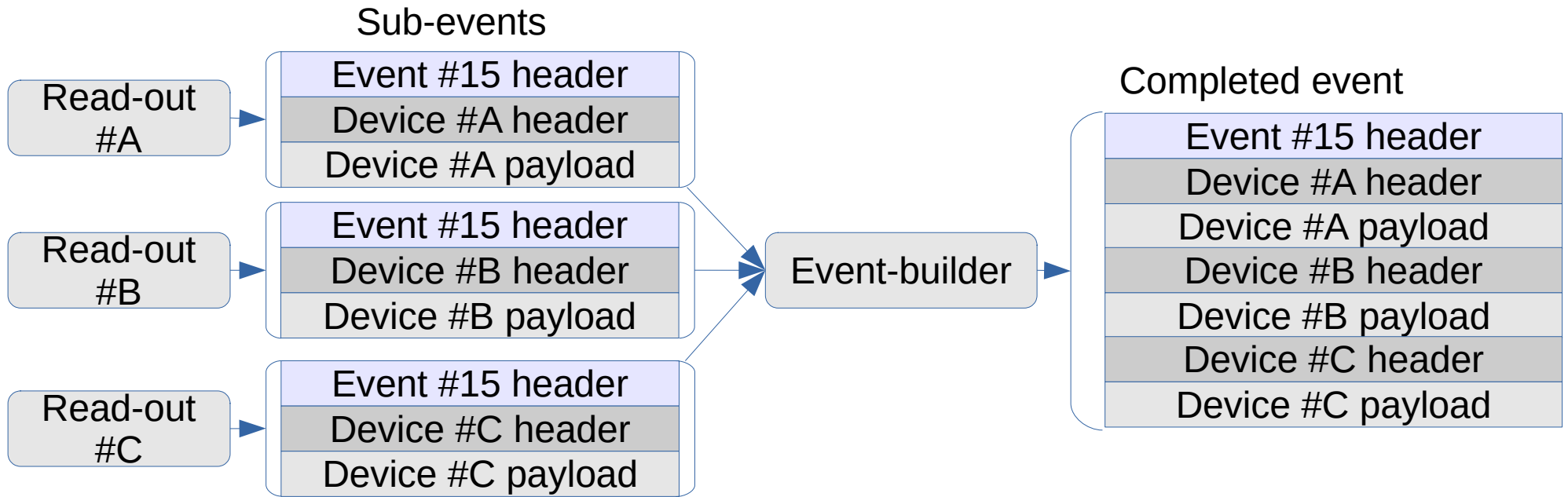


Event block	Bits
Synchro word	31:0
Payload length	31:0
Event payload	
Run Number	31:0
Device block	
Device block	
...	
Device block	



Device block	Bits
Device serial	31:0
Device ID	31:24
Payload length	23:0
Payload	

EvB combiner work



PNP

PnP Discovery

Options File Options Help

test Clear Clear + Refresh Type filter: All Host filter: afi- Group filter: All Show only my group Available: 9 PrintCurrent OK Cancel

	Type	Index	Ip	Len	Seq	Refresh time
14	MStream:UT24VE	0x07a924ee	afi-daq-2	466	11743	Thu Feb 8 10:18:40 2024
18	MStream:ADC64VE2	0x0cd9415b	afi-daq-2	622	28021	Thu Feb 8 10:18:40 2024
22	RunControl	ivan	afi-daq-2	510	3154	Thu Feb 8 10:18:39 2024
31	MStream:TQDC16VS_E	0x0cd0cb21	afi-daq-2	622	10311	Thu Feb 8 10:18:40 2024
32	TQDC2	ivan	afi-daq-2	506	2793	Thu Feb 8 10:18:39 2024
39	RunControl	ivan_top	afi-daq-2	456	3071	Thu Feb 8 10:18:39 2024
52	EvB	ivan	afi-daq-2	691	370308	Thu Feb 8 10:18:40 2024
68	MStream:UT24VE	0x07a8fb37	afi-da			
82	Adc64	ivan	afi-da			

Name:MStream#0x0cd0cb21
Options:
dev_address: 10.18.69.211
dev_id: 0xd6
dev_serial: 0x0cd0cb21
myReceiverPort: 36797
out_port: 42581
Interfaces:
data flow #0 afi-daq-2:42581 (afi-daq-2:41030)

PnP Discovery

Options File Options Help

test Clear Clear + Refresh Type filter: All Host filter: afi- Group filter: All Show only my group Available: 9 PrintC

	Type	Index	Ip	Len	Seq	Refresh time
14	MStream:UT24VE	0x07a924ee	afi-daq-2	466	11800	Thu Feb 8 10:18:45 2024
18	MStream:ADC64VE2	0x0cd9415b	afi-daq-2	622	28079	Thu Feb 8 10:18:45 2024
22	RunControl	ivan	afi-daq-2	510	3169	Thu Feb 8 10:18:44 2024
31	MStream:TQDC16VS_E	0x0cd0cb21	afi-daq-2	622	10368	Thu Feb 8 10:18:45 2024
32	TQDC2	ivan	afi-daq-2	506	2808	Thu Feb 8 10:18:44 2024
39	RunControl	ivan_top	afi-daq-2	456	3086	Thu Feb 8 10:18:44 2024
52	EvB	ivan	afi-daq-2	691	370360	Thu Feb 8 10:18:45 2024
68	MStream:UT24VE	0x07a8fb37	afi-daq-2	466	11544	Thu Feb 8 10:18:45 2024

Name:TQDC2#ivan
Version hash: 1.4.4-1-g4a8e7b4
Version date: 2024-02-02T16:13:49
Options:
DevList: 0xD6:0x00000CD0CB21
run: false
Interfaces:
RemoteControl #0 afi-daq-2:44881 (afi-daq-2:59036)

Viewer

AFI Viewer #ivan

File Options Help

Reset all

name Inv IN

- All
- 1: TQDC16V5_E OCD0-CB21
- 2: ADC64VE2 OCD9-415B

Histogram Raw Data Waveform

every event by request

Request data 1 event(s) Periodical 1s Save to file

```
MpdHdr:
[000] 2a50d5af: SyncWord: Event
[001] 00000124: len:292
[002] 00001cf8: evNum:7416
MpdDeviceHdr (OCD9-415B):
[003] 0cd9415b: Serial: OCD9-415B
[004] df000074: DevId:0xdf(ADC64VE2) Len:116
MStreamHdr:
[005] 00000010: subtype:0; words:4
TAI:
[006] 65c48166: Thu Feb 8 10:23:18 2024
[007] 4645fb40: ns:294,747,856 invalid
MStreamHdr:
[010] 0000001d: subtype:1; words:7 ch:0
TAI:
[011] 65c48166: Thu Feb 8 10:23:18 2024
[012] 4645fb40: ns:294,747,856 invalid
[013] ffe4ffdc: -28 -36
[014] ffd8f8: -36 -40
[015] ff88f8: -40 -48
[016] ffd8f4: -36 -28
[017] ffd8f0: -48 -48
MStreamHdr:
[018] 0100001d: subtype:1; words:7 ch:1
TAI:
[019] 65c48166: Thu Feb 8 10:23:18 2024
[020] 4645fb40: ns:294,747,856 invalid
[021] 01f801ec: 504 492
[022] 01f001f8: 496 504
[023] 01ec01f0: 492 496
[024] 01f401f4: 500 500
[025] 01f001f0: 508 496
MStreamHdr:
[026] 0200001d: subtype:1; words:7 ch:2
TAI:
[027] 65c48166: Thu Feb 8 10:23:18 2024
[028] 4645fb40: ns:294,747,856 invalid
[029] 01e801d0: 488 464
[030] 01dc01dc: 476 476
[031] 01d801e4: 468 484
[032] 01dc01e0: 476 480
[033] 01dc01e8: 476 488
MpdDeviceHdr (OCD0-CB21):
[034] 0cd0cb21: Serial: OCD0-CB21
[035] d600009c: DevId:0xd6(TQDC16V5_E) Len:156
MStreamHdr:
[036] 00000098: subtype:0; words:38
TAI:
[037] 65c48165: Thu Feb 8 10:23:17 2024
[038] *99152c2: ns:979,653,808 ok
DataBlockHeader (HPTDC):
[039] 00000004: type:0; len:4
[040] 70000000:
DataBlockHeader (ADC):
[041] 15000040: type:1; len:64 ch:5
003c0000: len:30; ts:0
#E80004: -8 4
#EcfE4: -4 -12
00000008: 0 8
0004000c: 4 12
#EcfE8: -4 -8
000000fc: 0 -4
0008ff: 8 -4
000c0008: 12 8
#E8ff: -8 -4
00080000: 8 0
00040010: 4 16
#E8ff: -16 -4
0008ff: 8 -4
#E80000: -8 0
#EcfE: -4 -4
DataBlockHeader (ADC):
[058] 16000040: type:1; len:64 ch:6
003c0000: len:30; ts:0
00030003: 3 3
#E0007: -1 7
0003ff: 3 -5
000b0007: 11 7
0003000b: 3 11
00070007: 7 7
```

```
MpdHdr:
[000] 2a50d5af: SyncWord: Event
[001] 00000124: len:292
[002] 00001cf8: evNum:7416
MpdDeviceHdr (OCD9-415B):
[003] 0cd9415b: Serial: OCD9-415B
[004] df000074: DevId:0xdf(ADC64VE2) Len:116
MStreamHdr:
[005] 00000010: subtype:0; words:4
TAI:
[006] 65c48166: Thu Feb 8 10:23:18 2024
[007] 4645fb40: ns:294,747,856 invalid
MStreamHdr:
[010] 0000001d: subtype:1; words:7 ch:0
TAI:
[011] 65c48166: Thu Feb 8 10:23:18 2024
[012] 4645fb40: ns:294,747,856 invalid
[013] ffe4ffdc: -28 -36
```

Backup

