Current status of DGS group

Apr. 20, 2019

KAGRA f2f meeting

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On behalf of DGS subgroup

Topics

- Field rack installation
- Software update
- DAC glitch issue

Field rack installation

Center 1F
IOO, IOO1, IMC0, OMC0, OMC1
PRM, PR3, PR2
BS, SRM, SR2, SR3
LSC0, ASC0, ALS0, ALS1
IX0, IY0

Center 2F
ICV, IXV1, IXV2, IYV1, IYV2

X-End
1F : EX0
2F : EX1, EX2, EX3

Y-End
1F : EY0
2F : EY1, EY2, EY3

Recabling and reassign chassis

- Great cooperation from VIS and CRY subgroups

To suppress heat accumulation

These circuits generate much heat

- HP Coil driver
- Whitening Filter
- AA Filter
- AI Filter

Software Update

Update Real-time Code Generator (RCG) to version 3.1.1

- same as LIGO O2
- Real-time system and DAQ system also run v3.1.1

Details of update

- Supported to record as double precision floating point number
- Improved digital AA/AI performance

DAC glitch issue

DAC glitches caused by CPU load

Problem

CPU load induces DAC glitches (CPU-max issue)

Lockloss occurred by DAC glitches

Solution

EPICS gateway

Exchange to faster CPUs
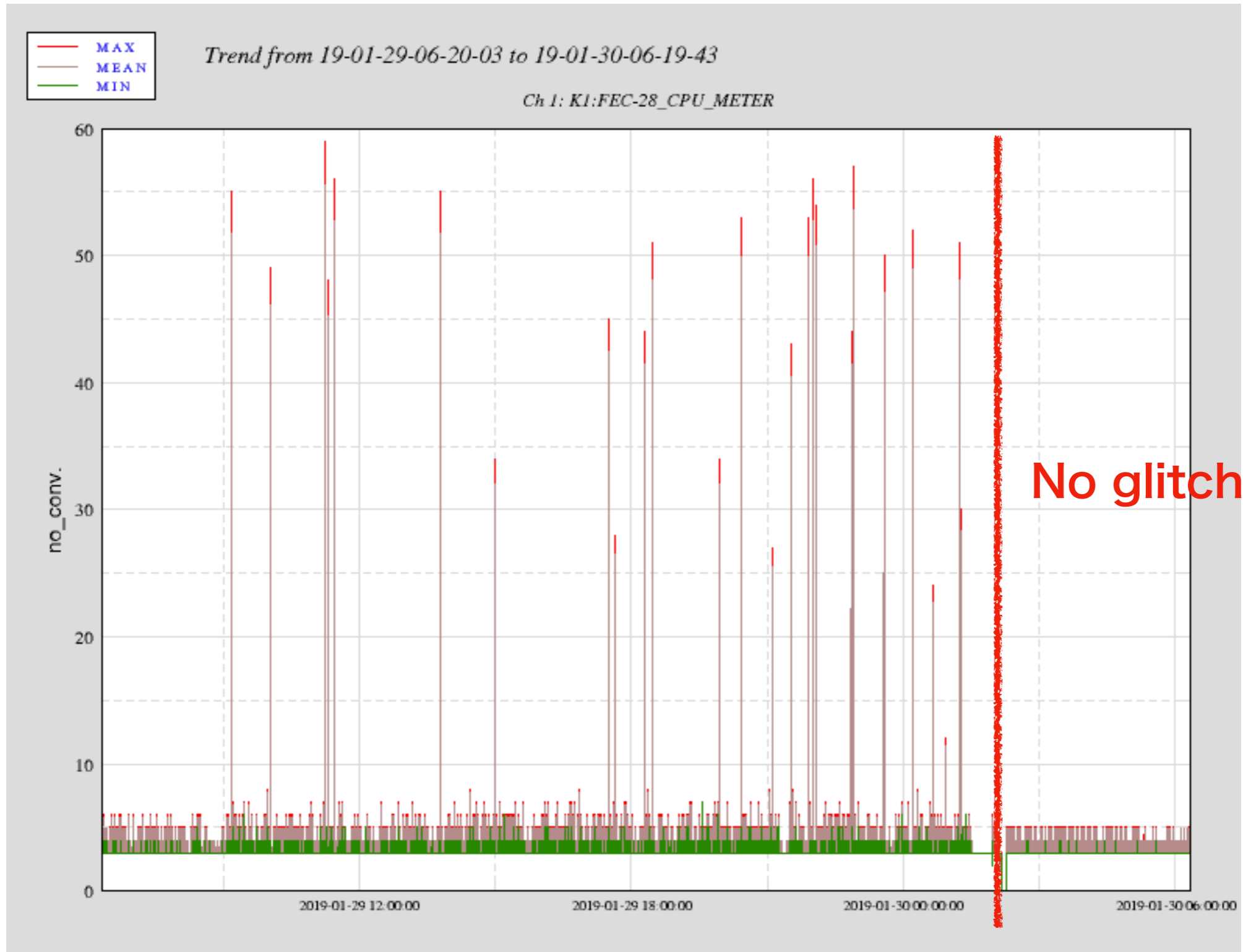
DAC glitch issue

Exchange to faster CPUs

We are using 4 types of CPU
(1) 2.8GHz v2 CPU : Mainly used
(2) 3.0GHz v3 : more stable than (1)
(3) 2.6GHz v4 : more unstable than (1)
(4) E5-1654 v4 @ 3.6GHz : first CPU

After replacing k1ioo to first one, we had NO CPU alert
We also replace k1ix1, k1iy1, k1ex1, k1ey1 and k1bs

DAC glitch issue

Trend from 19-01-29-06-20-03 to 19-01-30-06-19-43

Ch 1: K1:FEC-28_CPU_METER

Legend: MAX, MEAN, MIN

No glitch

DAC glitch issue

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This year, we plan to replace 7 machines to faster CPU

Summary

What we did

- Replaced RTPC to resolve DAC glitch issues
- Rack installation
  - Recabling and reassign chassis
- Software update of RCG to v3.1.1

Toward O3

- Continue to replace RTPC
- Exchange AC power supply to DC
- Recording time of one frame file to 64 seconds

After O3

- RCG update to v3.4.3(LIGO O3) or later
- Construct backup system