Trigger Offline Expert Report

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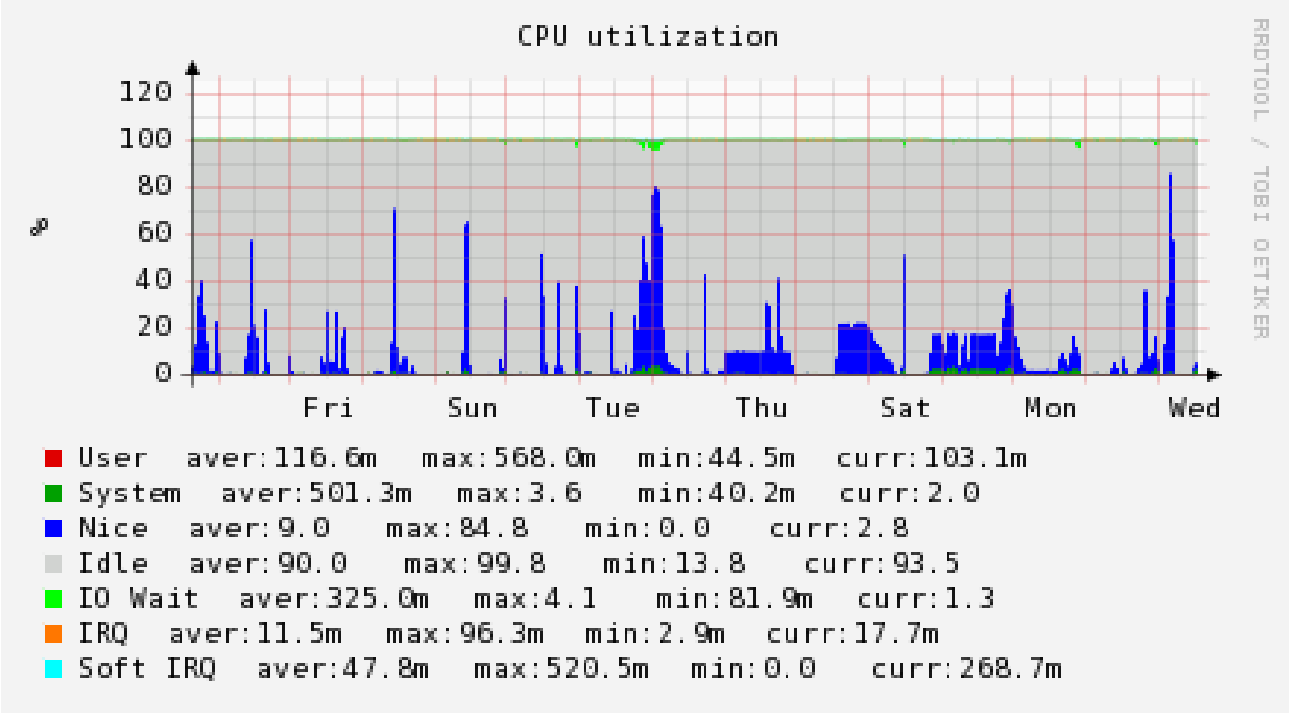
Trigger General Meeting – 25th November 2009

Offline processing machinery

- Now running on DEBUG stream automatically on Tier0
- Alessandro's work interacting with Tier0 team
- Offline monitoring shifter gets files processed with trigger
- Still needs to run pre- and post-analysis scripts from Anna on CAF
- CAF capacity not being used fully
- Antonio investigating



Trigger DQ Flags

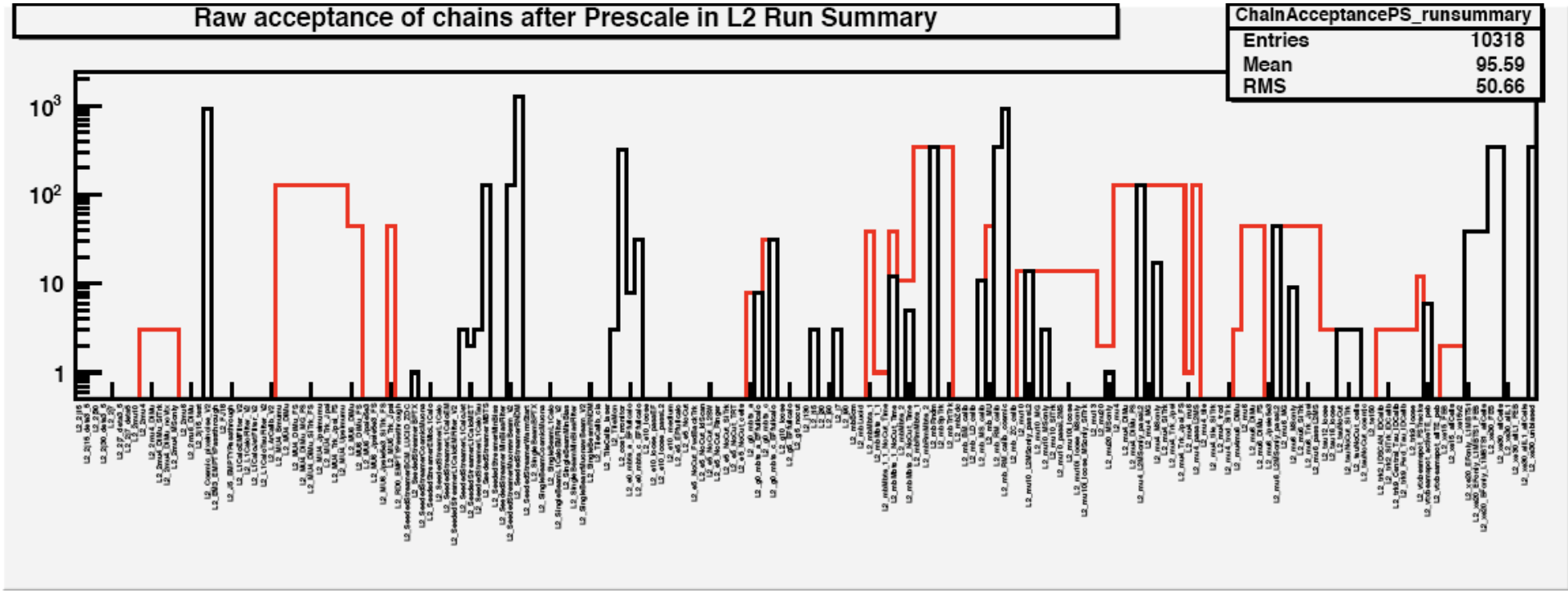
- Should be all black while trigger not running online
- Otherwise follow instructions on https://twiki.cern.ch/twiki/bin/view/Atlas/TriggerDQFlagsRecipe

- green - good
- yellow - flawed: expert expects to change to green or red after further analysis or that there is no impact on offline analysis
- red - bad
- grey - Data Quality assessment not possible - e.g. not enough statistics
- black - triggers from signature group not running; for detector groups: detector not in partition

Run	Links	#LB	#Events	L1CAL	L1MUB	L1MUE	L1CTP	TRCAL	TRBJT	TRBPH	TRCOS	TRELE	TRGAM	TRJET	TRMET	TRMBI	TRMUO	TRTAU	TRIDT
140748 (ongoing)	RS, AMI, DQ, ELOG, DCS:SoR/EoR	28 (103 s)	n.a. (n.a. Hz)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
140747	RS, AMI, DQ, ELOG, DCS:SoR/EoR	20 (112 s)	1,992 (0.9 Hz)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
140592	RS, AMI, DQ, ELOG, DCS:SoR/EoR	48 (79 s)	1,607,483 (420.0 Hz)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
140571	RS, AMI, DQ, ELOG, DCS:SoR/EoR	388 (119 s)	138,433 (3.0 Hz)	n.a.	n.a.	n.a.	n.a.	B	B	B	B	B	B	B	B	B	B	B	B
140541	RS, AMI, DQ, ELOG, DCS:SoR/EoR	334 (117 s)	457,319 (11.6 Hz)	n.a.	n.a.	n.a.	n.a.	B	B	B	B	B	B	B	B	B	B	B	B
140538	RS, AMI, DQ, ELOG, DCS:SoR/EoR	75 (113 s)	8,245 (1.0 Hz)	n.a.	n.a.	n.a.	n.a.	B	B	B	B	B	B	B	B	B	B	B	B
140536	RS, AMI, DQ, ELOG, DCS:SoR/EoR	46 (107 s)	2,293 (0.5 Hz)	n.a.	n.a.	n.a.	n.a.	B	B	B	B	B	B	B	B	B	B	B	B
140535	RS, AMI, DQ, ELOG, DCS:SoR/EoR	48 (112 s)	8,813 (1.6 Hz)	n.a.	n.a.	n.a.	n.a.	B	B	B	B	B	B	B	B	B	B	B	B
140528	RS, AMI, DQ, ELOG, DCS:SoR/EoR	146 (113 s)	14,503 (0.9 Hz)	n.a.	n.a.	n.a.	n.a.	B	B	B	B	B	B	B	B	B	B	B	B
140523	RS, AMI, DQ, ELOG, DCS:SoR/EoR	65 (114 s)	7,135 (1.0 Hz)	n.a.	n.a.	n.a.	n.a.	B	B	B	B	B	B	B	B	B	B	B	B
140521	RS, AMI, DQ, ELOG,	36	3,739	n.a.	n.a.	n.a.	n.a.	B	B	B	B	B	B	B	B	B	B	B	B

The story so far…

- Beam splashes on Friday evening
- Single beams during the weekend
- Collisions on Monday
- All done, go home for Christmas? Not quite yet…
- Reprocessed trigger offline in CAF



- Monday evening we launched the first pass reproc of run 140541.
- For speed and relevance, we did the whole physics_L1Calo stream plus selected lumi blocks of BPTX and MinBias.
- The good news is that there were no crashes or errors from the HLT so we can already conclude that it would have been safe to run the HLT online.
- New tests today to provide the same again for an updated menu.However, there was very little in the HLT actually run.
- The L1 trigger config used at the time (see below for full story) was either normal items with BPTX (but with low rate as the beam was too weak) or _EMPTY items with BGRP3 (set to the BCID of the beam).
- Because we don't seed HLT chains off _EMPTY items, very few HLT chains ran, but we still had some interesting feedback from taus and minbias/tracking.
- With input from slice experts, an amended HLT menu was built on Monday evening by the menu expert, to give more HLT activity from the LVL1 triggers we had. We used a combination of unseeded chains and seeding chains from _EMPTY items to achieve this.
- These data will soon be available for analysis.
  - Pass 1: AtlasP1HLT-15.5.X.Y,val,rel_1 smk 132 l1psk 26 hltpsk 66
  - Pass 2: AtlasP1HLT-15.5.X.Y,val,rel_2 smk 138 lspsk 26 hltpsk 69
- Based on feedback we will decided whether to do a pass3.

- LVL1 trigger config - from David Berge:

- Keep in mind we had some non-standard trigger settings in this run towards the end of the first phase of collisions (starting LB 141).

- If you look at the trigger rate plot Thilo showed in today's weekly run meeting, then you see this block of magenta coloured trigger rates starting LB 150, that's when the settings were finally correct. There is a first spike of magenta rates at LB 142, this is when the prescale key to select 'EMPTY' items went in, without the proper bunch group setting. We have then tried to update the bunch group on LB 143, which failed. So we immediately switched back to the beam L1PS key, since we saw huge back pressure. I would expect in LBs 142 and 143 you see events spread out over all BCIDs. Then we went back to the beam prescale key for LBS 144 to 149. At this time the beam intensities had already dropped below our BPTX trigger threshold, that's why you see in the trigger rate plot no rate at all. We had then loaded the bunch groups directly on the hardware, and started using the L1PS key with tweaked EMPTY items as of LB 150.

- FYI, as of LB 140, the BPTX beam 2 trigger started disappearing, at that point BPTX beam 1 was already gone. So at that point the MBTS triggers started becoming inefficient.

- In general, selecting events based on BCID 2554 is the safest bet for the times where we had paired bunches in ATLAS, if you don't want to switch between different L1 items as a function of LB.

Thanks!

- To all people on offline shift this week: Swagato Banerjee, Mansoora Shamin, Ignacio Aracena, Hulya Guler, Cibran Santamarina Rios
- Alessandro Di Mattia for providing the machinery for running the Tier0 debug stream jobs and soon the reprocessing jobs
- Anna Sfyrla for fixes to analysis scripts
- Valeria Bartsch for the offline shifter page
- Antonio Sidoti for investigating the CAF usage
- Everyone else I have forgotten - yes, it’s been a bit hectic… ☺