



Monitoring of the DAQ2 system

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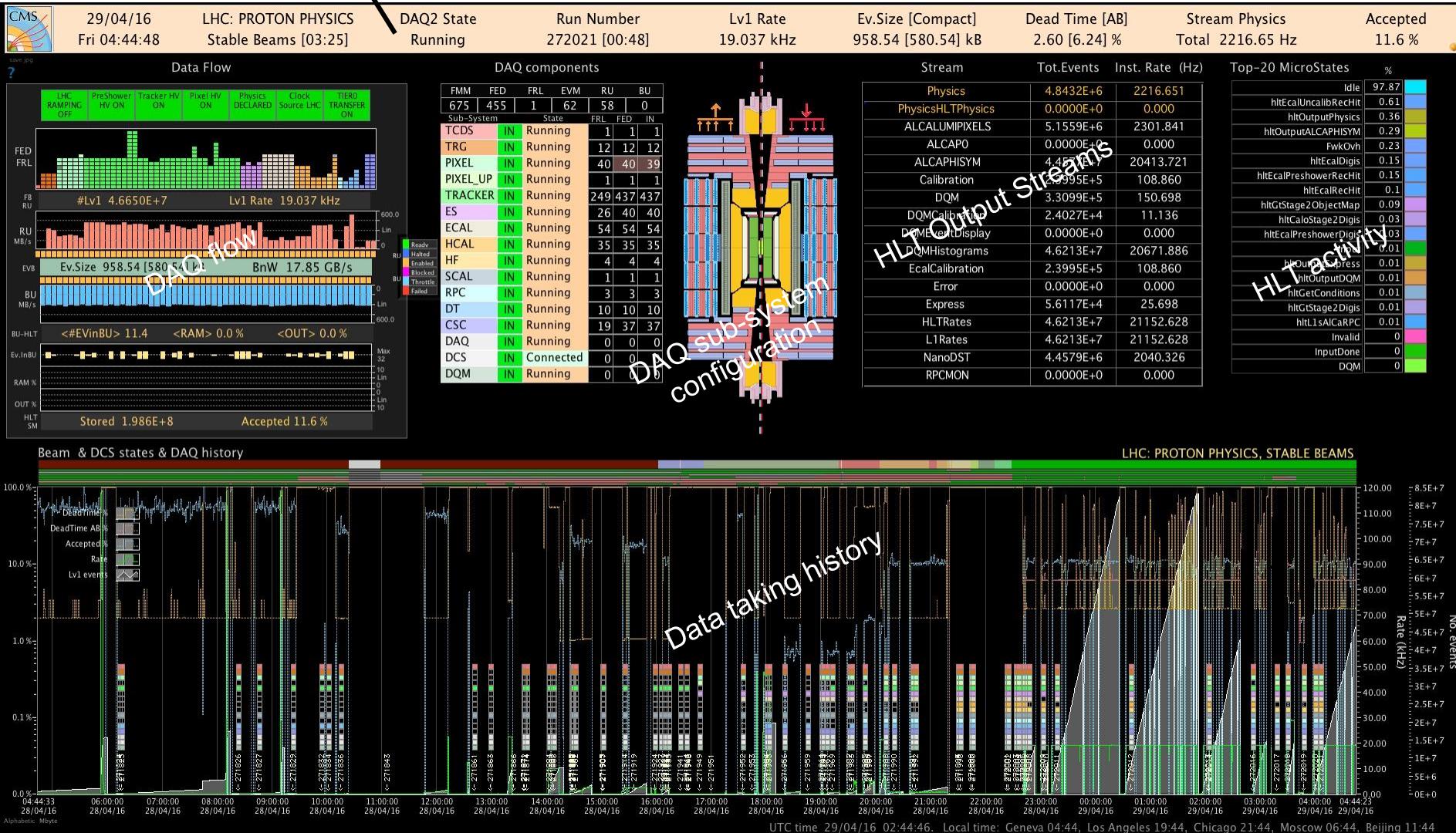
Monitoring tools

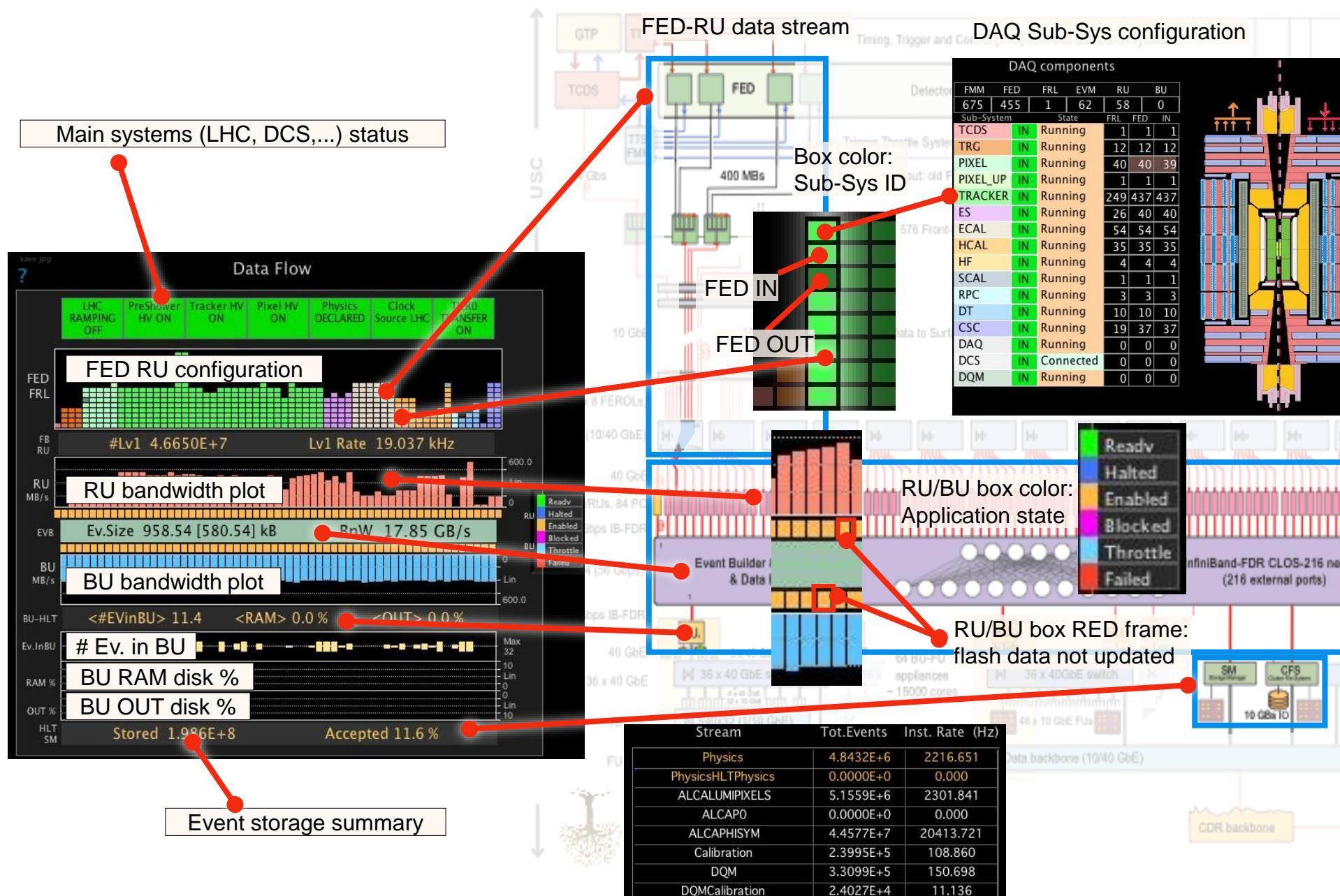
- RCMS/LVL0 interface
 - Has been covered by Hannes
- aDAQMon
 - Overview screen to see at a glance the CMS running configuration and rates.
- DAQView
 - Most comprehensive monitoring tool for issues with data flow. Here you can monitor the data from FEDs to BUs.
- DAQ Expert application
 - automatic detection of error conditions and displaying of instructions how to get the run going again
 - replacement of the DAQ doctor
- Elastic Search / Filter Farm monitoring (HLT, File Merging & Transfers)
 - Shows state of HLT processing. Important monitor of file-based filter farm (FFF).
- CPM controller
 - Central Partition Manager for the TCDS system. Good place to see rates, state of detector inputs, etc.
- HotSpot
 - Central display for sentinel messages for errors from all processes.
- Handsaw
 - Scrolling display of error messages

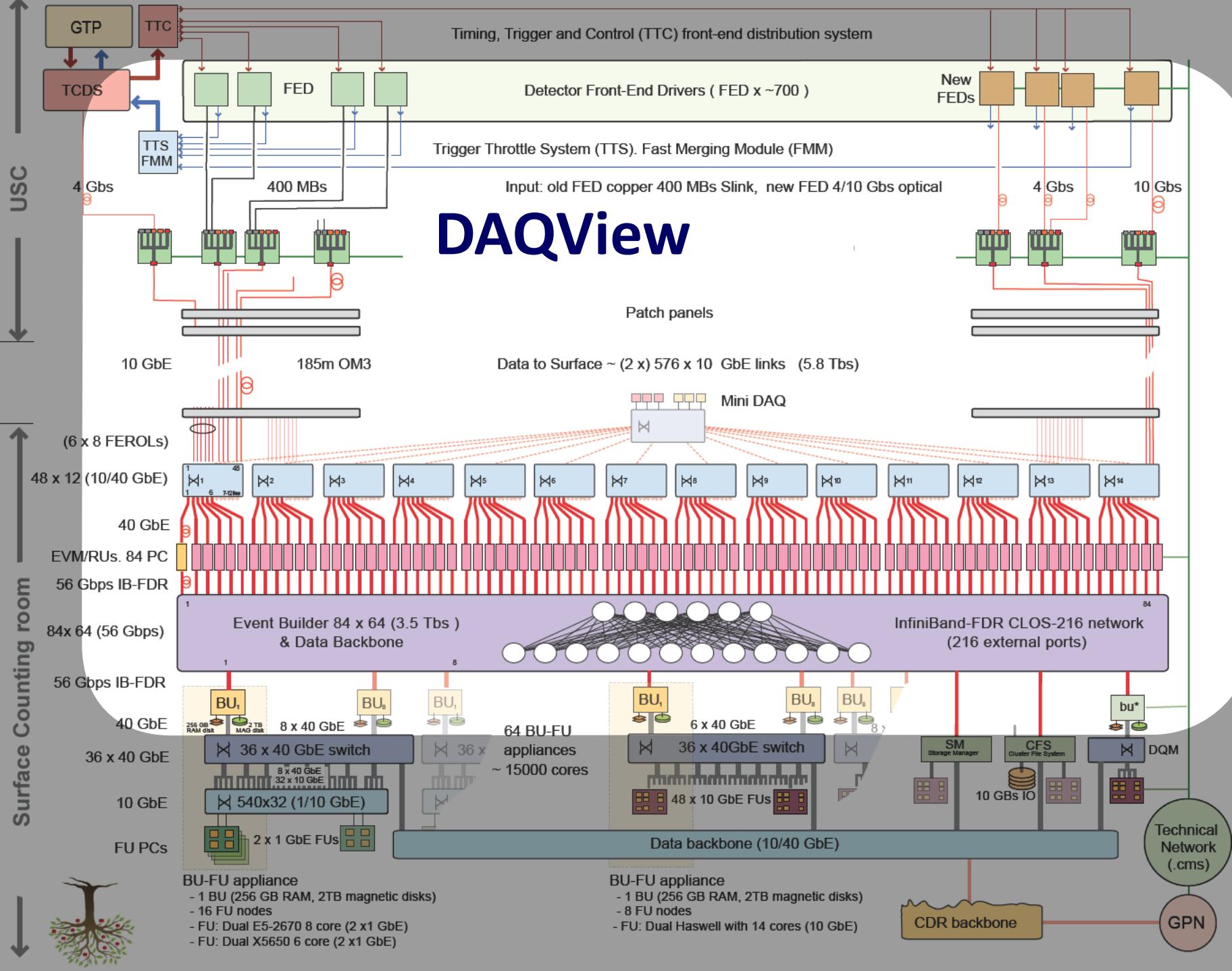
aDAQmon – DAQ Status Display

Status bar gives a quick overview of the DAQ

<http://cmsonline.cern.ch/daqStatusSCX/DAQstatusGre.html>









DAQView

<http://daq-expert.cms/daq2view-react/>

DAQView Home									FB Table		3 2018-03-01 09:49:31																	
FFF Table		FB+DT Table		Go to time																								
Run number	Run start time (local)			L0V state	L0V state entry time (local)		DAQ state	Machine state	Beam state	Session ID	DAQ configuration				Snapshot time (local)													
310754	Thu 01/03/2018, 09:17:09 GMT+0100 (CET) 35m, 49s ago			Running	Thu 01/03/2018, 09:17:29 GMT+0100 (CET)		Running	SHUTDOWN	NO BEAM	299288	/daq2/eq_180213/fb_all/DTup_GEM /dp_b1615_75BU				Thu 01/03/2018, 09:52:57 GMT+0100 (CET)													
Table Help																												
F E D B U I L D E R									E V B																			
T T S	P	A	F	%W	%B	fripC	geoSlot:SrcId / TTSSonlyFEDSrcId	min Trg	max Trg	FB Name	RU #	warn	rate#	thru(MB/s)	size (kB)	#events #	#frags in RU #	#evts in RU #	#requests #									
TTCP▲	-	-	x	x	s1d06-40-01	1:1024					1722370	TCDS	c2e14-11-01	0.932	1.0	1.12±0.0	1721862	0	6	3760								
BPixM:80	-	x	x	x	s2d19-41-01	1:1248,1249,1250,1251,2:1252,1253,1254,1255,11248					BPIXM1	c2e13-36-01	0.000	0.0	0.000±0.000	0	0	0	0									
BPixM:80	-	x	x	x	s2d19-41-01	4:1260,1261,1262,1263,5:1264,1265,1266,1267,11260					BPIXM2	c2e13-37-01	0.000	0.0	0.000±0.000	0	0	0	0									
BPixM:80	-	x	x	x	s2d19-41-01	7:1272,1273,1274,1275,8:1276,1277,1278,1279,11272					BPIXM3	c2e13-38-01	0.000	0.0	0.000±0.000	0	0	0	0									
BPixM:80	-	x	x	x	s2d19-41-01	10:1284,1285,1286,1287,11:1288,1289,1280,1281,11284					BPIXM4	c2e14-36-01	0.000	0.0	0.000±0.000	0	0	0	0									
BPixM:80	-	x	x	x	s2d19-41-01	3:1256,1257,6:1268,1269,9:1280,1281,12:1292,1293,11248					BPIXM5	c2e14-37-01	0.000	0.0	0.000±0.000	0	0	0	0									
BPixP:81	-	x	x	x	s2d19-40-01	1:1200,1201,1202,1203,2:1204,1205,1206,1207,11200					BPIXP1	c2e13-36-01	0.000	0.0	0.000±0.000	0	0	0	0									
BPixP:81	-	x	x	x	s2d19-40-01	4:1212,1213,1214,1215,5:1216,1217,1218,1219,11212					BPIXP2	c2e13-37-01	0.000	0.0	0.000±0.000	0	0	0	0									
BPixP:81	-	x	x	x	s2d19-40-01	7:1224,1225,1226,1227,8:1228,1229,1230,1231,11224					BPIXP3	c2e13-38-01	0.000	0.0	0.000±0.000	0	0	0	0									
BPixP:81	-	x	x	x	s2d19-40-01	10:1236,1237,1238,1239,11:1240,1241,1242,1243,11236					BPIXP4	c2e14-12-01	0.000	0.0	0.000±0.000	0	0	0	0									
BPixP:81	-	x	x	x	s2d19-40-01	3:1208,1209,6:1220,1221,9:1232,1233,12:1244,1245,11200					BPIXP5	c2e15-12-01	0.000	0.0	0.000±0.000	0	0	0	0									
CALTRIGUP:70	x	x	x	s2d10-25-01	5:1360						1722008	CALTRIGUP	c2e12-22-01	0.943	15.6	16.5±1.6	1720520	8	0	0								
RTC:71	x	x	x	s2d10-25-01	2:1354, 3:1356, 4:1358						1722008	1722280	c2e12-22-01	0.943	15.6	16.5±1.6	1720520	8	0	0								
CSC+:16	-	-	-	-	s1d06-34-01	1:841,1831,2:1086,2:1087,3:843,833,4:844,834,5:845,835,6:846,836,7:847,837,8:848,838,18:849,839					CSC+	c2e12-30-01	0.000	0.0	0.000±0.000	0	0	0	0									
CSC-:17	-	-	-	-	s1d06-34-01	9:861,1851,10:862,852,11:863,853,12:864,854,13:865,855,14:866,856,15:867,857,16:868,858,17:869,859					CSC-	c2e12-34-01	0.000	0.0	0.000±0.000	0	0	0	0									
CTPPS:74	-	x	x	x	s2d10-21-01	15:1462,16:1463,11462					CTPPS_TO	c2e14-10-01	0.000	0.0	0.000±0.000	0	0	0	0									
TOTDET:21	-	-	-	-	s2d10-21-01	2:578,4:598,6:582,7:583,8:584,9:585					DT	c2e12-23-01	0.000	0.0	0.000±0.000	0	0	0	0									
DT:14	-	x	x	x	s1d06-36-01	12:1371					DTUP	c2e14-31-01	0.000	0.0	0.000±0.000	0	0	0	0									
DT:15	-	x	x	x	s1d06-36-01	2:1369					EB+1	c2e12-39-01	0.000	0.0	0.000±0.000	0	0	0	0									
DT:16	-	x	x	x	s1d06-36-01	3:1370					EB+2	c2e14-24-01	0.000	0.0	0.000±0.004	0	0	0	0									
DTUP:61	-	x	x	x	s1d06-36-01	1:1368					EB-1	c2e12-17-01	0.000	0.0	0.000±0.000	0	0	0	0									
EB+0	-	-	-	-	s2d10-10-01	1:626,2:629,3:630,4:634,5:635,6:636,7:631,8:632,9:633					EB-2	c2e14-29-01	0.000	0.0	0.000±0.000	0	0	0	0									
EB+0	-	-	-	-	s2d10-18-01	1:56,2:56,3:56,4:56,5:56,6:56,7:56,8:56,9:56,10:56,11:56,12:56,13:56,14:56,15:56,16:56,17:56,18:56,19:56,20:56,21:56,22:56,23:56,24:56,25:56,26:56,27:56,28:56,29:56,30:56,31:56,32:56,33:56,34:56,35:56,36:56,37:56,38:56,39:56,40:56,41:56,42:56,43:56,44:56,45:56,46:56,47:56,48:56,49:56,50:56,51:56,52:56,53:56,54:56,55:56,56:56,57:56,58:56,59:56,60:56,61:56,62:56,63:56,64:56,65:56,66:56,67:56,68:56,69:56,70:56,71:56,72:56,73:56,74:56,75:56,76:56,77:56,78:56,79:56,80:56,81:56,82:56,83:56,84:56,85:56,86:56,87:56,88:56,89:56,90:56,91:56,92:56,93:56,94:56,95:56,96:56,97:56,98:56,99:56,100:56,101:56,102:56,103:56,104:56,105:56,106:56,107:56,108:56,109:56,110:56,111:56,112:56,113:56,114:56,115:56,116:56,117:56,118:56,119:56,120:56,121:56,122:56,123:56,124:56,125:56,126:56,127:56,128:56,129:56,130:56,131:56,132:56,133:56,134:56,135:56,136:56,137:56,138:56,139:56,140:56,141:56,142:56,143:56,144:56,145:56,146:56,147:56,148:56,149:56,150:56,151:56,152:56,153:56,154:56,155:56,156:56,157:56,158:56,159:56,160:56,161:56,162:56,163:56,164:56,165:56,166:56,167:56,168:56,169:56,170:56,171:56,172:56,173:56,174:56,175:56,176:56,177:56,178:56,179:56,180:56,181:56,182:56,183:56,184:56,185:56,186:56,187:56,188:56,189:56,190:56,191:56,192:56,193:56,194:56,195:56,196:56,197:56,198:56,199:56,200:56,201:56,202:56,203:56,204:56,205:56,206:56,207:56,208:56,209:56,210:56,211:56,212:56,213:56,214:56,215:56,216:56,217:56,218:56,219:56,220:56,221:56,222:56,223:56,224:56,225:56,226:56,227:56,228:56,229:56,230:56,231:56,232:56,233:56,234:56,235:56,236:56,237:56,238:56,239:56,240:56,241:56,242:56,243:56,244:56,245:56,246:56,247:56,248:56,249:56,250:56,251:56,252:56,253:56,254:56,255:56,256:56,257:56,258:56,259:56,260:56,261:56,262:56,263:56,264:56,265:56,266:56,267:56,268:56,269:56,270:56,271:56,272:56,273:56,274:56,275:56,276:56,277:56,278:56,279:56,280:56,281:56,282:56,283:56,284:56,285:56,286:56,287:56,288:56,289:56,290:56,291:56,292:56,293:56,294:56,295:56,296:56,297:56,298:56,299:56,300:56,301:56,302:56,303:56,304:56,305:56,306:56,307:56,308:56,309:56,310:56,311:56,312:56,313:56,314:56,315:56,316:56,317:56,318:56,319:56,320:56,321:56,322:56,323:56,324:56,325:56,326:56,327:56,328:56,329:56,330:56,331:56,332:56,333:56,334:56,335:56,336:56,337:56,338:56,339:56,340:56,341:56,342:56,343:56,344:56,345:56,346:56,347:56,348:56,349:56,350:56,351:56,352:56,353:56,354:56,355:56,356:56,357:56,358:56,359:56,360:56,361:56,362:56,363:56,364:56,365:56,366:56,367:56,368:56,369:56,370:56,371:56,372:56,373:56,374:56,375:56,376:56,377:56,378:56,379:56,380:56,381:56,382:56,383:56,384:56,385:56,386:56,387:56,388:56,389:56,390:56,391:56,392:56,393:56,394:56,395:56,396:56,397:56,398:56,399:56,400:56,401:56,402:56,403:56,404:56,405:56,406:56,407:56,408:56,409:56,410:56,411:56,412:56,413:56,414:56,415:56,416:56,417:56,418:56,419:56,420:56,421:56,422:56,423:56,424:56,425:56,426:56,427:56,428:56,429:56,430:56,431:56,432:56,433:56,434:56,435:56,436:56,437:56,438:56,439:56,440:56,441:56,442:56,443:56,444:56,445:56,446:56,447:56,448:56,449:56,450:56,451:56,452:56,453:56,454:56,455:56,456:56,457:56,458:56,459:56,460:56,461:56,462:56,463:56,464:56,465:56,466:56,467:56,468:56,469:56,470:56,471:56,472:56,473:56,474:56,475:56,476:56,477:56,478:56,479:56,480:56,481:56,482:56,483:56,484:56,485:56,486:56,487:56,488:56,489:56,490:56,491:56,492:56,493:56,494:56,495:56,496:56,497:56,498:56,499:56,500:56,501:56,502:56,503:56,504:56,505:56,506:56,507:56,508:56,509:56,510:56,511:56,512:56,513:56,514:56,515:56,516:56,517:56,518:56,519:56,520:56,521:56,522:56,523:56,524:56,525:56,526:56,527:56,528:56,529:56,530:56,531:56,532:56,533:56,534:56,535:56,536:56,537:56,538:56,539:56,540:56,541:56,542:56,543:56,544:56,545:56,546:56,547:56,548:56,549:56,550:56,551:56,552:56,553:56,554:56,555:56,556:56,557:56,558:56,559:56,560:56,561:56,562:56,563:56,564:56,565:56,566:56,567:56,568:56,569:56,570:56,571:56,572:56,573:56,574:56,575:56,576:56,577:56,578:56,579:56,580:56,581:56,582:56,583:56,584:56,585:56,586:56,587:56,588:56,589:56,590:56,591:56,592:56,593:56,594:56,595:56,596:56,597:56,598:56,599:56,600:56,601:56,602:56,603:56,604:56,605:56,606:56,607:56,608:56,609:56,610:56,611:56,612:56,613:56,614:56,615:56,616:56,617:56,618:56,619:56,620:56,621:56,622:56,623:56,624:56,625:56,626:56,627:56,628:56,629:56,630:56,631:56,632:56,633:56,634:56,635:56,636:56,637:56,638:56,639:56,640:56,641:56,642:56,643:56,644:56,645:56,646:56,647:56,648:56,649:56,650:56,651:56,652:56,653:56,654:56,655:56,656:56,657:56,658:56,659:56,660:56,661:56,662:56,663:56,664:56,665:56,666:56,667:56,668:56,669:56,670:56,671:56,672:56,673:56,674:56,675:56,676:56,677:56,678:56,679:56,680:56,681:56,682:56,683:56,684:56,685:56,686:56,687:56,688:56,689:56,690:56,691:56,692:56,693:56,694:56,695:56,696:56,697:56,698:56,699:56,700:56,701:56,702:56,703:56,704:56,705:56,706:56,707:56,708:56,709:56,710:56,711:56,712:56,713:56,714:56,715:56,716:56,717:56,718:56,719:56,720:56,721:56,722:56,723:56,724:56,725:56,726:56,7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Help	BUILERUNIT (BU)																			
	rate (kHz) s	thru (Mbps/s) s	size (KB) s	#events in s	#evts in BU s	priority	#req. sent s	#req. used s	#req. blocked s	#FUs HLT s	#FUs crash s	#FUs state s	#FUs cloud s	RAM disk usage s	#FUs s	#LS w/ files s	current LS s	#LS for HLT s	#LS out HLT s	bW out (Mbps/s) s
1-20-01	0.023	1.6	65.22b.0	41008	0	0	80	0	0	864	0	0	0	0.0%	235.1GB	500	100	100	0	1.50
1-30-01	0.015	1.2	77.32b.0	41008	0	0	80	0	0	864	0	0	0	0.0%	235.1GB	500	100	100	0	1.48
2-20-01	0.023	1.9	80.33b.0	41008	0	0	80	0	0	864	0	0	0	0.0%	235.1GB	500	100	100	0	1.54
3-20-01	0.015	1.3	79.13b.0	41008	0	0	80	0	0	864	0	0	0	0.0%	235.1GB	500	100	100	0	1.25
4-20-01	0.015	1.3	78.22b.0	41008	0	0	80	0	0	864	0	0	0	0.0%	235.1GB	500	100	100	0	1.55
5-20-01	0.023	1.6	65.03b.0	41008	0	0	80	0	0	864	0	0	0	0.0%	235.1GB	500	100	100	0	1.58
6-20-01	0.015	0.9	58.02b.0	41000	0	0	80	0	0	864	0	0	0	0.0%	235.1GB	500	100	100	0	1.74
7-20-01	0.015	1.3	79.32b.0	41016	8	0	79	1	0	816	0	0	0	0.0%	235.1GB	500	100	100	0	1.35
8-20-01	0.023	1.6	65.02b.0	41008	0	0	80	0	0	672	0	0	0	0.0%	235.1GB	500	100	100	0	1.34
9-30-01	0.023	1.9	79.12b.0	41008	0	0	80	0	0	864	0	0	0	0.0%	235.1GB	500	100	100	0	1.63
10-20-01	0.023	1.6	64.81b.0	41008	0	0	80	0	0	816	0	0	0	0.0%	235.1GB	500	100	100	0	1.42
11-30-01	0.023	1.9	79.93b.0	41008	0	0	80	0	0	768	0	0	0	0.0%	235.1GB	500	100	100	0	1.67
12-20-01	0.023	1.9	79.12b.0	41008	0	0	80	0	0	864	0	0	0	0.0%	235.1GB	500	100	100	0	1.63
13-30-01	0.015	0.9	57.98b.0	41000	0	0	80	0	0	864	0	0	0	0.0%	235.1GB	500	100	100	0	1.65
14-20-01	0.015	1.3	79.32b.0	41016	0	0	80	0	0	864	0	0	0	0.0%	235.1GB	500	100	100	0	1.84
15-30-01	0.015	1.3	79.02b.0	41016	0	0	80	0	0	864	0	0	0	0.0%	235.1GB	500	100	100	0	1.44
16-20-01	0.015	1.2	77.12b.0	41000	0	0	80	0	0	864	0	0	0	0.0%	235.1GB	500	100	100	0	1.24
17-30-01	0.023	1.6	66.68b.0	41008	0	0	80	0	0	864	0	0	0	0.0%	235.1GB	500	100	100	0	1.62
18-20-01	0.015	1.3	79.15b.0	41000	0	0	80	0	0	864	0	0	0	0.0%	235.1GB	500	100	100	0	1.40
19-30-01	0.015	1.2	77.15b.0	41000	0	0	80	0	0	864	0	0	0	0.0%	235.1GB	500	100	100	0	1.62
20-20-01	0.015	1.3	79.32b.0	41000	0	0	80	0	0	864	0	0	0	0.0%	235.1GB	500	100	100	0	1.34
21-30-01	0.015	1.9	77.88b.0	41008	0	0	80	0	0	672	0	0	0	0.0%	235.1GB	500	100	100	0	1.20
22-20-01	0.015	1.3	80.22b.0	41000	0	0	80	0	0	672	0	0	0	0.0%	235.1GB	500	100	100	0	1.17
23-30-01	0.015	1.3	79.03b.0	41000	0	0	80	0	0	672	0	0	0	0.0%	235.1GB	500	100	100	0	1.34
24-30-01	0.015	0.9	58.22b.0	41000	0	0	80	0	0	672	0	0	0	0.0%	235.1GB	500	100	100	0	1.54
25-20-01	0.015	1.3	79.03b.0	41000	0	0	80	0	0	672	0	0	0	0.0%	235.1GB	500	100	100	0	1.36
26-30-01	0.015	1.3	79.03b.0	41000	0	0	80	0	0	672	0	0	0	0.0%	235.1GB	500	100	100	0	1.57
27-20-01	0.015	1.3	79.42b.0	41000	0	0	80	0	0	672	0	0	0	0.0%	235.1GB	500	100	100	0	1.18
28-20-01	0.015	1.2	77.45b.0	41000	0	0	80	0	0	672	0	0	0	0.0%	235.1GB	500	100	100	0	1.00
29-30-01	0.015	0.9	57.22b.0	41000	0	0	80	0	0	672	0	0	0	0.0%	235.1GB	500	100	100	0	1.22
30-10-01	0.015	1.3	78.98b.0	41016	0	0	80	0	0	672	0	0	0	0.0%	235.1GB	500	100	100	0	1.97
31-20-01	0.015	1.3	78.01b.0	41000	0	0	80	0	0	672	0	0	0	0.0%	235.1GB	500	100	100	0	1.40

FFF Appliances
BU & FU

Background turns red
when EvB is Enabled &
no data is flowing

FED Builder FEROL/FMM

Event Builder

RU/EVM

Background turns red
when EvB is Enabled &
no data is flowing

DAQView - Navigation

Welcome to DAQView instances index

Setup	Remark	DAQagg status	Last DAQagg. pid	Action	Snapshot DU	Link	Notes
cdsq	Reserved for running Public Global Run from soppo	running	5871	stop	Off	DAQView - A DAQView - B DAQView - C DAQView - D DAQView - E	Realtime views
davulpro	davul configs running from davul tomcat	running	8569	stop	Off	DAQView - A DAQView - B DAQView - C DAQView - D DAQView - E	Realtime views
davuldevs	davul configs running from davuldev tomcat	running	7921	stop	Off	DAQView - A DAQView - B DAQView - C DAQView - D DAQView - E	Realtime views
rpc	Setup for RPC miniDAQ	stopped		start	Off	DAQView - A DAQView - B DAQView - C DAQView - D DAQView - E	Not running anymore, but DAQView can still be used to go back in time
ecal	Setup for ECAL miniDAQ	running	28875	stop	Off	DAQView - A DAQView - B DAQView - C DAQView - D DAQView - E	Realtime views

Switch pages between FEDbuilder, FFF, and all

Stop refreshing page

go back/forth in time

go to a specific point in time

get a link for current view (useful to paste to ELOG)

switch to DAQExpert for this point in time



Run number	Run start time (local)	LVO state	LVO state entry time (local)	DAQ state	Machine state	Beam state	Session ID	DAQ configuration	Snapshot time (local)
310758	Thu 01/03/2018, 10:17:33 GMT+0100 (CET) 1h, 5m, 30s ago	Undefined	Thu 01/03/2018, 11:22:39 GMT+0100 (CET)	Halted	SHUTDOWN	NO BEAM	299288	/daq2/eq_180213 /fb_all_DTup_GEM/dp_bf615_75BU	Thu 01/03/2018, 11:23:02 GMT+0100 (CET)

Current run

current Level0 FM state and time when state was reached

Duration and start time of run

DAQ subsystem state

DAQ configuration (blacklist version etc.)

Last update of page must be current!
If this is stale, call the oncall expert

DAQView – Global TTS

in ‘FB+DT Table’ view

Global TTS	trigger veto							pauses		
	Total	TTS	trigger rules	bunch-mask	ReTri	PM APVE	DAQ backpressure to PM	calibration sequence	software	firmware
State	R			R	R	R	R			
Deadtime (Instant)	3.71	0.00	0.79	0.98	0.00	1.26	0.00	0.10	0.00	0.62
Beamactive Deadtime (Instant)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

dead time in all clock cycles

Trigger throttling system (dead time from subsystems)

resonant trigger veto (e.g. 11 kHz zero bias triggers)

triggers lost due to calibration sequence

dead time in clock cycles with actual bunch crossings

total dead time in %

dead time from trigger rules
(can come from trigger microbursts)

backpressure from DAQ

DAQView – FED builder

Confused? Try the table help button!

%warning, %busy
in TTS partition

FED builder name

(Table Help)

TTC TTCP	TTS					F E D B U I L D E R		min Trg	max Trg	FB Name
	P	A	F	%W	%B	frlpc	geoSlot:SrcId	/	TTSOnlyFEDSrcId	
CPM-PRI:59	-	-	-	s1d06-40-01	1:1024					14954825 TCDS
HO:9	-	x	-	s2d10-16-01	1:725, 2:724, 3:728, 4:729, 5:726, 6:727, 7:730, 8:731					
SCAL:23	R	x	R	0.0	0.0	s2d10-07-01	1:735			14955454 HOSCAL
MUTFUP:67	R	x	x	x	s1d06-35-01	1:1384, 2:1385, 6:1380, 7:1381				14956312 14956325 EMTFOMTF
MUTFUP:67	R	x	x	x	s1d06-36-01	10:1376, 11:1377				14955558 BMTF
GTUP:65	R	x	x	x	s1d06-36-01	13:1404				14956293 GMTGT
MUTFUP:67	R	x	x	x	s1d06-36-01	12:1402				

FEROL PC
(link to hyperdaq page)

TTC partition name & no.

Current TTS state of partition

FED information (see next page)

P: TTS state from TCDS
F: TTS state from FMM
A: APVE emulator TTS state

min/max # fragments received by FEROL.
Highlighted in yellow if different to trigger.
Min is only displayed if not equal to max.

screenshot still from classic DAQView, appearance is slightly different in current DAQ2View
DAQ2View allows sorting columns

DAQView – FEROL and FMM

- Entries are of form **1:606, 2:607, 3:608, 4:609, 5:601, 6:W:100.0%W602<80.0%9605, 7:603, 8:604, 9:605 661**
 - FRL_geoslot: **FEDSourceID** or
 - FRL_geoslot: **FEDSourceID1, FEDSourceID2** or
 - **FEDSourceID**
 - For a pseudo-FED (=TTS link only, but no data is read out by DAQ)
- Additional info may be displayed next to the **FEDSourceID** (from left to right)
 - Percentage of time during which FED was in Warning (**W:9.9%**) or Busy (**B:0.2%**) during the last 3 seconds (if non-zero)
 - Current state of TTS if other than Ready **W**
 - FEDSourceID (expected) **601**
 - Grey if FRL input not enabled (FMM not enabled in case of pseudo-FED)
 - Highlighted in color of current TTS state if other than Ready
 - Percentage of time with DAQ backpressure during last update interval (5s) if non-zero
 - < is meant to be an arrow, not an inequality
 - Warnings
 - Received source ID different to expected
 - FED or SLINK CRC errors **#FCRC=69**
 - Number of fragments received by FRL if no data is flowing and this FRL is lagging “behind” **9605**
- uTCA FEDs (FED id ≥ 1024) do not have an FMM
 - Busy/warning in column ‘P’ DAQView

DAQView – RU/EVM Information

First row is TCDS / EVM

Each row is one FEDbuilder

FB Name	RU	rate (kHz)	thru (MB/s)	size (kB)	EVB	#events	#frags in RU	#evts in RU	#requests
TCDS	e14-10-01	0.947	0.9	0.952±0.000	2220297	0	9	276	
BPIX3	e15-27-01	0.959	1.6	1.7±0.0	2221952	6	0	0	
BPIX4	e15-28-01	0.991	1.6	1.7±0.0	2222272	19	0	0	
EB+1	e12-15-01	0.000	0.0	0.000±0.000		0	0	0	0
EB+2	e14-24-01	0.000	0.0	0.000±0.000		0	0	0	0
FPIX	e12-18-01	0.991	1.6	1.7±0.0	2222272	18	0	0	
TRG	e15-19-01	0.991	3.6	3.6±0.0	2222112	4	0	0	

Rate (kHz)

Throughput (MB/s)

Super-fragment size (kB)

requests by BU
normal EVM >> 1 && RUs < 10

EVM/RU host
(link to hyperdaq page)

fragments built by RU/EVM since start of run

incomplete fragments
>> 1 indicates a problem on the RU

events currently in RU
>>1 indicates problem in IB

Shaded values mean FEDbuilder is not in readout

screenshot still from classic DAQView, appearance is slightly different in current DAQ2View
DAQ2View allows sorting columns

DAQView – FFF/BU

Confused? Try the table help button!

BU ▾	BU host (link to hyperdaq page)			Event size (kB)			Events built since start of run														
	rate (kHz) ↳	thru (MB/s) ↳	size (kB) ↳	#events ↳	#evts in BU ↳	priority ↳	#req. sent ↳	#req. used ↳	#req. blocked ↳	#FUs HLT ↳	#FUs crash ↳	#FUs stale ↳	#FUs cloud ↳	RAM disk usage ↳	#files ↳	#LS w/ files ↳	current LS ↳	#LS for HLT ↳	#LS out HLT ↳	b/w out (MB/s) ↳	
bu-c2d31-20-01	Paused	0.000	0.0	61.3±0.0	376	0	0	0	0	80	0	0	0	864	0.0% o 235.1GE	5	1	120	0	-1	0.00
bu-c2d31-30-01	Paused	0.000	0.0	64.4±0.0	376	0	0	0	0	80	0	0	0	864	0.0% o 235.1GE	5	1	120	0	-1	0.00
bu-c2d32-20-01	Paused	0.000	0.0	63.7±0.0	376	0	0	0	0	80	0	0	0	864	0.0% o 235.1GE	5	1	120	0	-1	0.00
bu-c2d32-30-01	Paused	0.000	0.0	61.5±0.0	376	0	0	0	0	80	0	0	0	864	0.0% o 235.1GE	6	2	121	0	-1	0.00
bu-c2d33-20-01	Paused	0.000	0.0	63.7±0.0	368	0	0	0	0	80	0	0	0	864	0.0% o 235.1GE	5	1	120	0	-1	0.00
bu-c2d33-30-01	Paused	0.000	0.0	63.7±0.0	368	0	0	0	0	80	0	0	0	864	0.0% o 235.1GE	5	1	120	0	-1	0.00
bu-c2d34-20-01	Paused	0.000	0.0	63.6±0.0	368	0	0	0	0	80	0	0	0	864	0.0% o 235.1GE	5	1	120	0	-1	0.00
bu-c2d34-30-01	Paused	0.000	0.0	64.0±0.0	368	0	0	0	0	80	0	0	0	816	0.0% o 235.1GE	5	1	120	0	-1	0.00
bu-c2d35-20-01		0.199	12.0	59.9±0.0	11570520	56	0	73	7	0	672	0	0	0	0.0% o 235.1GE	116145	161	162	0	0	0.21

each line is one appliance

Throughput (MB/s)

Rate per BU (kHz)

BU state

events being built
in this moment

Resource information
(see next page)

Current LS number

LS queued on output
disk on FUs

LS queued
for FUs

LS for which
there is a file

files written

output
bandwidth

DAQView – BU Resources

- BUs have use a fixed number of requests (20 in the current configuration)
 - Each request corresponds to multiple events (32 in the current configuration)
 - The number of active requests may vary during a run
 - Load balancing between independent appliances
 - Backpressure mechanism if FFF/HLT cannot keep up
 - A request is sent to the EVM (#req. sent) when all events of the request have been handled
 - If #req sent > 0, the BU is able to accept new events
 - When the BU got at least one fragment for the request, the request is ‘used’ (#req. used)
 - The more request are used, the busier is the BU (either building events or waiting for data)
 - Resources can be blocked (#req. blocked)
 - RAM disk becomes full
 - Not enough FU CPU cores are available to process data
 - FU processing lags behind
 - Requests have a priority depending on the load of the BU appliance
 - BUs with lower priority number get events first

Table Help		BUILDER UNIT (BU)																			
BU ▲		rate (kHz) ♦	thru (MB/s) ♦	size (kB) ♦	#events ♦	#evts in BU ♦	priority ♦	#req. sent ♦	#req. used ♦	#req. blocked ♦	#FUs HLT ♦	#FUs crash ♦	#FUs stale ♦	#FUs cloud ♦	RAM disk usage ♦	#files ♦	#LS w/ files ♦	current LS ♦	#LS for HLT ♦	#LS out HLT ♦	b/w out (MB/s) ♦
bu-c2d31-20-01	Paused	0.000	0.0	0.0±0.0	0	0	0	0	0	80	0	0	0	864	0.0% of 235.1GB	0	0	0	0	-1	0.00
bu-c2d31-30-01	Paused	0.000	0.0	0.0±0.0	0	0	0	0	0	80	0	0	0	864	0.0% of 235.1GB	0	0	0	0	-1	0.00
bu-c2d32-20-01	Paused	0.000	0.0	0.0±0.0	0	0	0	0	0	80	0	0	0	864	0.0% of 235.1GB	0	0	0	0	-1	0.00
bu-c2d32-30-01	Paused	0.000	0.0	0.0±0.0	0	0	0	0	0	80	0	0	0	864	0.0% of 235.1GB	0	0	0	0	-1	0.00
bu-c2d33-20-01	Paused	0.000	0.0	0.0±0.0	0	0	0	0	0	80	0	0	0	864	0.0% of 235.1GB	0	0	0	0	-1	0.00
bu-															0.0% of						

DAQView – Running, or not?

Subsystem	HCAL	DT	CSC	TCDS	TRG	DAQ	DQM
State	Running	Running	Running	Running	Running	Running	Running
Time	00:10.0	00:06.2	00:09.3	00:00.1	00:10.2	00:02.0	00:00.0
Enabled Slices							
Current Run Key	ZS	N/A	N/A	N/A	Automatic	TIER0_TRANSFER_OFF	N/A
New Run Key	ZS				Automatic	TIER0_TRANSFER_OFF	
Commander	select	select	select	select	select	select	select
	 	 	 	 	 	 	 

DAQView – Running, or not?

Subsystem	HCAL	DT	CSC	TCDS	TRG	DAQ	DQM
State	Running	Running	Running	Running	Running	Running	Running
Time	00:10.0	00:06.2	00:09.3	00:00.1	00:10.2	00:02.0	00:00.0
Enabled Slices							
Current Run Key	ZS	N/A	N/A	N/A	Automatic	TIER0_TRANSFER_OFF	N/A
New Run Key	ZS				Automatic	TIER0_TRANSFER_OFF	
Commander	select	select	select	select	select	select	select

(Table Help)		F E D B U I L D E R						E V B									
TTCP	T %W %B frlpc	geoSlot:SrcId	/	TTSD	OnlyFED	SrcId	min Trg	max Trg	FB Name	RU	rate (kHz)	thru (MB/s)	size (kB)	#events	#frags in RU	#evts in RU	#evts requested
cpm-pri:59	- - -	s1d06-40-01	1:1024				15948		TCDS	e14-10-01	0.000	0.0	0.000±0.000	8064	512	0	0
GCT:11	- ? ?	s1d06-29-01	1:745				16198		TRG	e15-22-01	0.000	0.0	0.000±0.000	8064	512	0	0
GT:33	R 0.0	0.0	s1d06-27-01	1:812, 2:813	811		-	-									
RETRI:4	- ? ?	-	810				0		HFuTCA	e13-19-01	0.000	0.0	0.000±0.000	0	0	0	8064
HF:8	- ? ?	s2d10-26-01	4:1118, 5:1120, 6:1122														
Summary	frlpc	geoSlot:SrcId					min Trg	max Trg	FB Name	RU	rate (kHz)	thru (MB/s)	size (kB)	#events	#frags in RU	#evts in RU	#evts requested
											0.000	Σ 0.0	Σ 0.000±0.000	△ 8064	Σ 1024	Σ 0	Σ 8064

screenshot still from classic DAQView, appearance is slightly different in current DAQ2View

DAQView – Running, or not?

Subsystem	HCAL	DT	CSC	TCDS	TRG	DAQ	DQM
State	Running	Running	Running	Running	Running	Running	Running
Time	00:10.0	00:06.2	00:09.3	00:00.1	00:10.2	00:02.0	00:00.0
Enabled Slices							
Current Run Key	ZS	N/A	N/A	N/A	Automatic	TIER0_TRANSFER_OFF	N/A
New Run Key	ZS				Automatic	TIER0_TRANSFER_OFF	
Commander	select	select	select	select	select	select	select

LVL0:
DAQ is running

No, rate is 0 kHz

(Table Help)		F E D B U I L D E R				E V B										
TTCP	T %W %B frlpc	geoSlot:SrcId	/	TTSDOnlyFEDSrcId	min Trg	max Trg	FB Name	RU	rate (kHz)	thru (MB/s)	size (kB)	#events	#frags in RU	#evts in RU	#evts requested	
cpm-pri:59	- - -	s1d06-40-01	1:1024		15948		TCDS	e14-10-01	0.000	0.0	0.000±0.000	8064	512	0	0	
GCT:11	- ? ?	s1d06-29-01	1:745		16198		TRG	e15-22-01	0.000	0.0	0.000±0.000	8064	512	0	0	
GT:33	R 0.0	0.0	s1d06-27-01	1:812, 2:813	811											
RETRI:4	- ? ?	-	810		-	-										
HF:8	- ? ?	s2d10-26-01	4:1118, 5:1120, 6:1122		0		HFuTCA	e13-19-01	0.000	0.0	0.000±0.000	0	0	0	8064	
Summary	frlpc	geoSlot:SrcId			min Trg	max Trg	FB Name	RU	rate (kHz)	thru (MB/s)	size (kB)	#events	#frags in RU	#evts in RU	#evts requested	
									0.000	Σ 0.0	Σ 0.000±0.000	Σ 8064	Σ 1024	Σ 0	Σ 8064	

None of the HF FEDs has sent any events

No fragments in RU

Many events requested

No data flow as HF has not sent any data → Talk to HCAL expert

DAQView – Who Blocks the Run?

F E D B U I L D E R																	
TTCP	T	%W	%B	frlpc	geoSlot:SrcId	/	TTSOnlyFEDSrcId	min	Trg	max	Trg	FB	Name	RU	rate (kHz)	thru	
cpm-pri:59	-	-	-	s1d06-40-01	1:1024			9632	TCDS	e14-10-01					0.000		
CSC+:16	R	0.0	0.0	s1d06-34-01	1:841,831, 2:842,832, 3:843,833, 4:844,834, 5:845,835, 6:846,836, 7:847,837, 8:848,838, 18:849,839			9632	CSC+	e12-34-01					0.000		
CSC-:17	R	0.0	0.0	s1d06-34-01	9:861,851, 10:862,852, 11:863,853, 12:864,854, 13:865,855, 14:866,856, 15:867,857, 16:868,858, 17:869,859			9632	CSC-	e12-35-01					0.000		
EB+:0	-	?	?	s2d10-10-01	1:628, 2:629, 3:630, 4:634, 5:635, 6:636, 7:631, 8:632, 9:633 663				EB+1	e12-15-01					0.000		
EB+:0	-	?	?	s2d10-18-01	1:643, 2:644, 3:645, 4:637, 5:638, 6:639, 7:640, 8:641, 9:642 663				EB+2	e12-26-01					0.000		
EB-:1	R	0.0	0.0	s2d10-11-01	1:610, 2:611, 3:612, 4:616#FCRC=1, 5:617, 6:618, 7:613, 8:614, 9:615 662			9632	EB-1	e12-18-01					0.000		
EB-:1	R	0.0	0.0	s2d10-20-01	1:625, 2:626, 3:627, 4:619, 5:620#FCRC=1, 6:621, 7:622, 8:623, 9:624 662			9632	EB-2	e14-28-01					0.000		
EE+:2	-	?	?	s2d10-17-01	1:648, 2:649, 3:650, 4:654, 5:646, 6:647, 7:651, 8:652, 9:653 664				EE+	e12-19-01					0.000		
EE-:3	W	100.0	0.0	s2d10-09-01	1:606, 2:607, 3:608, 4:609, 5:601, 6:W:100.0%W602<80.0%9605, 7:603, 8:604, 9:605 661			9605	9632	EE-	e12-10-01				0.000		
GCT:11	-	?	?	s1d06-29-01	1:745												
GT:33	R	0.0	0.0	s1d06-27-01	1:812, 2:813 811			9632	TRG	e15-22-01					0.000		
RETRI:4	-	?	?	-	810			-	-	-							
TIBTID:24	R	0.0	0.0	s1d06-04-01	1:149, 2:150, 3:151, 4:152, 5:153, 6:154, 7:155, 8:156, 9:157, 10:158, 11:159, 12:160, 13:161, 14:162, 15:163			9632	TIBTID4	e12-30-01					0.000		
TIBTID:24	R	0.0	0.0	s1d06-05-01	1:134, 2:135, 3:136, 4:137, 5:138, 6:139, 7:140, 8:141, 9:142, 10:143, 11:144, 12:145, 13:146, 14:147, 15:148			9632	TIBTID5	e13-10-01					0.000		
TIBTID:24	R	0.0	0.0	s1d06-07-01	1:118,74, 2:119,75, 3:120,76, 4:121,77, 5:122,78, 6:123,79, 7:124,80, 8:125,81			9632	TIBTID6a	e13-15-01					0.000		
TIBTID:24	R	0.0	0.0	s1d06-07-01	9:126,82, 10:127,83, 11:128,84, 12:129,85, 13:130, 14:131, 15:132, 16:133			9632	TIBTID6b	e15-13-01					0.000		
TIBTID:24	R	0.0	0.0	s1d06-01-01	1:86,87, 2:88,89, 3:90,91, 4:92,93, 5:94,95, 6:96,97, 7:98,99, 8:100,101			9632	TIBTID1a	e13-16-01					0.000		
TIBTID:24	R	0.0	0.0	s1d06-01-01	9:102, 10:104,105, 11:106,107, 12:108,109, 13:110,111, 14:112,113, 15:114,115, 16:116,117			9632	TIBTID1b	e13-17-01					0.000		
TIBTID:24	R	0.0	0.0	s1d06-02-01	1:50, 2:51, 3:52, 4:53, 5:54, 6:55, 7:56, 8:57, 9:58, 10:59, 11:60, 12:61			0	9632	TIBTID2	e13-22-01 [59]				0.000		
TIBTID:24	R	0.0	0.0	s1d06-03-01	1:62, 2:63, 3:64, 4:65, 5:66, 6:67, 7:68, 8:69, 9:70, 10:71, 11:72, 12:73				9632	TIBTID3	e13-25-01				0.000		
Summary				frlpc	geoSlot:SrcId				min	Trg	max	Trg	FB	RU	rate (kHz)	thru	
															0.000		

screenshot still from classic DAQView, appearance is slightly different in current DAQ2View

DAQView – Who Blocks the Run?

ECAL is 100% in Warning

FED 602 is in warning
and last event is 9605

There's backpressure
from DAQ

Rate is 0 kHz

FED 59 has not sent any data

FED 59 is the culprit → Talk to Tracker expert

RU waits for data from FED 59

DAQView – DAQ backpressure

FED BUILDER										E V B			
TTCPC	T	%W	%B	frlpc	geoSlot:SrcId	/	TTSOnlyFEDSrcId	min Trg	max Trg	FB Name	RU	rate (kHz)	#evts requested
ccpm-pri:59	-	-	-	s1d06-40-01	1:1024			9632	9632	TCDS	e14-10-01	9.796	10
EB:-1	R	0.0	0.0	s2d10-11-01	1:610, 2:611, 3:612, 4:616, 5:617, 6:618, 7:613, 8:614, 9:615 662			9632	9632	EB-1	e12-18-01	9.796	0
EB:-1	R	0.0	0.0	s2d10-20-01	1:625, 2:626, 3:627, 4:619, 5:620, 6:621, 7:622, 8:623, 9:624 662			9632	9632	EB-2	e14-28-01	9.796	0
EE:+:2	-	?	?	s2d10-17-01	1:648, 2:649, 3:650, 4:654, 5:646, 6:647, 7:651, 8:652, 9:653 664					EE+	e12-19-01	9.796	0
EE:-:3	W	50.0	0.0	s2d10-09-01	1:606, 2:607, 3:608, 4:609, 5:601, 6:W:50.0%W602<50.0%9605, 7:603, 8:604, 9:605 661			9605	9632	EE-	e12-10-01	9.796	0
GCT:11	-	?	?	s1d06-29-01	1:745								
GT:33	R	0.0	0.0	s1d06-27-01	1:812, 2:813 811			9632	9632	TRG	e15-22-01	9.796	0
RETRI:4	-	?	?	-	810			-	-				
Summary				frlpc	geoSlot:SrcId			min Trg	max Trg	FB Name	RU	rate (kHz)	#evts requested
												9.796	Σ 10

screenshot still from classic DAQView,
appearance is slightly different in current
DAQ2View

DAQView – DAQ backpressure

ECAL is 50%
in Warning

There's backpressure
from DAQ

The rate is 10 kHz

Very few events
requested by BUs

(Table Help)		FED BUILDER				E V B					
		geoSlot:SrcId	/	TTSOnlyFEDSrcId		min Trg	max Trg	FB Name	RU	rate (kHz)	#evts requested
TTCP	T %W %B frlpc	s1d06-40-01		1:1024		9632	9632	TCDS	e14-10-01	9.796	10
cpm-pri:59	- - -					9632	9632	EB-1	e12-18-01	9.796	0
EB:-1	R 0.0 0.0	s2d10-11-01		1:610, 2:611, 3:612, 4:616, 5:617, 6:618, 7:613, 8:614, 9:615 662		9632	9632	EB-2	e14-28-01	9.796	0
EB:-1	R 0.0 0.0	s2d10-20-01		1:625, 2:626, 3:627, 4:619, 5:620, 6:621, 7:622, 8:623, 9:624 662		9632	9632	EE+	e12-19-01	9.796	0
EE:+:2	- ? ?	s2d10-17-01		1:648, 2:649, 3:650, 4:654, 5:646, 6:647, 7:651, 8:652, 9:653 664		-	-	EE-	e12-10-01	9.796	0
EE:-3	W 50.0 0.0	s2d10-09-01		1:606, 2:607, 3:608, 4:609, 5:601, 6:W:50.0%W602<50.0%9605, 7:603, 8:604, 9:605 661		9605	9632	EE-	e15-22-01	9.796	0
GCT:11	- ? ?	s1d06-29-01		1:745		9632	9632	TRG	-	-	
GT:33	R 0.0 0.0	s1d06-27-01		1:812, 2:813 811		-	-	-	-	-	
RETRI:4	- ? ?	-		810		-	-	-	-	-	
Summary	frlpc	geoSlot:SrcId				min Trg	max Trg	FB Name	RU	rate (kHz)	#evts requested
						9632	9632			9.796	Σ 10

DAQView – DAQ backpressure

ECAL is 50%
in Warning

There's backpressure
from DAQ

The rate is 10 kHz

Very few events
requested by BUs

FED BUILDER										E V B			
	T	%W	%B	frlpc	geoSlot:SrcId	/	TTSSonlyFEDSrcId	min Trg	max Trg	FB Name	RU	rate (kHz)	#evts requested
TTCP cpm-pri:59	-	-	-	s1d06-40-01	1:1024			9632	9632	TCDS	e14-10-01	9.796	10
EB:-1	R	0.0	0.0	s2d10-11-01	1:610, 2:611, 3:612, 4:616, 5:617, 6:618, 7:613, 8:614, 9:615 662			9632	9632	EB-1	e12-18-01	9.796	0
EB:-1	R	0.0	0.0	s2d10-20-01	1:625, 2:626, 3:627, 4:619, 5:620, 6:621, 7:622, 8:623, 9:624 662			9632	9632	EB-2	e14-28-01	9.796	0
EE+:2	-	?	?	s2d10-17-01	1:648, 2:649, 3:650, 4:654, 5:646, 6:647, 7:651, 8:652, 9:653 664					EE+	e12-19-01	9.796	0
EE:-3	W	50.0	0.0	s2d10-09-01	1:606, 2:607, 3:608, 4:609, 5:601, 6:W:50.0%W602<50.0%9605, 7:603, 8:604, 9:605 661			9605	9632	EE-	e12-10-01	9.796	0
GCT:11	-	?	?	s1d06-29-01	1:745								
GT:33	R	0.0	0.0	s1d06-27-01	1:812, 2:813 811			9632	9632	TRG	e15-22-01	9.796	0
RETRI:4	-	?	?	-	810			-	-				
Summary				frlpc	geoSlot:SrcId			min Trg	max Trg	FB Name	RU	rate (kHz)	#evts requested
												9.796	$\Sigma 10$

B U I L D E R U N I T (B U)																							
BU	rate (kHz) thru (MB/s)	size (kB)	#events	#evts in BU	priority	#req.	sent	#req.	used	#req.	blocked	#FUs	HLT	#FUs crash	#FUs stale	#FUs cloud	RAM disk usage	#files	#LS w/ files	current LS	#LS for HLT	#LS out HLT	
bu-c2d31-10-01	Failed	0.000	0.0 0.000±0.000	258336	0	1	0	0	0	20	144	0	240	0	10.4% of 235GB	2759	82	82	0	0	0		
bu-c2d33-30-01	Failed	0.000	0.0 0.000±0.000	264544	64	1	0	0	0	20	432	0	96	0	9.5% of 235GB	2825	83	83	1	0	0		
bu-c2d34-30-01		0.040	23.8 455.9±0.0	216032	32	0	0	0	0	20	144	0	0	0	0.2% of 235GB	2334	83	83	0	0	4		
bu-c2d35-10-01		0.053	20.3 455.9±0.0	248672	0	1	7	0	0	13	48	0	336	0	7.8% of 235GB	2659	83	84	3	0	0		
bu-c2d36-10-01	Failed	0.000	0.0 0.000±0.000	263040	0	1	0	0	0	20	48	0	336	0	9.8% of 235GB	2810	83	83	1	0	0		
Summary		rate (kHz) thru (MB/s)	size (kB)	#events	#evts in BU	priority	#req.	sent	#req.	used	#req.	blocked	#FUs	HLT	#FUs crash	#FUs stale	#FUs cloud	RAM disk usage	#files	#LS w/ files	current LS	#LS for HLT	#LS out HLT
Σ BUs = 2 / 5		$\Sigma 0.093$	$\Sigma 43.8$	$\Sigma 455.9\pm 0.0$	$\Sigma 12876893$	$\Sigma 96$	1	$\Sigma 7$	$\Sigma 0$	$\Sigma 93$	$\Sigma 8112$	$\Sigma 0$	$\Sigma 8176$	$\Sigma 0$	0.8% of 11757GB	$\Sigma 137563$	83	84	3	4			

DAQView – DAQ backpressure

ECAL is 50% in Warning

There's backpressure from DAQ

The rate is 10 kHz

Very few events requested by BUs

				FED BUILDER													
				geoSlot:SrcId	/	TTSOnlyFEDSrcId		min Trg	max Trg	FB Name	RU	EVB rate (kHz)	#evts requested				
TTCP cpm-pri:59	T	%W	%B	frlpc		1:1024				TCDS	e14-10-01	9.796	10				
EB:-1	R	0.0	0.0	s2d10-11-01		1:610, 2:611, 3:612, 4:616, 5:617, 6:618, 7:613, 8:614, 9:615 662				EB-1	e12-18-01	9.796	0				
EB:-1	R	0.0	0.0	s2d10-20-01		1:625, 2:626, 3:627, 4:619, 5:620, 6:621, 7:622, 8:623, 9:624 662				EB-2	e14-28-01	9.796	0				
EE:+2	-	?	?	s2d10-17-01		1:648, 2:649, 3:650, 4:654, 5:646, 6:647, 7:651, 8:652, 9:653 664				EE+	e12-19-01	9.796	0				
EE:-3	W	50.0	0.0	s2d10-09-01		1:606, 2:607, 3:608, 4:609, 5:601, 6:W50.0%W602<50.0%9605, 7:603, 8:604, 9:605 661				EE-	e12-10-01	9.796	0				
GCT:11	-	?	?	s1d06-29-01		1:745											
GT:33	R	0.0	0.0	s1d06-27-01		1:812, 2:813 811				TRG	e15-22-01	9.796	0				
RETRI:4	-	?	?	-		810											
Summary				frlpc		geoSlot:SrcId											
								min Trg	max Trg	FB Name	RU	rate (kHz)	#evts requested				
												9.796	Σ 10				

Some BUs have Failed

Resources blocked

Many FUs are stale

Data queued on HLT output

BUILDER UNIT (BU)																		
BU	rate (kHz) thru (MB/s)	size (kB)	#events	#evts in BU	priority	#req.	sent	#req.	used	#req.	blocked	#FUs	HLT	#FUs crash	#FUs stale	#FUs cloud	RAM disk usage	#files
bu-c2d31-10-01	Failed	0.000	0.0 0.000±0.000	258336	0	1	0	0	0	20	144	0	240	0	10.4% of 235GB	2759	82	82 0
bu-c2d33-30-01	Failed	0.000	0.0 0.000±0.000	264544	64	1	0	0	0	20	432	0	96	0	9.5% of 235GB	2825	83	83 0
bu-c2d34-30-01		0.040	23.8 455.9±0.0	216032	32	0	0	0	0	20	144	0	0	0	0.2% of 235GB	2334	83	83 0
bu-c2d35-10-01		0.053	20.3 455.9±0.0	248672	0	1	7	0	0	13	48	0	336	0	7.8% of 235GB	2659	83	84 3
bu-c2d36-10-01	Failed	0.000	0.0 0.000±0.000	263040	0	1	0	0	0	20	48	0	336	0	9.8% of 235GB	2810	83	83 1
Summary			rate (kHz) thru (MB/s)	size (kB)	#events	#evts in BU	priority	#req.	sent	#req.	used	#req.	blocked	#FUs	HLT	#FUs crash	#FUs stale	#FUs cloud
Σ BUs = 2 / 5			Σ 0.093	Σ 43.8 455.9±0.0	Σ 12876893	Σ 96	1	Σ 7	Σ 0	Σ 93	Σ 8112	Σ 0	Σ 8176	Σ 0	8.2% of 11757GB	Σ 137563	83	84 3

Data queued for HLT

FFF output bandwidth is too high → HLT is accepting too many events
 → Check with trigger shifter for high L1 rates or call HLT DOC

- DAQ FM goes into ‘Running Degraded’ when BUs fail
- After massive failures on the FFF/HLT, DAQ oncall has to be called

screenshot still from classic DAQView,
 appearance is slightly different in current
 DAQ2View

DAQ Expert

- Automatic detection of problems in the event builder
 - and instructions to fix the problem
- Web application
- Two main components:
 - Dashboard
 - current status/problem and instructions how to fix it
 - recent problems
 - recent sound messages and state changes
 - Browser
 - timeline of error conditions and other information
 - mainly for DAQ DOC
- Replaces the Run I DAQ Doctor
- Core logic: classic ‘flow chart’ (see backup slides)
 - <https://twiki.cern.ch/twiki/pub/CMS/ShiftNews/DAQStuck5.pdf>
 - however not maintained anymore, conditions and solutions were and will be added to the DAQExpert
- DAQExpert has been used throughout 2017, your feedback is welcome !

the first place to look at when triggers stop unexpectedly !

DAQ expert

- introduction/documentation at: <http://daq-expert.cern.ch/>



What is DAQ Expert?

The main goal is to increase data taking efficiency.

The main tasks are to perform automatic recovery and to automate routine actions in CMS currently done by the operator.

First version is suggesting the actions to shifters.

[See what expert suggests](#)

tunnel to CMS cluster necessary

DAQ Expert dashboard

<http://daq-expert.cms/nm/dashboard.jsp>

DAQ Expert  Dashboard  Browser  Archive

All ok

overall status
(nothing to worry about at the moment)

DAQExpert has no suggestion at the moment

Recent problems

TTS Deadtime	2018-02-27 18:02:02	 3 min
TTS Deadtime during running is 100%, the threshold is 2.0% Show steps		
Partition problem	2018-02-27 18:02:02	 3 min
Partition ES- in ES subsystem is in ERROR TTS state. It's blocking trigger. Show steps		
Deadtime	2018-02-27 18:02:02	 3 min
Deadtime during running is 100%, the threshold is 8.0% Show steps		
Stuck after fixing-soft-error	2018-02-27 18:02:02	 3 min
Level zero is stuck after fixing soft error. This is caused by subsystem(s) ES Show steps		

recent problems and proposed solutions

Recent events

Started: Run ongoing	2018-03-01 09:17:30
Run is ongoing  New run	according to TCDS state
TCDS State: Running	2018-03-01 09:17:30
New TCDS state identified	
Level Zero State: Running	2018-03-01 09:17:30
New Level zero state identified	
DAQ state: Running	2018-03-01 09:17:26
New DAQ state identified	
DAQ state: Starting	
New DAQ state identified	
Level Zero State: Star	
New Level zero state ide	
Level Zero State: Cor	
New Level zero state ide	
Run: 310754	2018-03-01 09:16:06
New run has been identified	

all recent events
(includes state changes and sound messages)

DAQ Expert dashboard

DAQ Expert Dashboard Browser Archive

problem is currently active

CURRENT PROBLEM

overall status: there is a problem now which you need to solve !

Fed stuck

TTCP EB+ of ECAL subsystem is blocking trigger, it's in BUSY TTS state, The problem is caused by FED 632 in BUSY

Steps to recover

Stop the run

Red & green recycle the **ECAL**

Start new run (try up to 2 times)

Problem fixed: Make an e-log entry. Call the DOC of the subsystem ECAL to inform

Problem not fixed: Call the DOC for the subsystem ECAL

follow these steps to fix the problem

Recent events

Run: 302492  2018-03-01 10:59:02

New run started!

New run has been identified

DAQ state: Running

New DAQ  2018-03-01 10:59:01

state identified

TCDS State: Running

2018-03-01 10:59:00

New TCDS state identified

symptom
s

Recent problems

Partition deadtime

2018-03-01 10:59:12 

Deadtime of partition(s) CSC- in subsystem(s) CSC is 25.1% the threshold is 5.0% [Show steps](#)

Deadtime during run

2018-03-01 10:59:05 

There is 99.8% deadtime during run. [Show steps](#)

DAQ Expert dashboard demo

- Example walkthrough: <http://daq-expert.cern.ch/dashboard-demo.html>
- shows:
 - normal ('happy') state
 - an event that generates a sound in the control room
 - an event that generates spoken text in the control room
 - a problem without known solution (i.e. no recovery suggestions)
 - a new problem which is considered more important than the currently active problem (problems overlapping in time)
- have a look at this in your browser after the tutorial !

DAQ Expert browser

Confused? Try the help button!

Simple Extended LMFactory **beta**

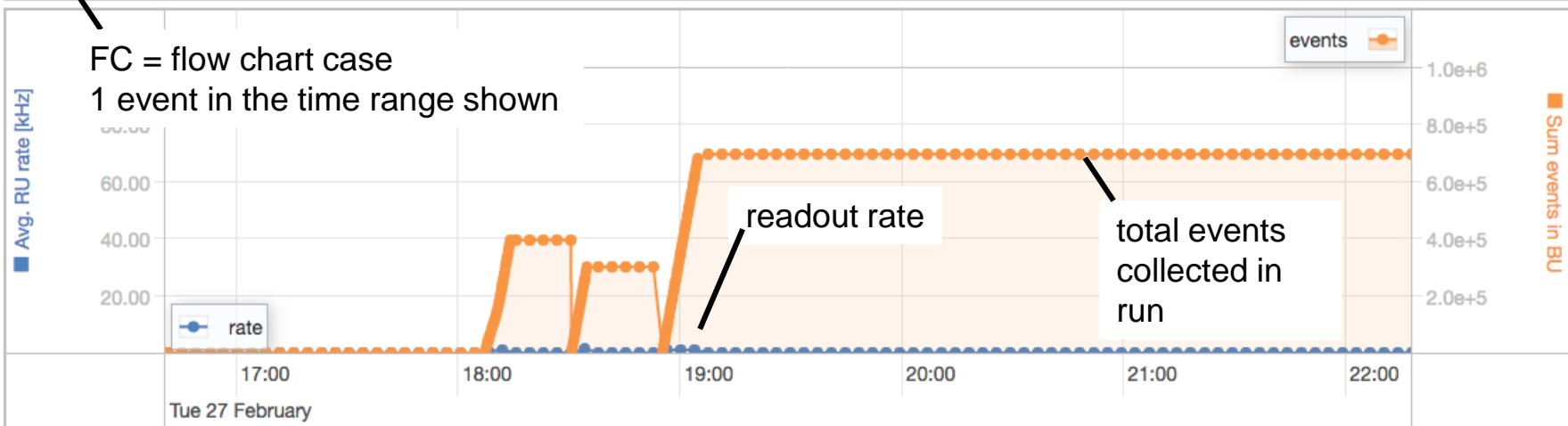
time axis
(scroll to zoom in/out, pan to move)

DAQView Share External Links **Help ?**

Tue 27 February	
	17:00 18:00 19:00 20:00 21:00 22:00
Beam (1)	NO BEAM
Machine (1)	SHUTDOWN
BAActive (0)	
Session (1)	299288
Run NO (4)	310484 310616 310623 310630
DAQ (17)	Configured Ru Configured Ri Configure Run Configured
Downtime (0)	
FC (1)	1
Ver. (1)	2.9.16

LHC and CMS DAQ state changes etc.

downtime / problems



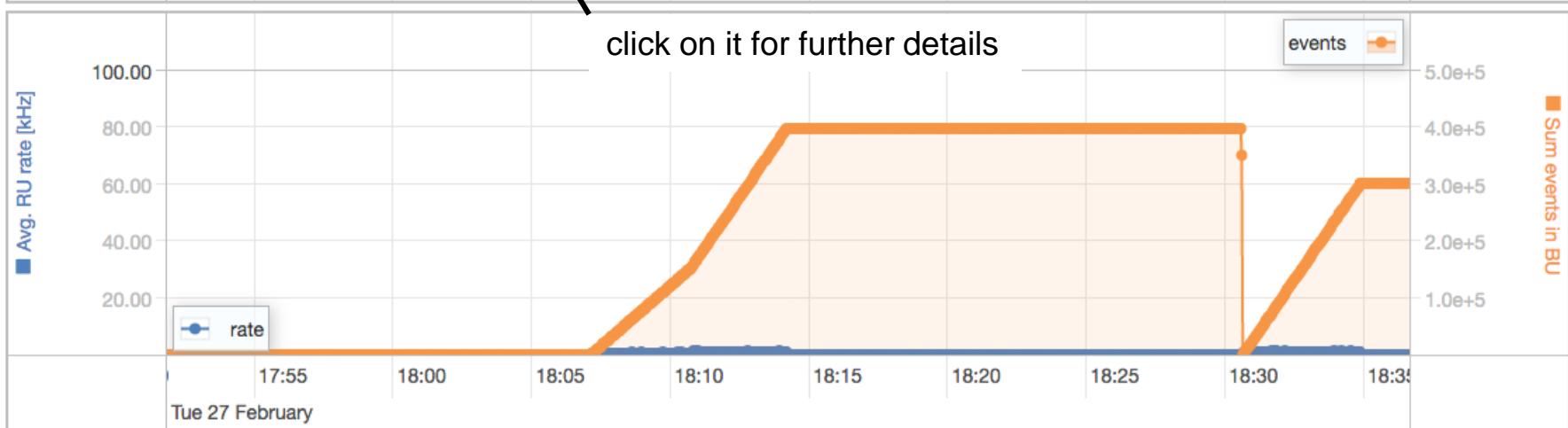
DAQ Expert browser

Simple Extended LMFactory **beta**

DAQView Share External Links Help

	Tue 27 February										
	17:55	18:00	18:05	18:10	18:15	18:20	18:25	18:30	18:35		
Beam (1)	NO BEAM										
Machine (1)	SHUTDOWN										
BActive (0)											
Session (1)	299288										
Run NO (3)	310484	310616				310623					
DAQ (14)	Configured	Running	C _c ₃	Running	Configured	Running	Configured	Running	Configured		
Downtime (0)											
FC (1)	Partition										
Ver. (1)	2.9.16										

click on it for further details



Avg. RU rate [kHz]

rate

events

Sum events in BU

Tue 27 February

DAQ Expert browser

DAQ Expert Dashboard Browser Archive

Condition details

Partition problem

Partition ES- in ES subsystem is in ERROR TTS state. It's blocking trigger.

Duration: 3:39 4 minutes

Action

1. Issue a TTCHardReset
2. If DAQ is still stuck after a few seconds, issue another TTCHardReset (HardReset includes a Resync, so it may be used for both OOS and ERROR)
3. Problem fixed: Make an e-log entry
4. Problem not fixed: Try to recover: Stop the run. Red & Green recycle the subsystem `ES`. Start a new run. Try up to 2 times
5. Problem still not fixed after recover: Call the DOC of `ES` (for the partition in `ERROR`)
6. Problem fixed after recover: Make an e-log entry. Call the DOC of `ES` (for the partition in `ERROR`) to inform

events Sum events in BU

Avg. RU rate [kHz]

rate

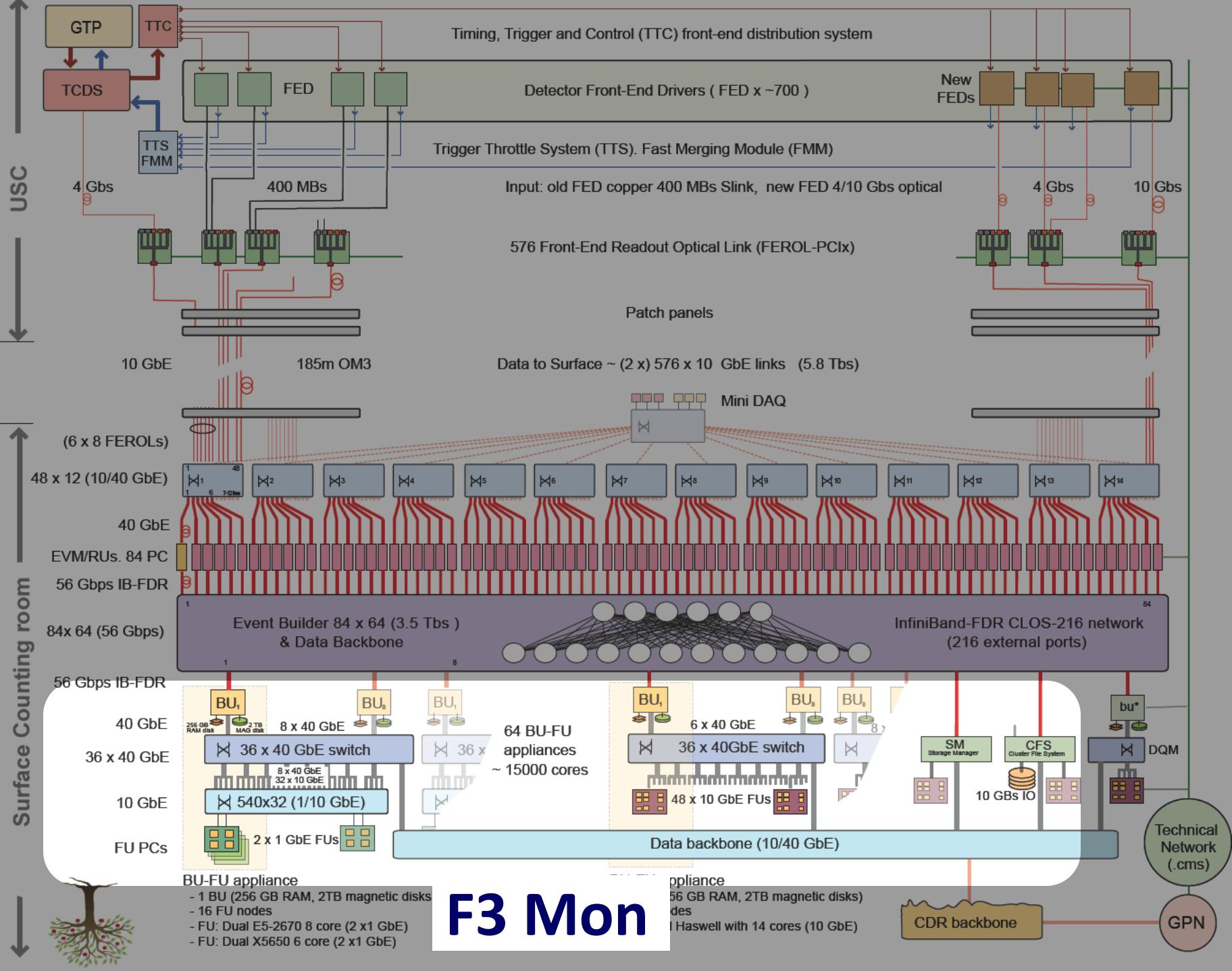
17:55 18:00 18:05 18:10 18:15 18:20 18:25 18:30 18:35

Tue 27 February

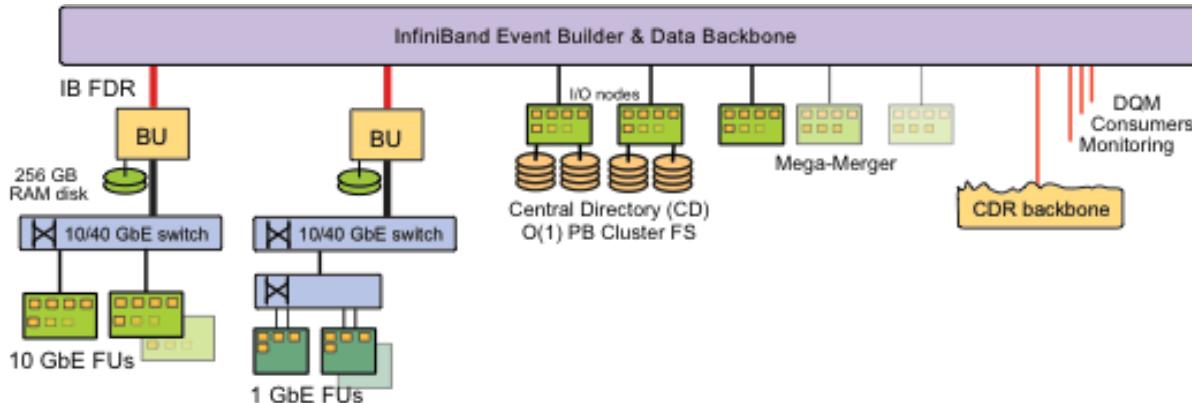
18:30 18:35

310623

Running Config



File-based Filter Farm (FFF/F3)



- Filter Units (FUs) run the CMSSW processes selecting events for permanent storage
 - Each FU runs multiple, multi-threaded CMSSW instances
 - Accepted events are written to the local disk
- The Storage and Transfer System aggregates files (event data, DQM histograms & metadata)
 - Micro-merger on each FU aggregates the data from all processes on the FU
 - Mini-merger on the BU aggregates the data from all FUs
 - Macro-merger(s) aggregate the data from all BUs
 - Data are aggregated per stream and luminosity section
 - DQM data might suffer delays when merging is lagging behind
- Error stream contains events which crashed the CMSSW process
 - Backtrace is available from F3 mon (see next slide)
 - CMSSW processes are restarted after a crash a few times, after that they are “quarantined”
 - DAQ oncall needs to clean up the FFF when this happens
 - If there is a low rate of crashes, the HLT DOC should be notified

F3 Mon

Errors from HLT

Both boxes must be green

Confused? Try the guide!

Active run

F3 Mon

Run Info: 272864

StartTime: May 9 2016, 14:42
EndTime: ongoing
Streams: ALCALUMIPIXELS, ALCAPHISYM, Calibration, DQM, DOMCalibration, DQMEventDisplay, DQMHistograms, EcalCalibration, Error, ExpressCosmics, HLTRates, L1Rates, NanoDST, Physics, RPCMON
LS: 60

Disks Information

- BU Ramdisks: 0.31% used
- BU Outdisks: 1.35% used
- FU Outdisks: 0.15% used

Run List # Runs: 2225

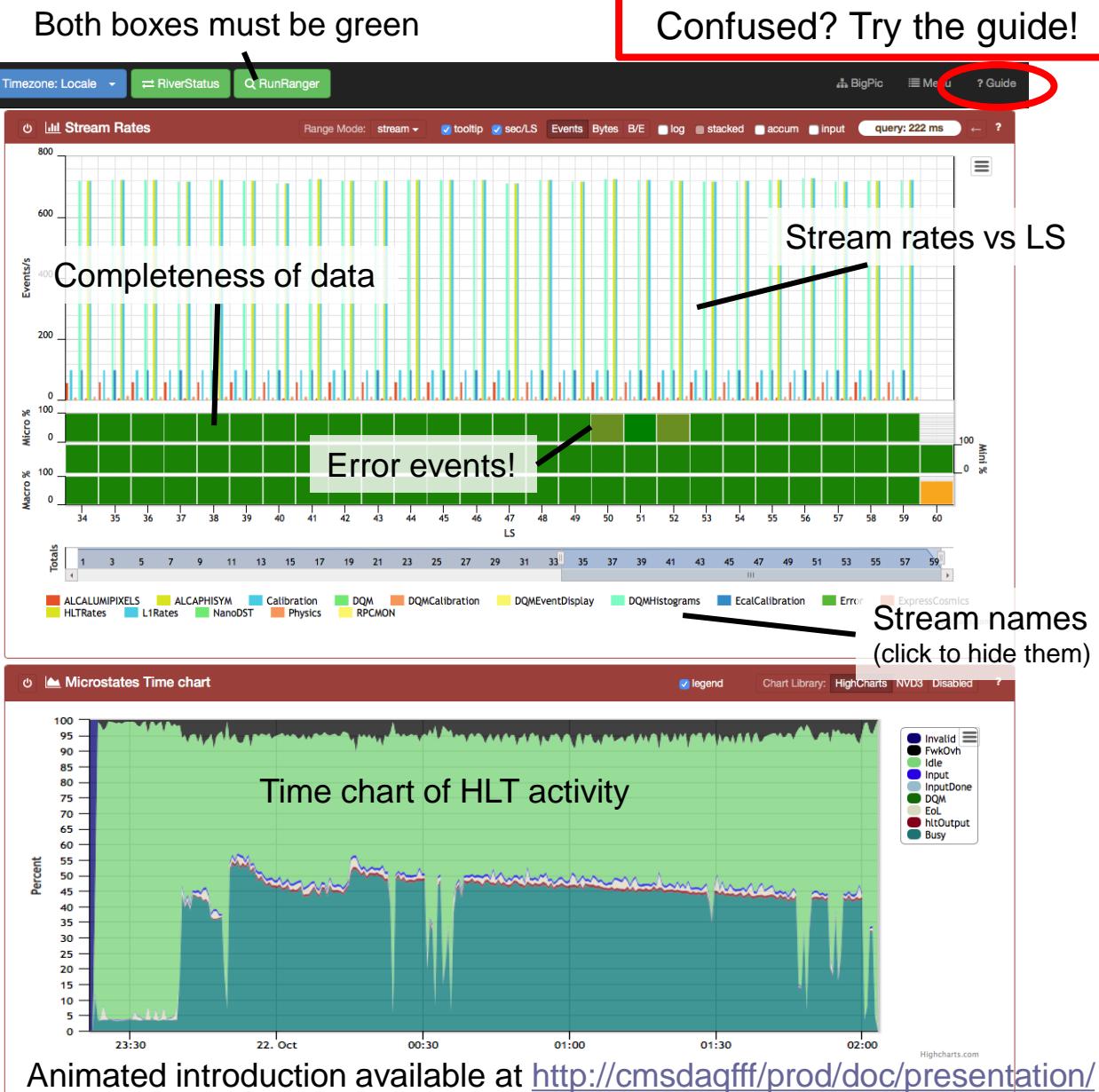
ID	Start	End
272864	09/05/16 14:42	ongoing
272858	09/05/16 14:11	09/05/16 14:39
272855	09/05/16 14:03	09/05/16 14:06
272854	09/05/16 13:31	09/05/16 14:00
272853	09/05/16 13:18	09/05/16 13:28

River List

Name	Host	System	Status
main	ncsrv-c2e42-13-02	cdaq	running
main	ncsrv-c2e42-13-02	minidaq	running
272864	ncsrv-c2e42-13-02	cdaq	running
main	ncsrv-c2e42-19-02	dv	running

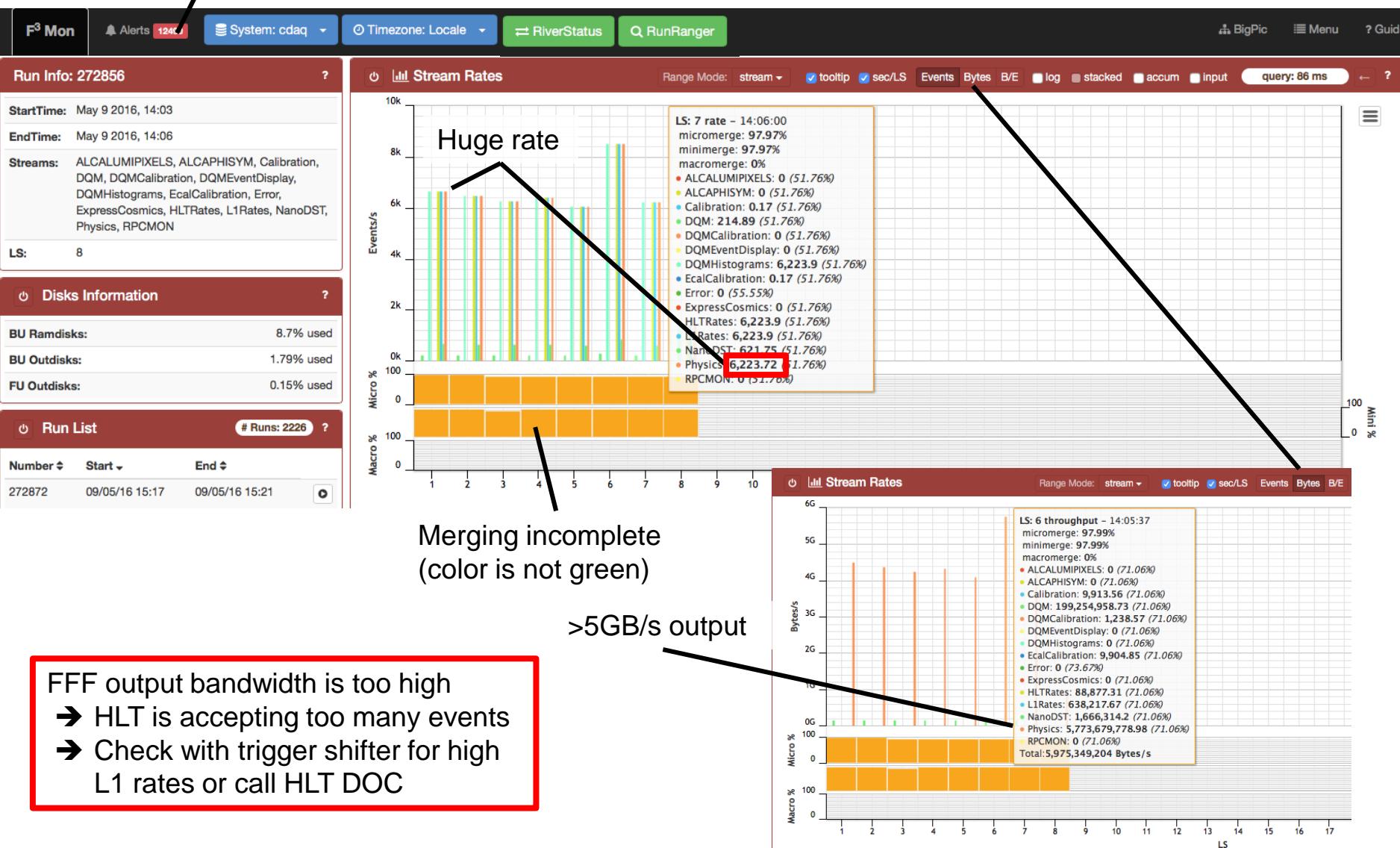
List of recent runs

Access old runs



F3 Mon – Bad Situation

Many alerts



F3 Mon – Alerts Panel

Click here to open alerts panel

F³ Mon
 Alerts 214
 System: cdaq
 Timezone: Locale
 RiverStatus
 RunRanger
 BigPic
 Menu
? Guide

Run Info: 272971

StartTime: May 10 2016, 12:58

EndTime: May 10 2016, 13:40

Streams: ALCALUMIPIXELS, ALCAPHISYM, Calibration, DQM, DQMCalibration, DQMEventDisplay, DQMHistograms, EcalCalibration, Error, ExpressCosmics, HLTRates, L1Rates, NanoDST, Physics, RPCMON

LS: 107

Log Messages

search...				1 2 3 ... 11 >
Host	Pid	Severity	Message	HostTime
			/lib/slc6_amd64_gcc493/libFWCoreFramework.so #4 0x00007f5f2484fc54 in edm::StreamProcessingTask::execute() () from /opt/offline /slc6_amd64_gcc493/cms/cmssw/CMSW_8_0_7/lib/slc6_amd64_gcc493/libFWCoreFramework.so [...]	
fu-c2d41-26-02		ERROR	run - RUN:272971 - process 92761 on resource(s) ['core23', 'core8', 'core19', 'core42'] exited with signal -11, retries left: 5	2016-05-10 13:25:48
fu-c2e38-24-03	65483	FATAL	A fatal system signal has occurred: segmentation violation The following is the call stack containing the origin of the signal. Thread 8 (Thread 0x7f4908b7f700 (LWP 65791)): #0 0x0000003bdfa0f2ad in waitpid () from /lib64/libpthread.so.0 #1 0x00007f4917892b27 in edm::service::cmssw_stacktrace_fork() () from /opt/offline /slc6_amd64_gcc493/cms/cmssw/CMSW_8_0_7/lib/slc6_amd64_gcc493 /pluginFWCoreServicesPlugins.so #2 0x00007f4917893462 in edm::service::InitRootHandlers::stacktraceHelperThread() () from /opt/offline/slc6_amd64_gcc493/cms/cmssw/CMSW_8_0_7/lib/slc6_amd64_gcc493 /pluginFWCoreServicesPlugins.so #3 0x00007f4919e7cac0 in execute_native_thread_routine () from /opt/offline/slc6_amd64_gcc493 /external/gcc/4.9.3/lib64/libstdc++.so.6 #4 0x0000003bdfa079d1 in start_thread () from /lib64/libpthread.so.0 [...] Thread 7 (Thread 0x7f48fce7f700 (LWP 65803)): #0 0x0000003bdfa0b5bc in pthread_cond_wait@@GLIBC_2.3.2 () from /lib64/libpthread.so.0 #1 0x00007f4919e77758 in __gthread_cond_wait(pthread_cond_t*, pthread_mutex_t*) () from /opt/offline/slc6_amd64_gcc493/external/gcc/4.9.3/lib64/libstdc++.so.6 #2 0x00007f4919e777f6 in std::condition_variable::wait(std::unique_lock<T>) () from /opt/offline /slc6_amd64_gcc493/external/gcc/4.9.3/lib64/libstdc++.so.6	2016-05-10 13:25:18

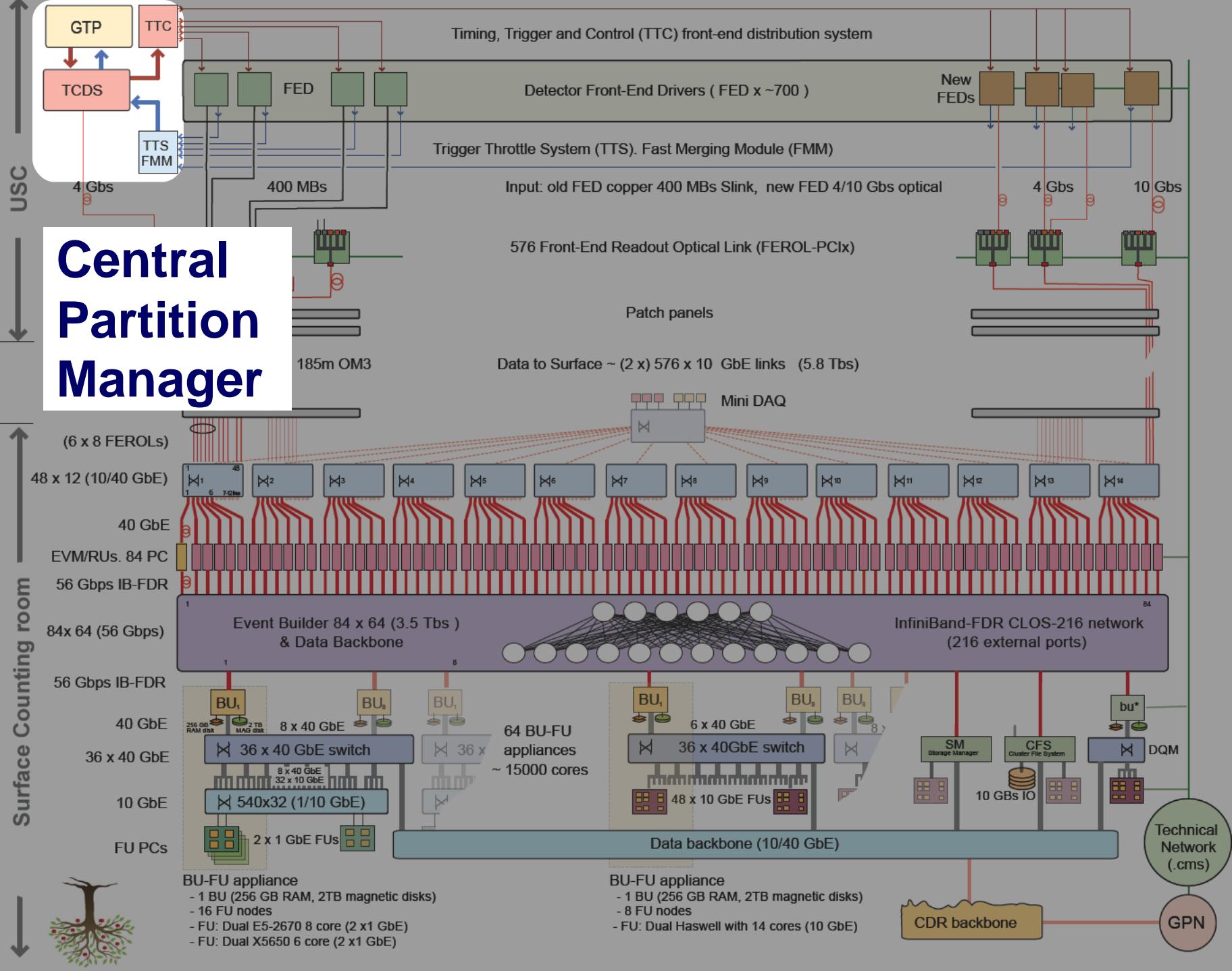
Storage Manager Page 1

https://cmsonline.cern.ch/webcenter/portal/cmsonline/pages_common/storagemanager

- Gives an overview of the data transfer to tier 0 for recent runs
 - Number of files, sizes and event rates per stream
 - Totals per run
- Check that files are injected, transferred and checked
 - Suspicious values are color coded
 - in case of problems: make an elog entry and send an email to cms-storagemanager-alerting@cern.ch

Last Streams

Last Injection Time (UTC)	Run	Stream	Injected	Transf	Checked	Repacked	Deleted	Corrupted	Total	Total Size [GB]	Total Events Built
01.03.2018 09:07:50	310754	ExpressCosm...	0	0	22	107	0	0	129	0.10	14851
01.03.2018 09:07:48	310754	Physics	0	0	126	0	0	0	126	35.97	209654
01.03.2018 09:07:48	310754	NanoDST	0	0	125	0	0	0	125	0.17	45785
01.03.2018 09:07:48	310754	Calibration	0	0	4	121	0	0	125	5.26	290223
01.03.2018 08:14:27	310753	Physics	0	8	0	0	0	0	8	0.01	1661
01.03.2018 08:14:25	310753	NanoDST	0	8	0	0	0	0	8	0.00	59
01.03.2018 08:14:25	310753	Calibration	0	8	0	0	0	0	8	0.31	16846
01.03.2018 08:14:23	310753	ExpressCosm...	0	10	0	0	0	0	10	0.01	1035
27.02.2018 18:05:16	310630	Physics	0	0	0	26	26	0	26	0.19	20404
27.02.2018 18:05:13	310630	ExpressCosm...	0	0	0	26	26	0	26	0.05	6886





TCDS

- Combines the pre-LS1:

- Trigger Control System (TCS)

The conductor of all CMS triggering and data-taking

- Trigger Timing and Control (TTC)

The distributor of clock, L1As, and synchronisation signals

- Trigger Throttling System (TTS)

The feedback of readiness states from FEDs to TCS

- Many-legged creature:

- The ‘head’ is the Central Partition Manager (controlled by central DAQ)

- Many different legs (i.e., partitions) across the different subsystems (controlled by the subsystems)

TCDS Central

<http://tcds-control-central.cms:2000/urn:xdaq-application:lid=100>

 XDAQ online

tcdsp5     

TCDSCentral 'tcds-central'

Dump system state

Configuration Application status TCDS 'tcds_central' applications TCDS 'tcds_tcmi' applications TCDS 'tcds_pri' applications TCDS 'tcds_sec' applications

Application status

Application information

Application state

Info on the state of the XDAQ application

Application FSM state	n/a
Application status	All OK
Problem description	-
RunControl session in charge	n/a
Application mode	Operations mode
Uptime	0:21:18:51:35
Latest monitoring update time	2016-05-09 14:56:00 UTC
Latest monitoring update duration (s)	0.502



History

Application status and command history

Timestamp	Message
2016-04-26 10:47:16 UTC	Revoking 'MonitoringAlarm_lid100' alarm
2016-04-26 10:44:49 UTC	Raising 'MonitoringAlarm_lid100' alarm
2016-04-17 20:22:35 UTC	Revoking 'MonitoringAlarm_lid100' alarm
2016-04-17 20:21:46 UTC	Raising 'MonitoringAlarm_lid100' alarm
2016-04-17 20:04:44 UTC	Revoking 'MonitoringAlarm_lid100' alarm

TCDS Central

<http://tcds-control-central.cms:2000/urn:xdaq-application:lid=100>



tcdsp5    

TCDSCentral 'tcds-central'

Dump system state

Configuration Application status TCDS 'tcds_central' applications **TCDS 'tcds_ttcmi' applications** TCDS 'tcds_pri' applications TCDS 'tcds_sec' applications

TCDS 'tcds_ttcmi' applications
Overview of all TCDS 'tcds_ttcmi' applications

Application overview

	Service	URL	Hardware lease owner	FSM state	Application state	Problem description	Latest update (UTC)
	rf2ttc	http://tcds-control-mi.cms:2010/urn:xdaq-application:lid=100	279182	Enabled	All OK	-	2016-05-09 14:56:28
	rfrxd1	http://tcds-control-mi.cms:2010/urn:xdaq-application:lid=200	279182	Enabled	All OK	-	2016-05-09 14:56:27
	rfrxd2	http://tcds-control-mi.cms:2010/urn:xdaq-application:lid=201	279182	Enabled	All OK	-	2016-05-09 14:56:28
	bobr	http://tcds-control-mi.cms:2010/urn:xdaq-application:lid=300	279182	Enabled	All OK	-	2016-05-09 14:56:28

TTC machine interface applications

Provide the connection between the LHC RF and timing signals and CMS.

TCDS Central

<http://tcds-control-central.cms:2000/urn:xdaq-application:lid=100>

XDAQ online

TCDSCentral 'tcds-central'

Dump system state

Configuration Application status TCDS 'tcds_central' applications TCDS 'tcds_ttcmi' applications **TCDS 'tcds_pri' applications** (highlighted with a red box) TCDS 'tcds_sec' applications

TCDS 'tcds_pri' applications

Overview of all TCDS 'tcds_pri' applications

Application overview

Service	URL	Hardware lease owner	FSM state	Application state	Problem description	Latest update (UTC)
cpm-pri	http://tcds-control-cpm-pri.cms:2050/urn:xdaq-application:lid=100	279182	Zeroing	All OK	-	2016-05-09 14:57:11
lpm-tk	http://tcds-control-tk-pri.cms:2102/urn:xdaq-application:lid=201		Halted	All OK	-	2016-05-09 14:57:10
ici-tecm	http://tcds-control-tk-pri.cms:2102/urn:xdaq-application:lid=301	tecm_GenericTCDSSupervisor_123456	Enabled	All OK	-	2016-05-09 14:57:11
ici-tecp	http://tcds-control-tk-pri.cms:2102/urn:xdaq-application:lid=302	tecp_GenericTCDSSupervisor_123456	Enabled	All OK	-	2016-05-09 14:57:10
ici-tbtid	http://tcds-control-tk-pri.cms:2102/urn:xdaq-application:lid=303	tbtid_GenericTCDSSupervisor_123456	Enabled	All OK	-	2016-05-09 14:57:10
ici-tob	http://tcds-control-tk-pri.cms:2102/urn:xdaq-application:lid=304	tob_GenericTCDSSupervisor_123456	Enabled	All OK	-	2016-05-09 14:57:10
ici-fpix	http://tcds-control-tk-pri.cms:2102/urn:xdaq-application:lid=305	PixelTCDS	Enabled	All OK	-	2016-05-09 14:57:10

Central Partition Manager (CPM)

Drives CMS. Controls triggers, calibration sequence, timing and synchronisation, ...

This application should tell you what and how many triggers are flowing, or why not.

apve-tob	http://tcds-control-tk-pri.cms:2102/urn:xdaq-application:lid=404	tob_GenericTCDSSupervisor_123456	Enabled	All OK	-	2016-05-09 14:57:10
pi-tecm	http://tcds-control-tk-pri.cms:2102/urn:xdaq-application:lid=501	tecm_GenericTCDSSupervisor_123456	Enabled	All OK	-	2016-05-09 14:57:10

CPMController

<http://tcds-control-cpm-pri.cms:2050/urn:xdaq-application:lid=100>



tcdsp5

CPMController 'cpm-pri'

(Enabled)

Configuration	Application status	Hardware ID	Hardware status	Input sources	Scheduling	Sequences	Actions	Cyclic generators	ReTri	APVE	TTS and trigger blockers	TTS link status	TTS
counters	Counters	L1A histos	Rates and deadtimes	NibbleDAQ	DAQ								

Configuration

Configuration parameters

Application configuration

Application configuration parameters

Run number	272887
Monitoring update interval	PT1S
Hardware lease duration	PT1M
Path to default hardware configuration file	\$(XDAQ_ROOT)/etc/tcds/cpm/hw_cfg_default_cpm.txt
IPbus connections file	\$(XDAQ_SETUP_ROOT)/\$(XDAQ_ZONE)/etc/tcds_connections.xml
T1 IPbus connection name	cpmt1-pri
T2 IPbus connection name	cpmt2-pri
FED id	1024

```
0&3%1&3%2&3%3&3%4&3%5&3%6&3%7&3%8&3%9&3%
10&3%11&3%12&3%13&3%14&3%15&3%16&3%17&3%
18&3%19&3%20&3%21&3%22&3%23&3%24&3%25&3%
26&3%27&3%28&3%29&3%30&3%31&3%32&3%33&3%
34&3%35&3%36&3%37&3%38&3%39&3%40&3%50&3%
51&3%52&3%53&3%54&3%55&3%56&3%57&3%58&3%
60&3%61&3%62&3%63&3%64&3%65&3%66&3%67&3%
68&3%69&3%70&3%71&3%72&3%73&3%74&3%75&3%
76&3%77&3%78&3%79&3%80&3%81&3%82&3%83&3%
84&3%85&3%86&3%87&3%88&3%89&3%90&3%91&3%
92&3%93&3%94&3%95&3%96&3%97&3%98&3%99&3%
100&3%101&3%102&3%104&3%105&3%106&3%107&
```

BRILDAQ configuration

BRILDAQ eventing configuration parameters

BRILDAQ eventing bus name	bridata
BRILDAQ eventing topic name	tcds_brildaq_data

CPMController

<http://tcds-control-cpm-pri.cms:2050/urn:xdaq-application:lid=100>



CPMController 'cpm-pri'

(Enabled)

TTS and trigger blockers tab

Configuration	Application status	Hardware ID	Hardware status	Input sources	Scheduling	Sequences	Actions	Cyclic generators	ReTri	APVE	TTS and trigger blockers	TTS link status	TTS
Counters	Counters	L1A histos	Rates and deadtimes	NibbleDAQ	DAQ								

TTS and trigger blockers

Information on TTS and other trigger-blocking sources affecting the running state

Running state		Trigger-blockers	Trigger rules
Firmware PM running state			
Running state	triggers blocked by TTS	TTS	N for trigger rule 'not more than one L1A in N BXs'
Top-level TTS state	Warning	DAQ backpressure	N for trigger rule 'not more than two L1As in N BXs'
		ReTri trigger	N for trigger rule 'not more than three L1As in N BXs'
		PM APVE trigger	N for trigger rule 'not more than four L1As in N BXs'
		Bunch-matching	N for trigger rule 'not more than five L1As in N BXs'

Running state shows if triggers are flowing or why not:

- Stopped
- Running
- Blocked by TTS
- Blocked by DAQ backpressure
- etc.

LPM 5 (DT) TTS values	
iCI1 (DTTF)	Ignored
iCI2 (DT-)	Ready
iCI3 (DT0)	Ready
iCI4 (DT+)	Ready
iCI5 (TWINMUX)	Warning
iCI6 (Unused)	Ignored
iCI7 (Unused)	Ignored

trigger rules

trigger rules configuration. If set to zero, the trigger rule is disabled.

N for trigger rule 'not more than one L1A in N BXs'	3
N for trigger rule 'not more than two L1As in N BXs'	25
N for trigger rule 'not more than three L1As in N BXs'	100
N for trigger rule 'not more than four L1As in N BXs'	240
N for trigger rule 'not more than five L1As in N BXs'	0
N for trigger rule 'not more than six L1As in N BXs'	0
N for trigger rule 'not more than seven L1As in N BXs'	0
N for trigger rule 'not more than eight L1As in N BXs'	0
N for trigger rule 'not more than nine L1As in N BXs'	0
N for trigger rule 'not more than ten L1As in N BXs'	0
N for trigger rule 'not more than eleven L1As in N BXs'	0
N for trigger rule 'not more than twelve L1As in N BXs'	0
N for trigger rule 'not more than thirteen L1As in N BXs'	0
N for trigger rule 'not more than fourteen L1As in N BXs'	0
N for trigger rule 'not more than fifteen L1As in N BXs'	0

CPMController

<http://tcds-control-cpm-pri.cms:2050/urn:xdaq-application:lid=100>



CPMController 'cpm-pri'

(Enabled)

Rates and deadtimes tab

Configuration counters	Application status Counters	Hardware ID L1A histo	Hardware status nibbleDAQ DAQ	Rates and deadtimes	Scheduling	Sequences	Actions	Cyclic generators	ReTri	APVE	TTS and trigger blockers	TTS link status	TTS
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Rates and deadtimes

Information on rates, deadtimes, etc. Note: Beam-active deadtime

BeamActive BX mask

BeamActive bunch-mask configuration, picked up from the Circula

Number of BeamActive BXs per orbit	0
BeamActive BXs	none

Latest trigger rates

Trigger (i.e., L1A) rates from the latest good nibble read (Hz). Not gated with the active-BX mask.

Total trigger rate	2095
Trigger type 0	0
Physics trigger	1392

Latest deadtimes (BeamActive)

Deadtimes from the latest nibbles read (% of time). Gated with the active-BX mask.

Trigger type 0	0
Trigger type 1	0
Trigger type 2	0

This tab shows:

- What rate of triggers are flowing, per type
- What rate of triggers are being suppressed, per type
- What the deadtime is, per source
- How much time each partition spends in TTS not-READY (at the bottom)

Latest suppressed-trigger rates

Suppressed-trigger rates from the latest good nibble read (Hz). Not gated with the active-BX mask.

Total suppressed-trigger rate	321
Trigger type 0	0

Latest deadtimes

Deadtimes from the latest good nibble read (% of time). Not gated with the active-BX mask.

Total deadtime	2.00
Deadtime due to TTS	0.04

Latest trigger-rule deadtimes

Trigger-rule deadtimes from the latest good nibble read (% of time). Not gated with the active-BX mask.

Deadtime due to trigger rule 1	0.01
Deadtime due to trigger rule 2	0.00

Dead times are shown twice

- Averaged over all bunch crossings
- Averaged over bunch crossings where collisions happen (BeamActive)

Deadtime due to software pauses	0.00
Deadtime due to hardware pauses	0.00

CPMController

<http://tcds-control-cpm-pri.cms:2050/urn:xdaq-application:lid=100>



tcdsp5     

CPMController 'cpm-pri'

(Configured)

Input Sources

Configuration Application status Hardware ID Hardware status Input sources Scheduling Sequences Actions Cyclic generators ReTri APVE TTS and trigger blockers TTS link status TTS

Input sources	
General CPM information	
Orbit source	
Orbit source selection and configuration	

Orbit source: CPM	disabled
Orbit source: TTCmi	enabled
Orbit offset (BX)	3334

Trigger/B-go inputs

Trigger and B-go source selection and configuration

Front-panel GT trigger input	enabled
Front-panel GT trigger input delay (BX)	0
Front-panel NIM trigger input	disabled
Front-panel NIM trigger input delay (BX)	0
IPbus/SOAP-based triggers and B-gos	enabled
TTS state-driven triggers and B-gos	enabled
Cyclic triggers	disabled
BX-mask trigger generator	disabled
Random-trigger generator	enabled

BX-mask trigger

Bunch-mask trigger configuration

Prescale	1
Initial prescale value	0
Number of forced-trigger BXs per orbit	0
Forced-trigger BXs	none

Random trigger

Random-trigger configuration

Modify random-trigger rate
Requested random-trigger rate (Hz) 600

Click here to change
the random trigger rate

HotSpot

<https://xdaq.web.cern.ch/xdaq/xmas/14/hotspot/hotspot.swf>


Designed by M. Bowen L. Orsi A. Petrucci

 Reset  Acknowledge

▼ **testmodel(131/0)**

- ▶ **FEDs(0/0)**
- ▶ **Slices(0/0)**
- ▶ **Infrastructure(0/0)**
- ▶ **Applications(0/0)**
- ▶ **Run Control(4/0)**
- ▶ **Job Control(0/0)**
- ▶ **XaaS(0/0)**
- ▶ **Other(127/0)**

 Hotspot  Info 

Heatmap Tile View Properties Counters

FEDs Active/Ack Fatal 0/0 Error 0/0 Warn 0/0	Slices Active/Ack Fatal 0/0 Error 0/0 Warn 0/0	Infrastructure Active/Ack Fatal 0/0 Error 0/0 Warn 0/0	Applications Active/Ack Fatal 0/0 Error 0/0 Warn 0/0
Run Control Active/Ack Fatal 0/0 Error 0/0 Warn 4/0	Job Control Active/Ack Fatal 0/0 Error 0/0 Warn 0/0	XaaS Active/Ack Fatal 0/0 Error 0/0 Warn 0/0	Other Active/Ack Fatal 0/0 Error 64/0 Warn 63/0

Check regularly for Errors or Fatal by clicking on corresponding button

 Make sure that it updates (pulsates)

HotSpot



Designed by M. Bowen L. Orsi & Peruzzi

[Hotspot](#) [Info](#) [Settings](#)

Acknowledge
understood
errors

Click on error

	<input checked="" type="checkbox"/> Acknowledge Selection	<input checked="" type="checkbox"/> Acknowledge All				
Acknowledged	date/time	identifier	severity	occurrences	notifier	uniqueid
	Wed Jan 14 19:11:48 2015 UTC	xmas::store2g::exception::Exception	error	1	http://pc-c2e11-19-01.cms:9927/urn:xdaq-application:lid=17	beee70ba-4650-4158-8be7-3...
	Wed Jan 14 19:10:53 2015 UTC	xmas::store2g::exception::Exception	error	1	http://pc-c2e11-19-01.cms:9929/urn:xdaq-application:lid=17	40dc46f0-cbe9-406d-aa2b-b7...
	Wed Jan 14 18:41:28 2015 UTC	xmas::store2g::exception::Exception	error	1	http://pc-c2e11-19-01.cms:9927/urn:xdaq-application:lid=17	fbea1bb-dcd4-4edd-9c0b-78...
	Wed Jan 14 18:33:35 2015 UTC	xmas::store2g::exception::Exception	error	1	http://pc-c2e11-19-01.cms:9927/urn:xdaq-application:lid=17	b59679f6-ff5b-4b9c-97b4-ad0...
	Wed Jan 14 18:50:50 2015 UTC	xmas::store2g::exception::Exception	error	1	http://pc-c2e11-19-01.cms:9929/urn:xdaq-application:lid=17	d27a33bd-a616-402c-96e2-0...

Properties	HTML	JSON																																												
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Analyze the error and
take appropriate action

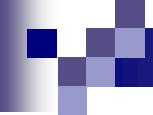
Handsaw

```
2015-01-14 18:12:53 and 765 ms : cms.daqdev.rcms.fm.levelZeroFM.util.Lv0GlobalModeHandler
  ERROR Caught Nullpointerexception
2015-01-14 18:13:04 and 721 ms : cms.daqdev.rcms.fm.levelZeroFM.util.Lv0GlobalModeHandler
  ERROR Caught Nullpointerexception
2015-01-14 18:13:14 and 31 ms : cms.daqdev.rcms.fm.levelZeroFM.util.Lv0GlobalModeHandler
  ERROR Caught Nullpointerexception
2015-01-14 18:13:14 and 837 ms : cms.daqdev.rcms.fm.app.rubuilder.RUBuilderFM
  ERROR CMSSW_7_2_3
2015-01-14 19:26:34 and 948 ms : cdaq.cms.ru-c2e15-26-01.p:31100.evb::EVM.instance(0)
  ERROR Caught exception: exception::CRCerror 'Received 1 events with wrong CRC checksum from FED 814: FED trailer claims 0xd479, but recalculation gives 0xa
752' raised at checkIntegrity(/usr/local/src/xdaq/baseline12/daq/evb/src/common/FedFragment.cc:245)
2015-01-14 20:35:22 and 57 ms : cdaq.cms.ru-c2e15-26-01.p:31100.evb::EVM.instance(0)
  ERROR Caught exception: exception::CRCerror 'Received 2 events with wrong CRC checksum from FED 814: FED trailer claims 0x3c76, but recalculation gives 0x4
f5d' raised at checkIntegrity(/usr/local/src/xdaq/baseline12/daq/evb/src/common/FedFragment.cc:245)
2015-01-14 20:47:31 and 91 ms : cdaq.cms.ru-c2e15-12-01.p:31100.evb::RU.instance(43)
  ERROR Caught exception: exception::CRCerror 'Received 1 events with wrong CRC checksum from FED 486: FED trailer claims 0xd8fd, but recalculation gives 0x
67d' raised at checkIntegrity(/usr/local/src/xdaq/baseline12/daq/evb/src/common/FedFragment.cc:245)
2015-01-14 21:17:55 and 724 ms : cdaq.cms.ru-c2e15-12-01.p:31100.evb::RU.instance(43)
  ERROR Caught exception: exception::CRCerror 'Received 2 events with wrong CRC checksum from FED 486: FED trailer claims 0x40dd, but recalculation gives 0x
e5d' raised at checkIntegrity(/usr/local/src/xdaq/baseline12/daq/evb/src/common/FedFragment.cc:245)
2015-01-14 21:36:02 and 258 ms : cdaq.cms.ru-c2e15-12-01.p:31100.evb::RU.instance(43)
  ERROR Caught exception: exception::CRCerror 'Received 3 events with wrong CRC checksum from FED 486: FED trailer claims 0x7368, but recalculation gives 0x
de8' raised at checkIntegrity(/usr/local/src/xdaq/baseline12/daq/evb/src/common/FedFragment.cc:245)
```

- Running in a terminal on the shifter console
 - You need an account in the online cluster to start it
- Scrolling display of error messages from DAQ
 - All messages (and more) are in HotSpot or LVL0
 - Handsaw is often quicker to find the most relevant message

What to do if it does not work

- Don't panic! Keep cool.
 - Not always easy, especially during stable beams
 - Think before clicking!
 - GUIs are sometimes slow in reacting. Be patient...
- Look at what the **DAQ expert application suggests**
 - suggestions are a superset of the 'DAQ stuck' flow chart
- Look for error messages (LVL0, HotSpot, Handsaw)
- Look at DAQView for anything suspicious
 - Figure out what subsystem is causing problems
 - Be aware that one subsystem might get backpressure from DAQ due to other issues
- Talk to the shift leader and other shifters
 - They might be aware of problems affecting DAQ
 - E.g. if a subsystem lost power, DAQ will go into error
(you might be the first to realize it!)
- If you are unsure or stuck, do not hesitate to call the DAQ oncall anytime (76600)



Thank you for your attention

HAPPY SHIFTING...