HammerCloud Blacklisting Study

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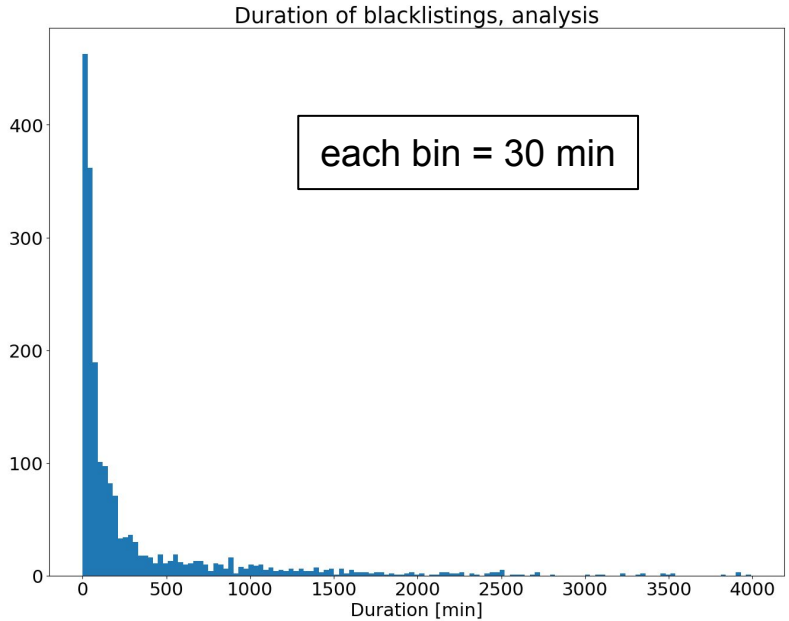
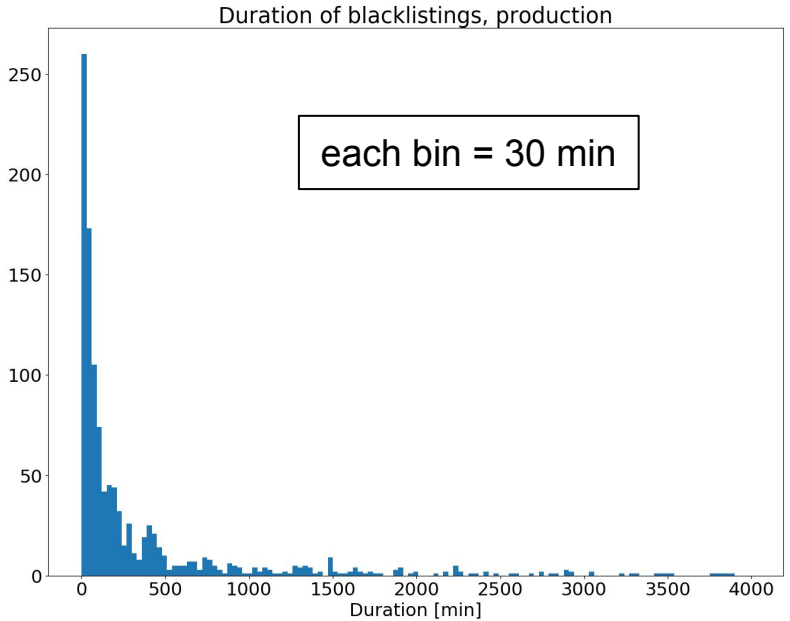
Introduction

- Blacklisting log data period: 13.03.2018 - 10.10.2018
  - Information on blacklisting and whitelisting actions
    - Count “test periods” and their duration by scanning through the log for a given queue and selecting blacklisting actions with a following whitelisting action
    - Evaluate “blacklisting chains” by counting consecutive test periods with a blacklisting action following the previous whitelisting action within a defined time gap
  - Ignoring “slave” blacklistings, i.e. when PQs are set to TEST due to the decision on the master queue
- jobs_archive data
  - Information on the example job panda IDs given in the blacklisting reason string
- Previous study in 2017: link
- Git repo: link

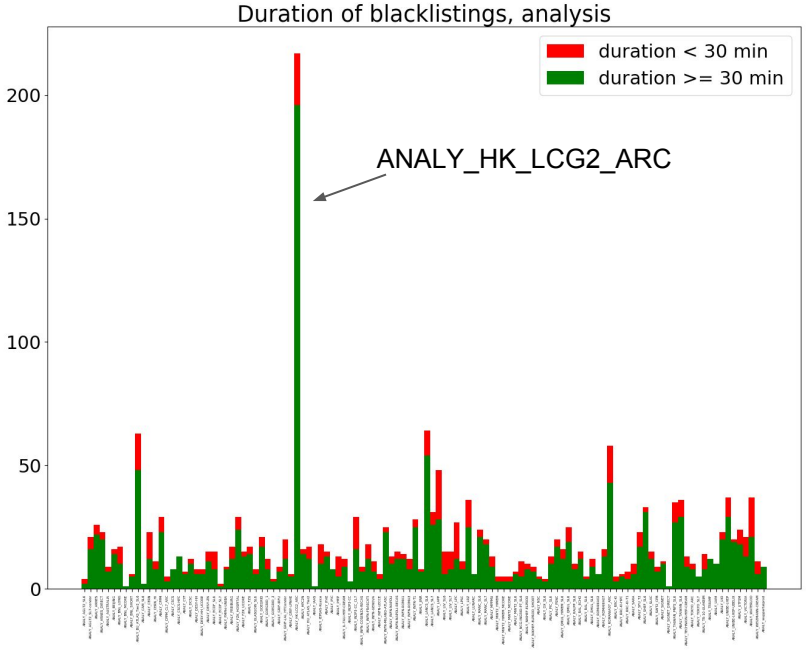
Duration of blacklistings (“test periods”)





- Most test periods only last for up to a couple of hours
- Long periods possibly due to untracked/manual whitelistings
  - However, there are some PQs that are just constantly blacklisted, up to 90d!

Duration of blacklistings per PQ



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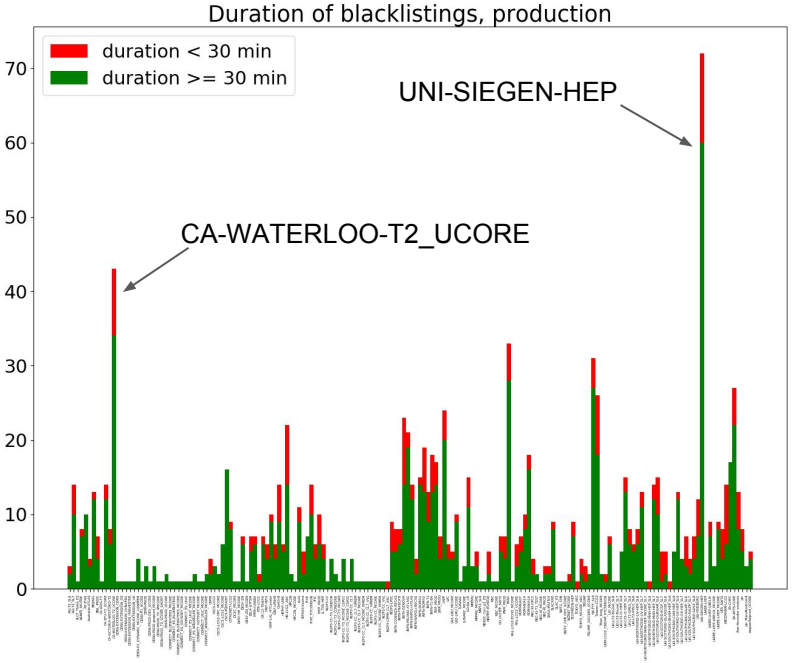

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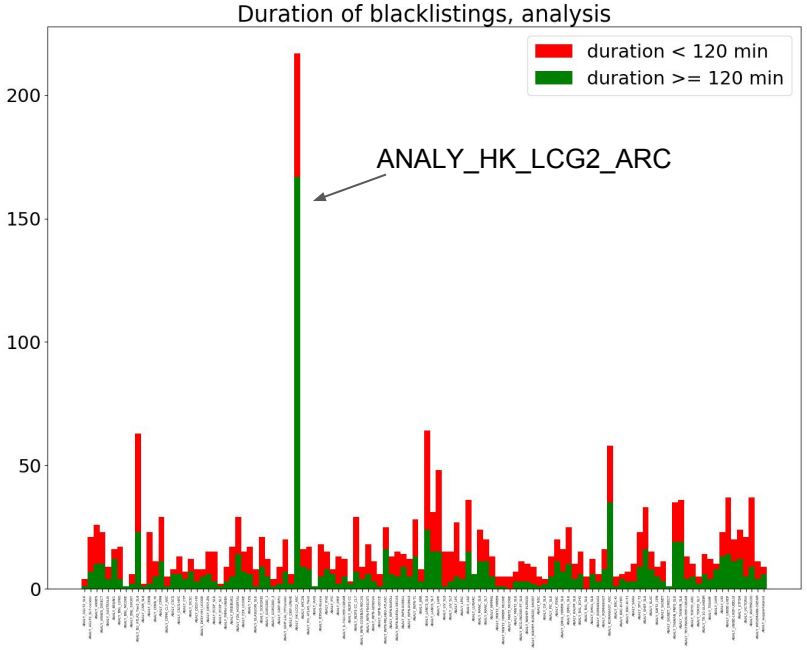
Duration of blacklistings per PQ



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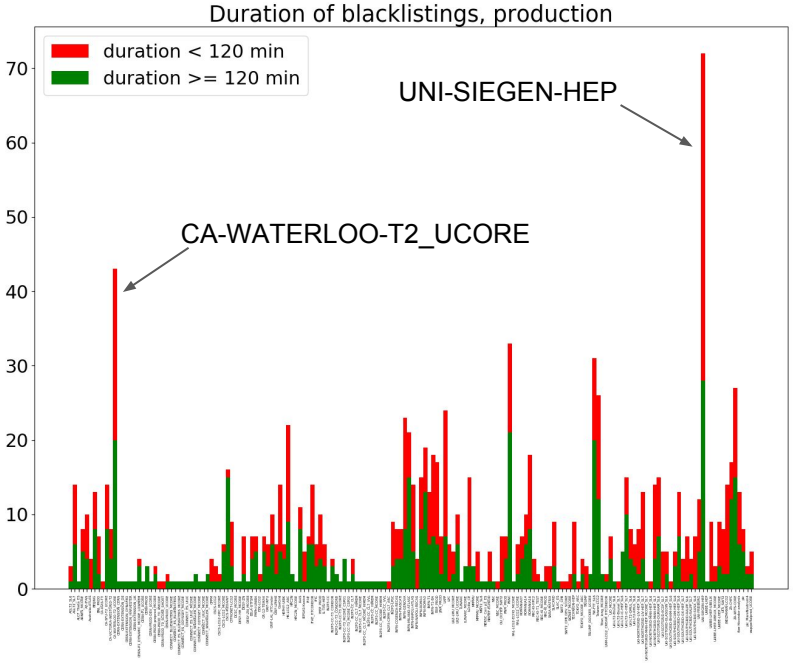

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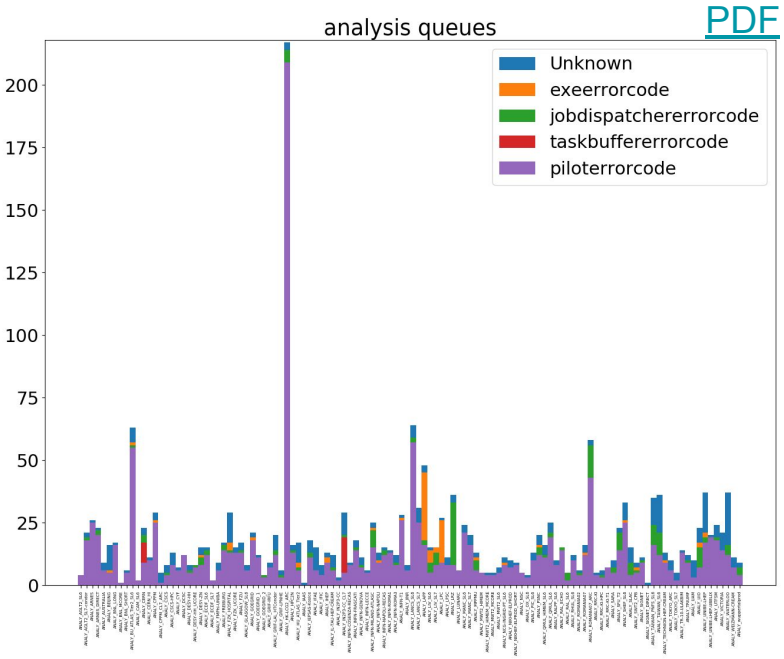
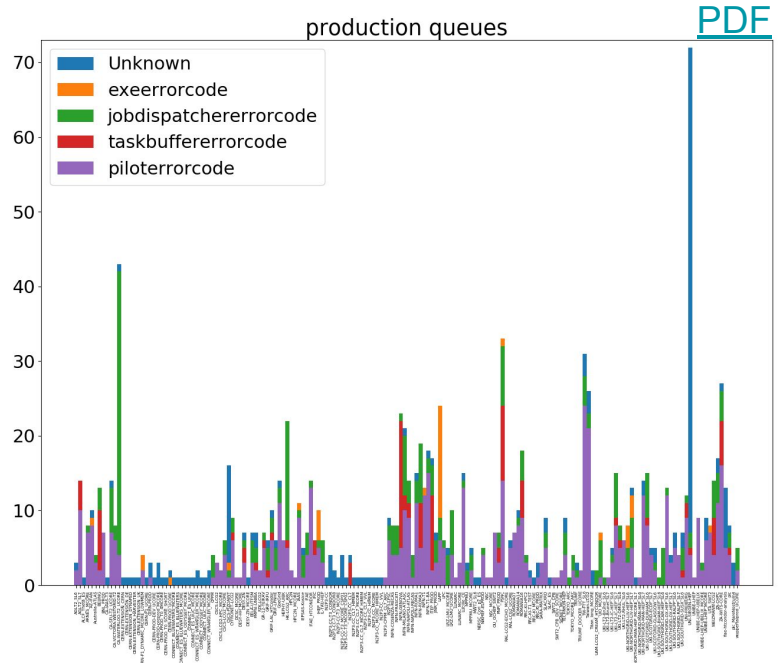
PanDA error codes per PQ, taken from example jobs





- Priority for marking a given test period with a particular error code
  - piloterror > taskbuffer > jobdispatcher > exeerror

Pilot error codes per PQ, taken from example jobs

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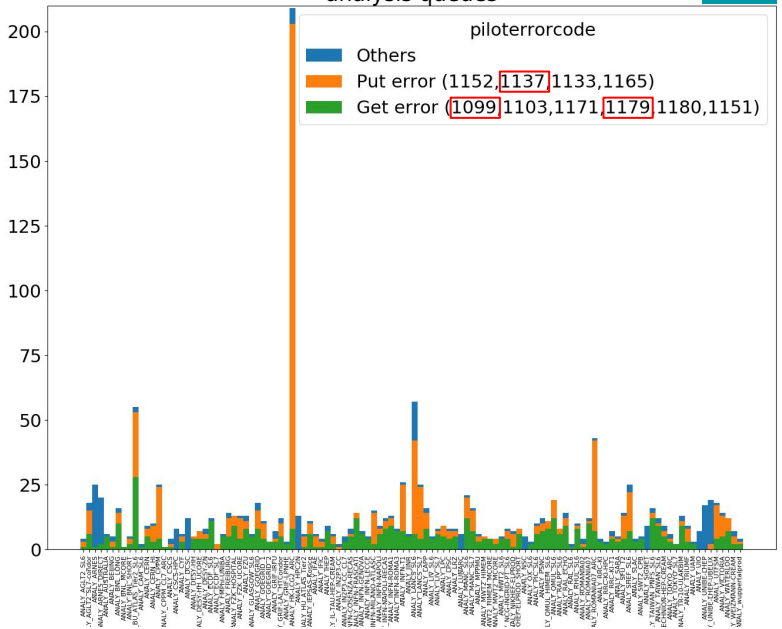

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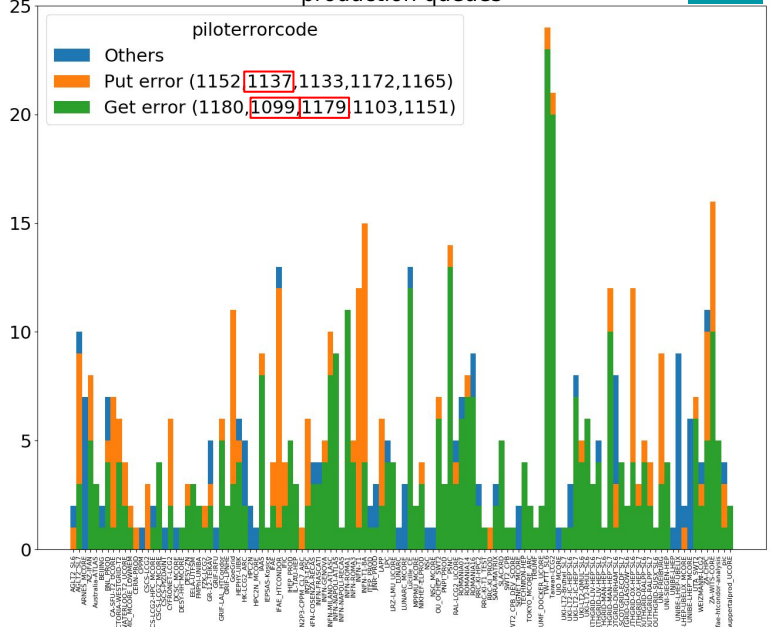
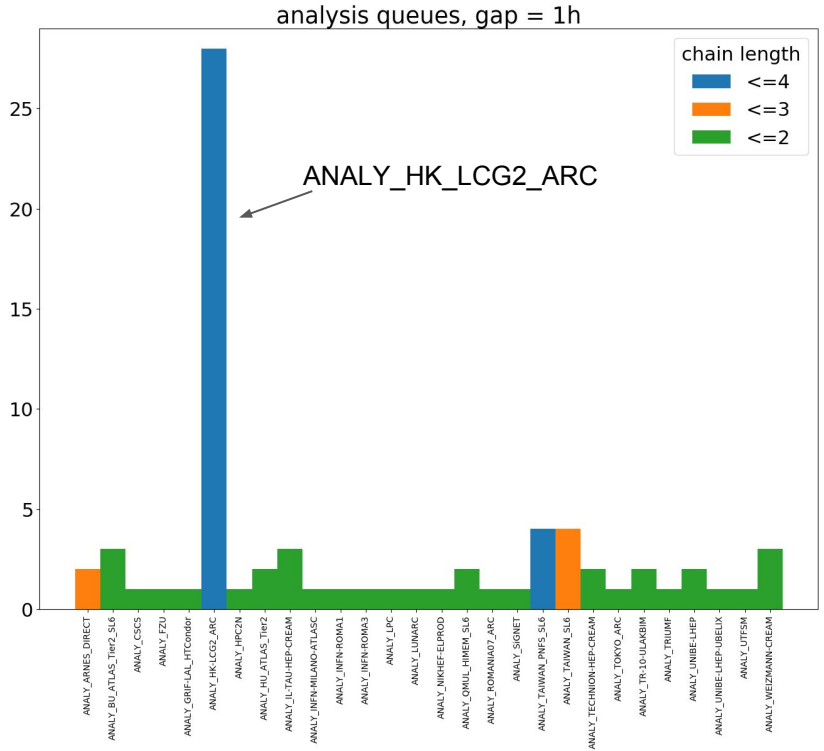


- For the majority of blacklisting incidents the problem was either getting the input to the worker node or missing output / uploading the output

Detailed overview of pilot error codes

Blacklisting chains (gap = 1h) per PQ



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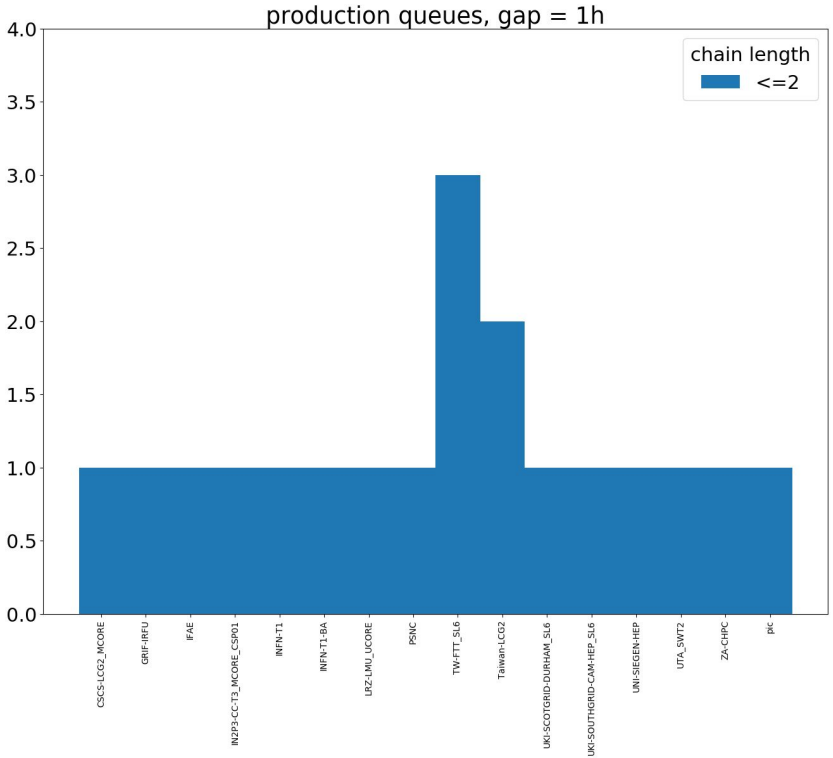

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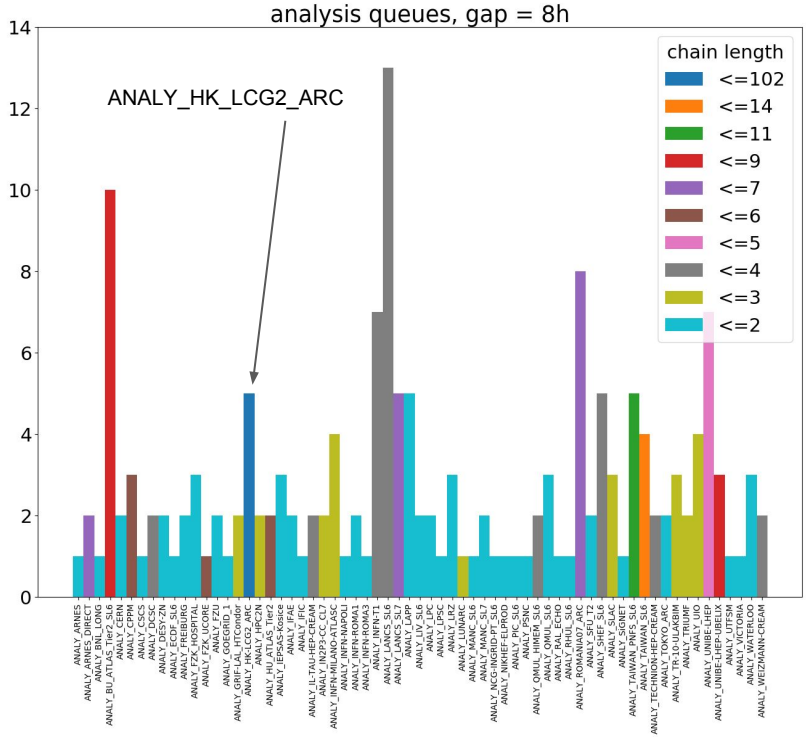
Blacklisting chains (gap = 8h) per PQ



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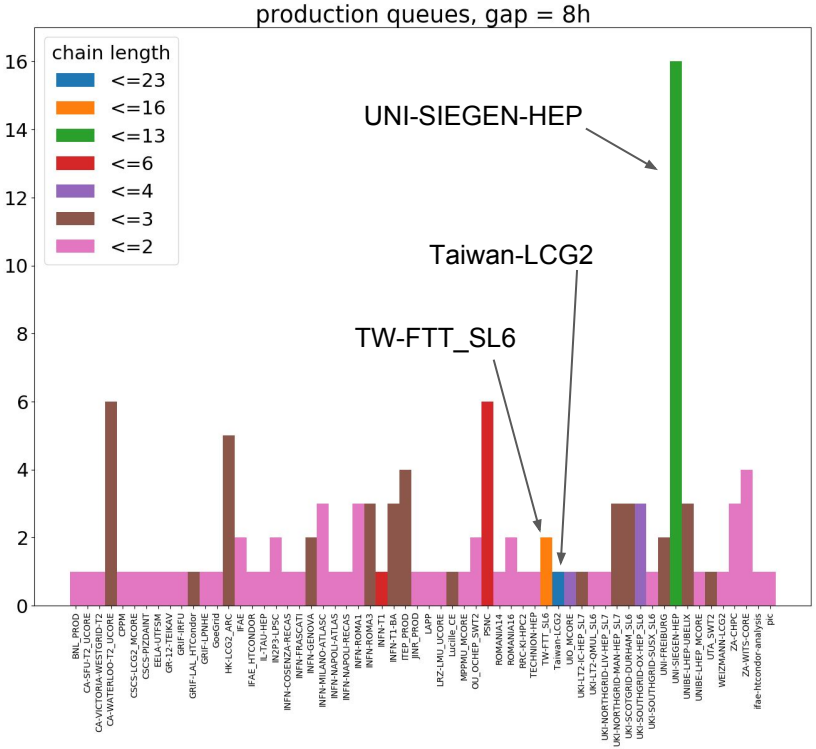

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Summary

- Most blacklisting test periods only last a couple of hours
- For the majority of blacklistings, failing retrieval/upload of the input/output is the error reason
- From these studies and past blacklisting reports in general, I don’t see a good way to prevent “unnecessary” blacklisting in a dynamic way → the information HammerCloud receives from PanDA is not really sufficient to evaluate if an issue is transient or not
- However, acting on chained blacklisting behaviour could be something reasonable to include in HammerCloud
    - Keep a PQ blacklisted if a blacklisting chain of length X occured (with gap = Y hours) and notify the responsible people that the PQ will stay in TEST until it’s investigated
    - AFAIK we already do something similar with the EventService blacklisting

The line must be drawn here! This far, no further!

Jean-Luc Picard

piloterrorcodes

	total/analysis/production	
1137:	727/591/136	Put error: Error in copying the file from job workdir to localSE
1179:	421/285/136	Get error: Failed to get LFC replicas
1099:	335/173/162	Get error: Staging input file failed
1008:	121/80/41	General pilot error, consult batch log
1246:	94/93/1	"User tarball (source unknown) cannot be downloaded from PanDA server"
1103:	76/35/41	Get error: No such file or directory
1244:	54/54/0	"No release candidates found"
1180:	30/15/15	Get error: Globus system error
1098:	20/13/7	No space left on local disk
1144:	19/0/19	This job was killed by panda server
1151:	16/7/9	Get error: Input file staging timed out
1152:	15/14/1	Put error: File copy timed out
1194:	14/13/1	"STAGEOUT FAILED: File verification failed ..."
1221:	12/11/1	File already exist
1110:	6/2/4	Failed during setup
1165:	5/4/1	Put error: Local output file missing
1171:	5/5/0	Get error: adler32 mismatch on input file
1133:	5/3/2	Put error: Fetching default storage URL failed
1201:	3/1/2	Job killed by signal: SIGTERM
1223:	1/0/1	TRF failed due to bad_alloc
1112:	1/1/0	Exception caught by pilot
1172:	1/0/1	Put error: adler32 mismatch on output file
1111:	1/0/1	Exception caught by runJob
1176:	1/1/0	Pilot has no child processes (job wrapper has either crashed or did not send final status
1212:	1/1/0	Payload ran out of memory

jobdispatchererrorcodes

	total/analysis/production	
100:	300/157/143	lost heartbeat
102:	172/31/141	"Sent job didn't receive reply from pilot within 30 min"
101:	4/3/1	job recovery failed for three days

taskbuffererrorcodes

300: "The worker was cancelled while the job was starting :..."