Shifter's responsabilities for the Offline systems

The DQM/Offline shifter controls the following Offline systems:

- the RAW data registration, transfer and replication
- the Shuttle

by means of:

- the `dashboard`
- the MonALISA `Shuttle monitoring page`

and takes appropriate actions, as detailed in the following and in

- the `shifters' manual` in the `ALOSHI pages`.

The DQM/Offline shifter's duties are listed in the `shifter's checklist`.

The Offline station

The Offline station is the small screen at the right of the DQM screens.

As Offline shifter you have autologin on the Offline station (**arcoff01**).

This means you don't need a password to login.

RAW data

RAW data flow

A: P2 ⇒ CASTOR disk

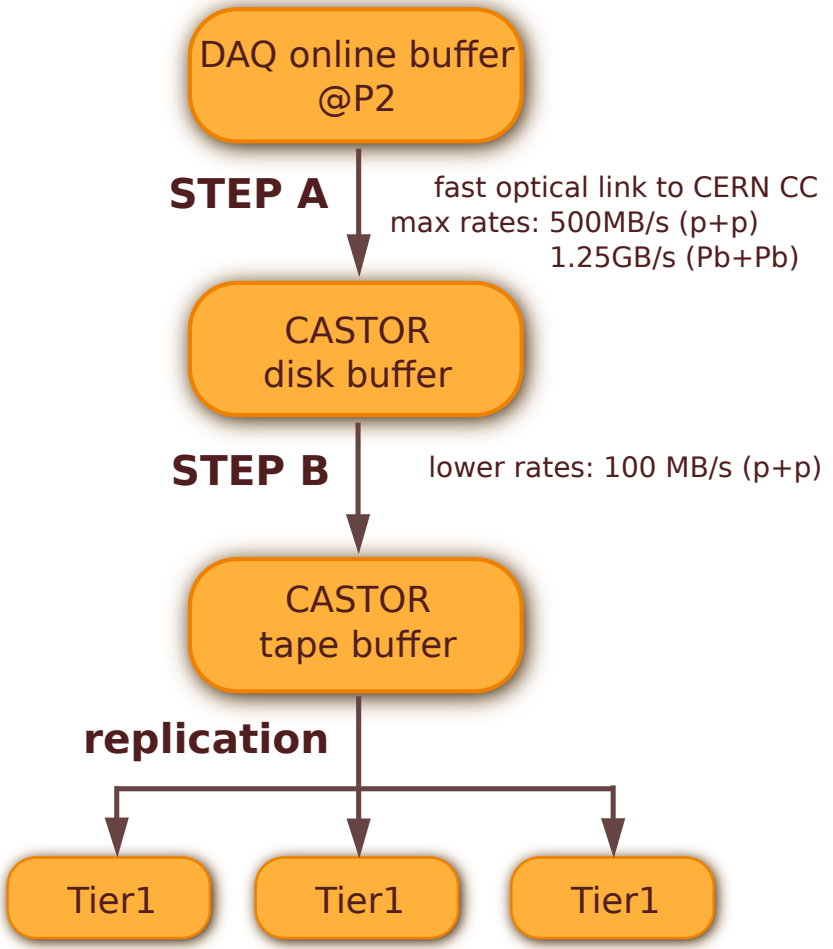
RAW data are transferred from DAQ to CASTOR disk (at different rates).

B: CASTOR disk ⇒ CASTOR tape

Physics runs' RAW data are copied to CASTOR tape (at lower rates).

Replication

RAW data are transfered to Tier1s.



From P2 to CASTOR disk

- Automatic and well exercised (it almost never goes wrong)
- DAQ is nominally responsible for the transfers
  - If not working, DAQ/SL notifies the shifter and/or the alice-shift-alarms@cern.ch expert list
- Offline provides the gateway for registering the files in the AliEn File Catalogue

Shifter's duties:

- follow the registration of RAW data ▸ see dashboard
- monitor the filling of the CASTOR buffer ▸ see dashboard

From CASTOR disk to CASTOR tape

- All PHYSICS data get copied to tape. No action required from the shifter.

Data replication

- After RAW is recorded to tape in CASTOR a copy is made to two remote T1 centres for custodial storage and processing
  - The replication is an automatic process, triggered at EoR
  - Progress is displayed on the dashboard
- Shifter's responsability:
  - the process is fully automatized
  - if physics runs are not replicated in the last 12 hours, add a note in the EOS report (mentioning run numbers) and send list of stuck runs also to alice-shift-alarms@cern.ch

The Shuttle

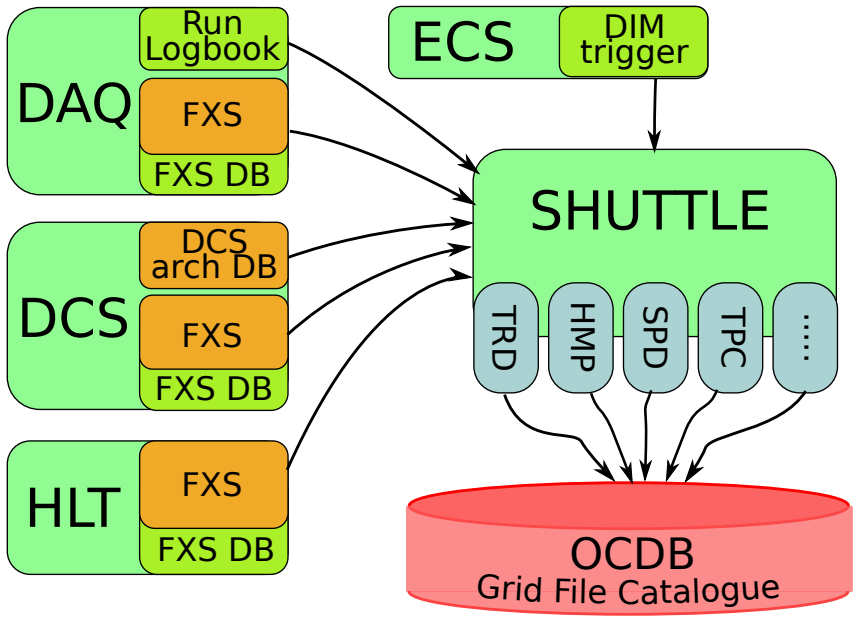
The Shuttle

- the Shuttle: short description
- the Shuttle status (online/offline)
- the MonAlisa Shuttle web page
- how to read the Logs
- the Detectors Preprocessors Flow
- what to do in case of failures

Shuttle and Preprocessors

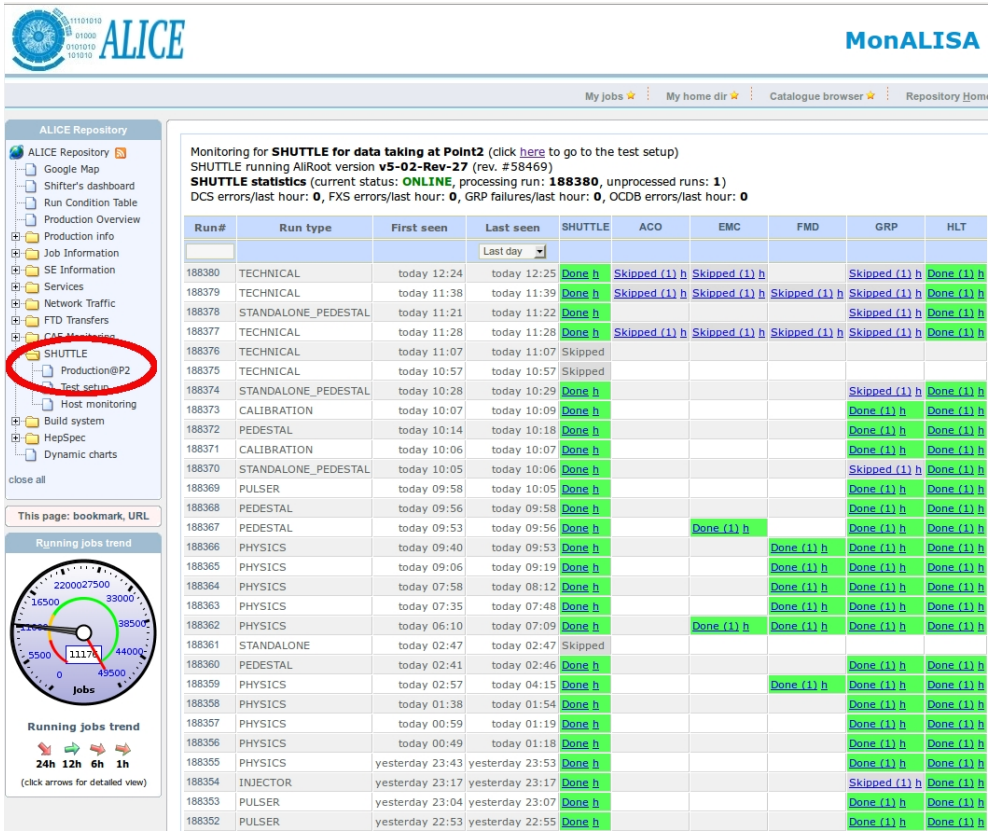
The Shuttle is the ALICE Online-Offline software framework. It steers detector specific procedures (preprocessors) to:

- extract conditions (calibration and alignment) from online systems
- consolidate them and
- upload them to the OCDB



Monitoring the Shuttle

- Quick overview from the dashboard.
- Full view from the MonAlisa Shuttle monitoring page.
- Linked also from the navigation section of the MonAlisa main page: Shuttle Production@P2

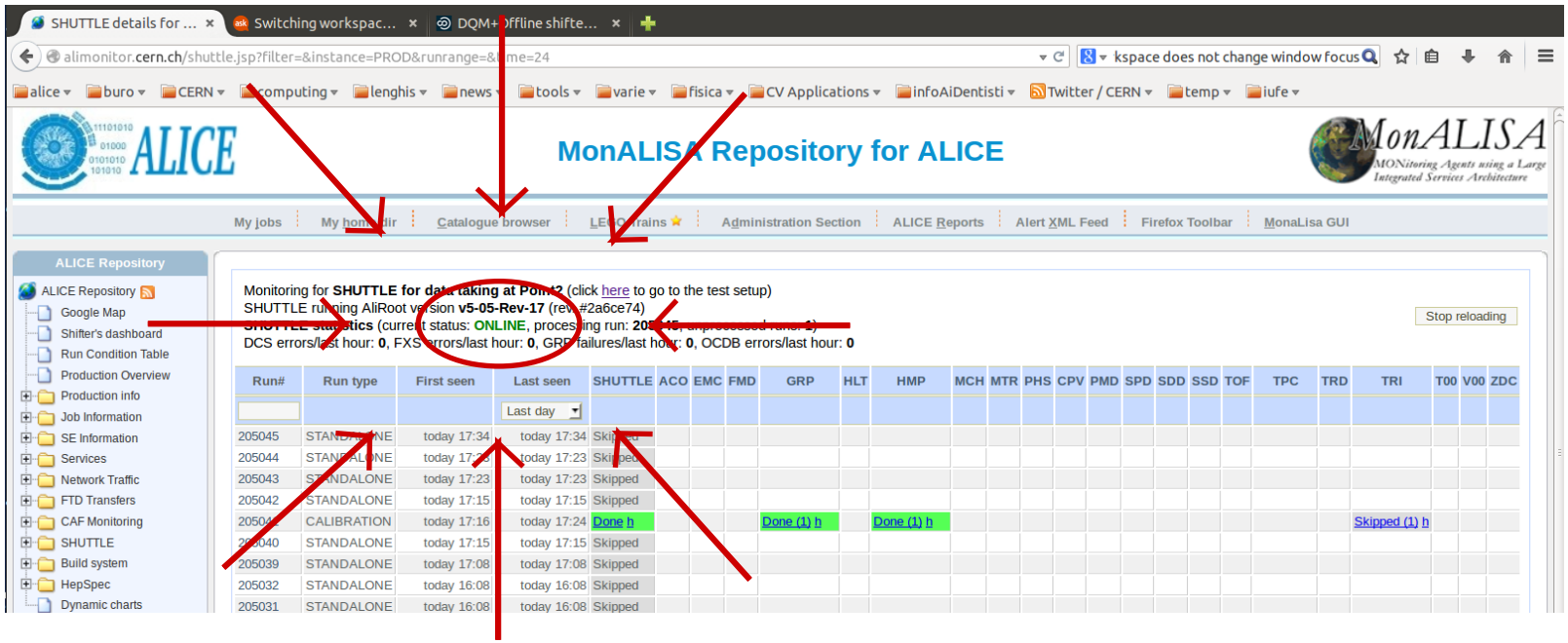


Run#	Run type	First seen	Last seen	SHUTTLE	ACO	EMC	FMD	GRP	HLT
			Last day						
188380	TECHNICAL	today 12:24	today 12:25	Done h	Skipped (1) h	Skipped (1) h		Skipped (1) h	Done (1) h
188379	TECHNICAL	today 11:38	today 11:39	Done h	Skipped (1) h	Skipped (1) h	Skipped (1) h	Skipped (1) h	Done (1) h
188378	STANDALONE_PEDESTAL	today 11:21	today 11:22	Done h				Skipped (1) h	Done (1) h
188377	TECHNICAL	today 11:28	today 11:28	Done h	Skipped (1) h	Skipped (1) h	Skipped (1) h	Skipped (1) h	Done (1) h
188376	TECHNICAL	today 11:07	today 11:07	Skipped					
188375	TECHNICAL	today 10:57	today 10:57	Skipped					
188374	STANDALONE_PEDESTAL	today 10:28	today 10:29	Done h				Skipped (1) h	Done (1) h
188373	CALIBRATION	today 10:07	today 10:09	Done h				Done (1) h	Done (1) h
188372	PEDESTAL	today 10:14	today 10:18	Done h				Done (1) h	Done (1) h
188371	CALIBRATION	today 10:06	today 10:07	Done h				Done (1) h	Done (1) h
188370	STANDALONE_PEDESTAL	today 10:05	today 10:06	Done h				Skipped (1) h	Done (1) h
188369	PULSER	today 09:58	today 10:05	Done h				Done (1) h	Done (1) h
188368	PEDESTAL	today 09:56	today 09:58	Done h				Done (1) h	Done (1) h
188367	PEDESTAL	today 09:53	today 09:56	Done h		Done (1) h		Done (1) h	Done (1) h
188366	PHYSICS	today 09:40	today 09:53	Done h			Done (1) h	Done (1) h	Done (1) h
188365	PHYSICS	today 09:06	today 09:19	Done h			Done (1) h	Done (1) h	Done (1) h
188364	PHYSICS	today 07:58	today 08:12	Done h			Done (1) h	Done (1) h	Done (1) h
188363	PHYSICS	today 07:35	today 07:48	Done h			Done (1) h	Done (1) h	Done (1) h
188362	PHYSICS	today 06:10	today 07:09	Done h		Done (1) h	Done (1) h	Done (1) h	Done (1) h
188361	STANDALONE	today 02:47	today 02:47	Skipped					
188360	PEDESTAL	today 02:41	today 02:46	Done h				Done (1) h	Done (1) h
188359	PHYSICS	today 02:57	today 04:15	Done h			Done (1) h	Done (1) h	Done (1) h
188358	PHYSICS	today 01:38	today 01:54	Done h				Done (1) h	Done (1) h
188357	PHYSICS	today 00:59	today 01:19	Done h				Done (1) h	Done (1) h
188356	PHYSICS	today 00:49	today 01:18	Done h				Done (1) h	Done (1) h
188355	PHYSICS	yesterday 23:43	yesterday 23:53	Done h				Done (1) h	Done (1) h
188354	INJECTOR	yesterday 23:17	yesterday 23:17	Done h				Skipped (1) h	Done (1) h
188353	PULSER	yesterday 23:04	yesterday 23:07	Done h				Done (1) h	Done (1) h
188352	PULSER	yesterday 22:53	yesterday 22:55	Done h				Done (1) h	Done (1) h

Shuttle online/offline state

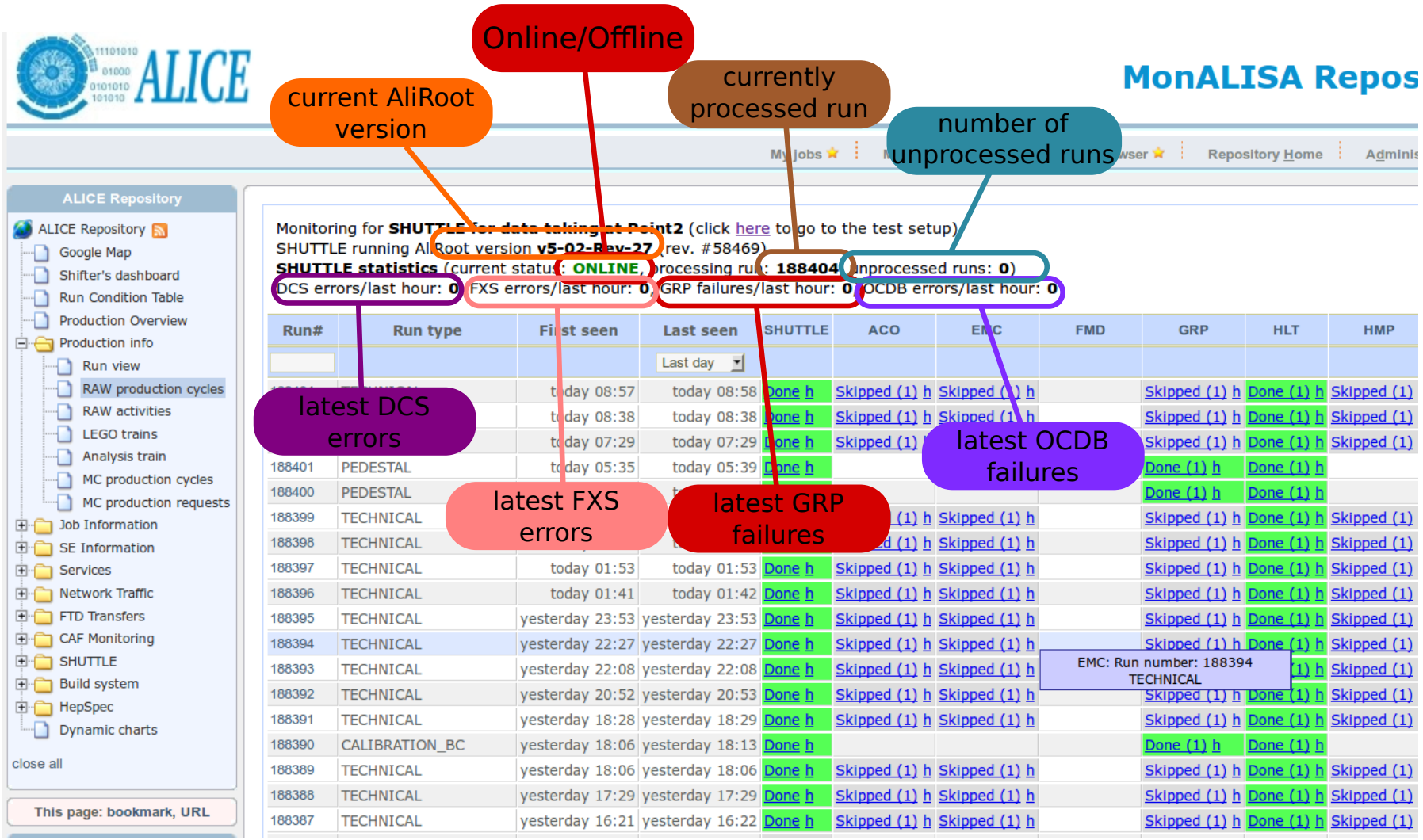
The MonAlisa Shuttle pages show the state of the Shuttle:

- it is either offline or online
- the offline state is already the result of a failed automatic restarting procedure

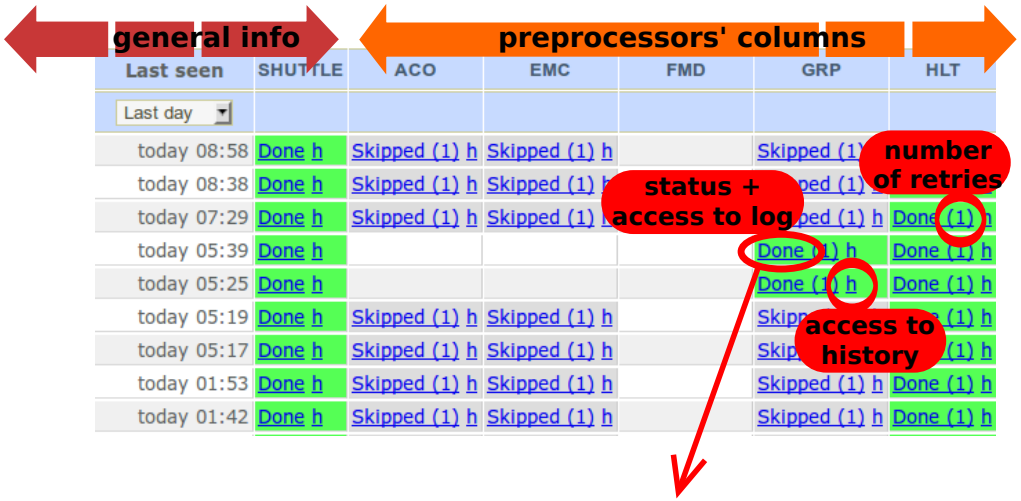


Keep regularly an eye on the Shuttle state and call the Offline on-call in case it is offline.

Monitoring the Shuttle



Monitoring the Shuttle



Messages can come either from the Shuttle or from the preprocessors.

```
2012-09-14 03:35:49 UTC (2906): GRP - run 188401 - Process - Starting processing
I-AliShuttle::Log: 2012-09-14 03:35:49 UTC (27935): SHUTTLE - run 188401 - Executing TGrid::Connect
=> Trying to connect to Server [0] root://pcapiserv03.cern.ch:10000 as User alidaq
I-AliShuttle::Log: 2012-09-14 03:35:49 UTC (27935): SHUTTLE - run 188401 - ProcessCurrentDetector - Retrieving values for GRP, run 188401
I-AliShuttle::Log: 2012-09-14 03:35:49 UTC (27935): SHUTTLE - run 188401 - CleanReferenceStorage - Cleaning /home/shuttle/SHUTTLE_PROD/SHUTTLE/LocalShuttleRefStorage/GRP
I-AliShuttle::Log: 2012-09-14 03:35:49 UTC (27935): GRP - run 188401 - Checking if run type PEDESTAL is in the list of run types to be processed by this preprocessor...
I-AliShuttle::Log: 2012-09-14 03:35:49 UTC (27935): GRP - run 188401 - Run type found. Processing this run.
I-TFile::OpenFromCache: using local cache copy of /alien/alice/data/2012/OCDB/GRP/CTP/DummyConfig/Run0_999999999_v1_s0.root [/tmp/OCDBCache//alice/data/2012/OCDB/GRP/CTP/Dum
I-AliGRPPreprocessor::Initialize: Initialization of the GRP preprocessor.
I-AliGRPPreprocessor::Initialize: Start Time DCS = 1347592864
I-AliGRPPreprocessor::Initialize: End Time DCS = 1347593013
I-AliGRPPreprocessor::Initialize: Pressure Entries: 3
I-AliShuttle::Log: 2012-09-14 03:35:49 UTC (27935): SHUTTLE - run 188401 - UpdateShuttleStatus - GRP: Changing state from Started to DCSStarted
I-AliShuttle::Log: 2012-09-14 03:35:50 UTC (27935): GRP - run 188401 - ProcessCurrentDetector - Querying DCS Amanda server alidcsamanda.cern.ch:1337 (1 of 1)
I-AliShuttle::Log: 2012-09-14 03:35:50 UTC (27935): GRP - run 188401 - Querying 47 DCS aliases
I-AliDCSClient::GetValues: Retrieved entries 0..46 (total 0..46); E.g. L3Current has 7 values collected
I-AliShuttle::Log: 2012-09-14 03:35:52 UTC (27935): SHUTTLE - run 188401 - UpdateShuttleStatus - GRP: Changing state from DCSStarted to PPStarted
I-AliShuttle::Log: 2012-09-14 03:35:53 UTC (27935): GRP - run 188401 - ********** Processing DAQ logbook
I-AliShuttle::Log: 2012-09-14 03:35:53 UTC (27935): GRP - run 188401 - Start time for run 188401: 1347592936
I-AliShuttle::Log: 2012-09-14 03:35:53 UTC (27935): GRP - run 188401 - End time for run 188401: 1347592960
I-AliShuttle::Log: 2012-09-14 03:35:53 UTC (27935): GRP - run 188401 - Beam Energy for run 188401: 4000.000000 (NOT USING IT TO FILL THE GRP OBJECT, taking it from the LHC f
I-AliShuttle::Log: 2012-09-14 03:35:53 UTC (27935): GRP - run 188401 - Beam Type for run 188401: p-p (NOT USING IT TO FILL THE GRP OBJECT, taking it from the LHC file)
I-AliShuttle::Log: 2012-09-14 03:35:53 UTC (27935): GRP - run 188401 - Number Of Detectors for run 188401: 1
I-AliShuttle::Log: 2012-09-14 03:35:53 UTC (27935): GRP - run 188401 - Detector Mask for run 188401: 1024
I-AliShuttle::Log: 2012-09-14 03:35:53 UTC (27935): GRP - run 188401 - LHC period (DAQ) for run 188401: LHC12g
```

Reading the logs

- Logs are available per run for all preprocessors involved in the run (active detectors interested in the run type):
  click on status (Done, Failed) at run (row) – DET (column) intersection.
- Every information is associated with a timestamp which is expressed in UTC ⇒ corresponds to Geneva time minus one hour in winter, minus two hours in summer
- The Shuttle steering process appears in the table as all preprocessors, its logs are accessible in the same way
- In case of failure, an email is automatically sent to a list of responsibles (the recipients' email addresses are listed at the end of the log)

Reading the logs

- Each preprocessor sets (in its code) the run types of interest
- Only runs taken within the ECS framework can be processed by the Shuttle (not runs from the DAQ Run Control)
- The GRP preprocessor is run only for a subset of `run types`
- Two different error codes conventions for:
  - preprocessors `AliDETPreprocessor::Process`
    - ✔ exit code 0 ⇔ success
    - ✘ exit code >0 ⇔ failure
  - AliShuttle steering method `AliShuttle::ProcessCurrentDetector`
    - ✔ 1 ⇔ success
    - ✘ 0 ⇔ failure

Reading the logs

In practice:

- `Process - Client process of 192029 - DET is exiting now with 1.`

  $\Leftrightarrow$ the preprocessor for DET was processed successfully

- ```
  I-AliShuttle::Log:  2012-11-08 17:04:04 UTC (16044):  DET - run 191760 - ProcessCurrentDetector -
  Preprocessor failed.  Process returned 1.
  I-AliShuttle::Log:  2012-11-08 17:04:04 UTC (16044):  Shuttle - run 191760 - UpdateShuttleStatus -
  DET: Changing state from PPStarted to PPError
  I-AliShuttle::Log:  2012-11-08 17:04:04 UTC (16044):  Shuttle - run 191760 - ****** run 191760 -
  DET: ERROR ******

  I-AliShuttle::Log:  2012-11-08 17:04:04 UTC (16044):  Shuttle - run 191760 - Process - Client

  process of 191760 - DET is exiting now with 0.
  ```

  $\Leftrightarrow$ the preprocessor for DET failed.
  ```

Take action!

⚠ Take action for GRP, DCS and FXS errors (keep an eye on the heading of the monitoring page).

⚠ If not solved, those errors prevent the possibility to reconstruct the concerned runs.

⚠ Check the log files by clicking on the Failed or PPError or DCSError or FXSError. The last lines will be particulary revealing of the cause of the failure.

✔ in case of StoreErrors notify the offline on-call, after having checked whether the OCDB is accessible, in case the problem persists for more than 1 hour.

✔ in case of failing preprocessors (PPError, Failed) responsibles are notified automatically. No need to inform experts (but in the GRP case, which is a special preprocessor, as explained above).

GRP failure: Take action!

- ⚠ In case of GRP failure, check the log file of the run by clicking on the Failed or PPError symbol for the GRP in the given run. The last lines of the log will clarify the issue. E.g.:
  - ➠ `GRP Preprocessor FAILS!!!  (Trigger Configuration ERROR)`
  - ➠ `GRP Preprocessor FAILS!!!  (DCS ERROR)`
- ⚠ Contact the shifter of the corresponding system (Trigger or DCS, in the example above), passing all the informations made available by the log
- ⚠ Inform the shift leader and the of the problem: no reconstruction will be possible for that run

DCS and FXS errors: Take action!

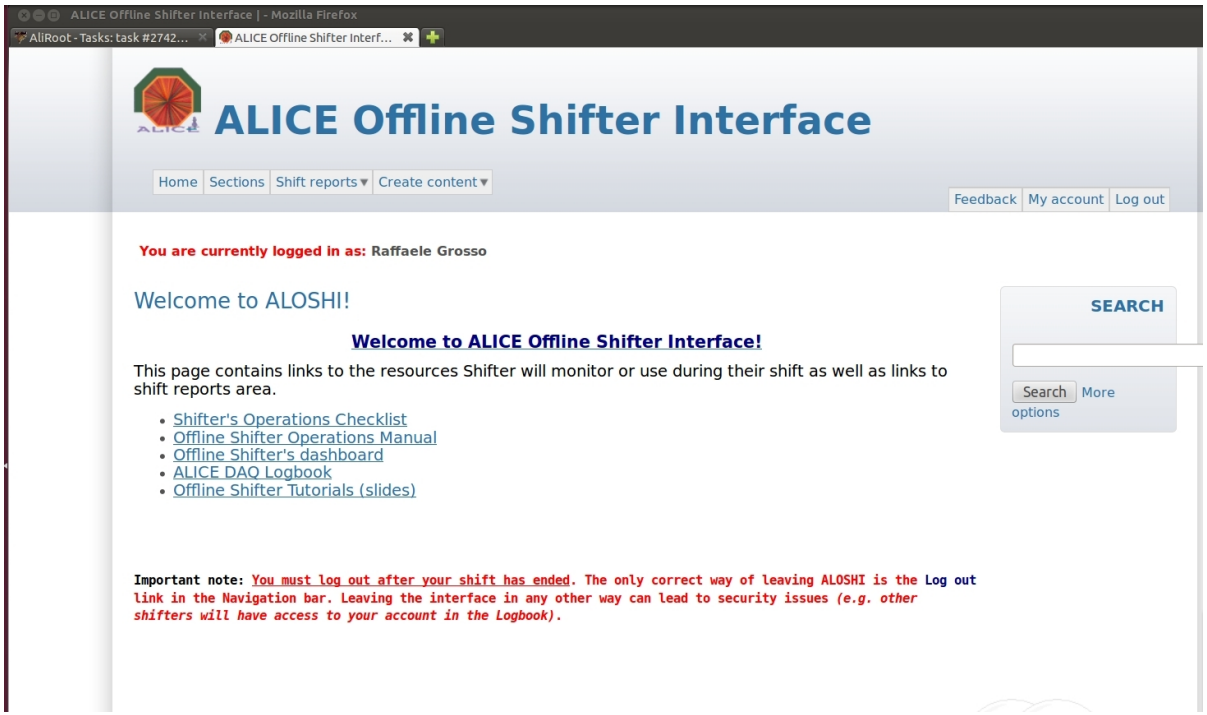
- ⚠ Find the detector that fails with `DCSError` and inform the DCS shifter about the problem and the detector concerned.
- ⚠ Find the detector that fails in `FXSError` and look in its log file to find out which subsystem FXS retrieval failed (can be DAQ or DCS or HLT). Inform the corresponding subsystem shifter and the SL.
  Examples of error messages:
  - ➠ `(Trigger Scalers not found in FXS - ERROR)`
  - ➠ `(FXS Error for LHC Data)`
- ⚠ The cause of combined errors (e.g. `DCS (or DAQ) FXS Error for LHC (or CTP) Data`) can be in either of the systems (e.g. in the LHC (CTP) subsystem or in the FXS itself). In this case contact the SL and the DCS or DAQ shifter, (s)he will in case notify the LHC or CTP expert on call.
- ☞ Whenever it is instructive, show the shifter or the SL the log file.
- ✎ For all the critical issues mentioned above, report the problem in the End Of Shift report

Information for the Offline shifters

ALOSHI: single access point for information

https://aloshi.cern.ch

The ALICE Offline SHifter Interface (ALOSHI) provides to the Offline Shifter a single point of access for browsing and editing information and documentation.



It allows to:

- publish structured documentation for Shifter's operations and tasks;
- search easily for information in the database of the shift reports and in the documentation.

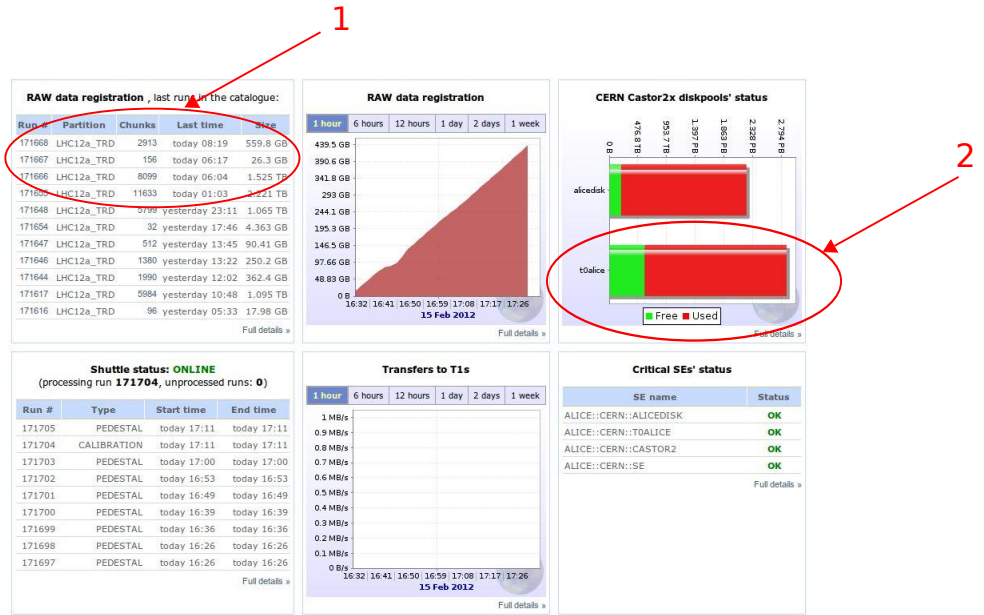
Offline Shifter documentation on ALOSHI

- Any member of ALICE collaboration can access ALOSHI (`https://aloshi.cern.ch`) with its AFS-NICE CERN password.
  - No registration is needed.
- The main page contains (among others) links to:
  - Shifter's Operations Checklist;
  - Offline Shifter's Operation Manual;
  - Offline Shifter's Dashboard;
  - ALICE DAQ Logbook.
- Any authenticated user can edit documentation. Modifications to Offline documentation must be agreed with Offline RC (Latchezar).

The shifter's dashboard

The `shifter's dashboard` provides an overview of the systems to be monitored. The shifter:

1. compares the last registered runs with the last taken runs. If the registration is too far behind the data taking (1-2 hours), contacts the SL and the DAQ shifter to check if DAQ is indeed not asking for registation (e.g. empty runs).
2. checks the status of the CASTOR diskpool. If the free space appears to be too small (<5%) notifes the SL and the Offline expert.



back to step A

Summary of required actions:

The shifter's check list

The shifter's check list

Summary of shifters' duties available in the `shifter's checklist`:

- Monitoring of RAW data registration (dashboard)
  - Periodic check of the status
  - Follow PHYSICS runs (start/stop in DAQ logbook) and their registration to CASTOR
  - Report registration errors to alice-shift-alarms@cern.ch
- Monitoring of the data replication (dashboard)
  - Periodic check of replication status
  - Note "stuck" runs (not processed 12 hours after registration) in the shifter report pages and sent list to alice-shift-alarms@cern.ch

The shifter's check list

- Monitoring of Shuttle operation (dashboard)
  - Follow on processing of all runs + global Shuttle messages
  - In case of persistent detector preprocessor failures, submit a note in the EOS report
  - In case of system failures (DAQ, DCS, HLT) try to narrow down the issue, contact SL and report to system shifter, annotate logbook.
  - In case of Shuttle failures, if automatic restart procedure fails, report to the Offline on-call
- Reporting issues:
  - Report issues in the ALICE logbook with reference to the runs concerned.
  - At end of shift write down a summary of the operations and of noteworthy events (in the alice-logbook).

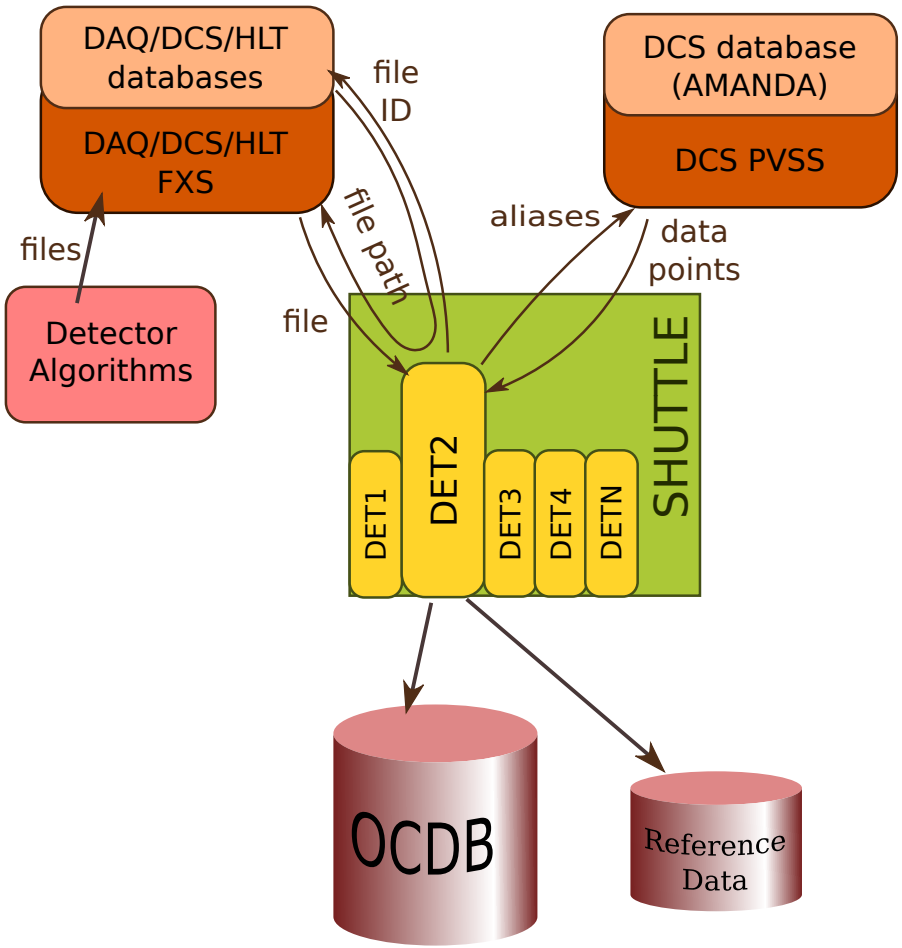
The right mood

- Before pressing the 

make sure to apply the procedures and rules defined for each failure type
  - aloshi has a search feature, use it to look for similar problems and solutions
- Try out the remedies
- If all fails, inform the `on-call expert`

Enjoy your shifts!

Shuttle and Preprocessors



Steered by the Shuttle, detector preprocessors retrieve:

- files from the File eXchange Servers
- a map of Data Points from the DCS interface

valid for the given detector and the given run/time stamp.
These data are processed and publibshed in the Offline Conditions Data Base as CDB objects (root files in AliEn).

Preprocessors' status flow