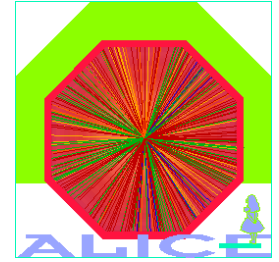


News on the CDB Framework

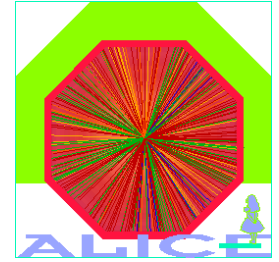


- General news
- OCDB access in PDC06
- Introduction of CDB tags in the AliEn file catalogue
 - ➔ Structure of the CDB and CDBMetaData tables
 - ➔ Implementation of Grid CDB access using tags

Alberto Colla

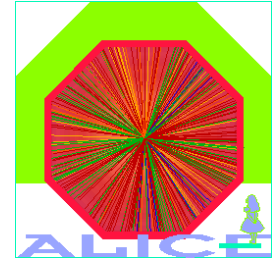
ALICE Offline Week - CERN, October 4, 2006

General news



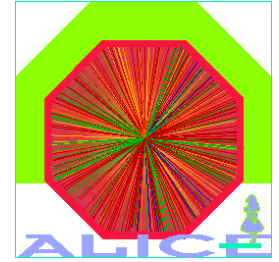
- OCDB Documentation updated on the Offline pages!
 - ➔ Check it: <http://aliceinfo.cern.ch/Offline/Activities/ConditionDB.html>
 - ➔ Comments welcome!

Requests for detector codes (1)



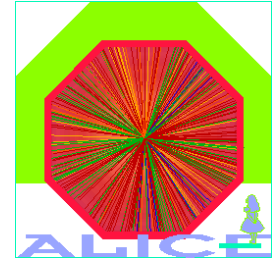
- Important!
- In the present implementation of the OCDB access in the detector codes, if the conditions data are not found on the main storage, then the **zero-order object** stored in `$ALICE_ROOT` (or **hard-coded parameters**) are used.
- **This must be changed now**, in view of the utilization of the access framework for real data reconstruction
- Change your code in such a way it **stops** if main storage is not **accessible**
 - ➔ e.g. issue an **AliFatal!**

Requests for detector codes (2)



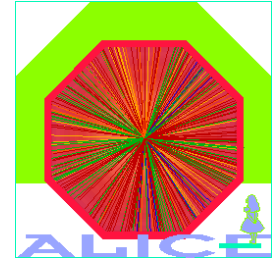
- Please check OCDB access in your digitization/reconstruction code. Object retrieval should be done like this:
 - ➔ `AliCDBManager::Instance() ->Get("DET/Calib/Type");`
 - No **storage activation**
 - No **explicit run number** (it comes from the steering classes)
 - No **explicit version/subVersion**
 - ➔ Some detectors still do not comply with this!

News on the CDB Framework



- General news
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CDB tags in the AliEn FC



- Motivations:

- ➔ make the search in the file catalogue more “intelligent”
 - avoid mechanical parsing/retrieval from file catalogue names only
- ➔ optimization of **access classes**
- ➔ Utilization of **CDB metadata**

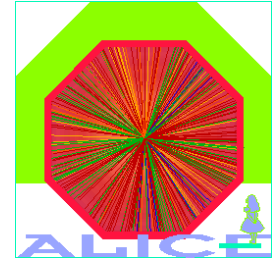
table name : **CDB**

first_run (int)	last_run (int)	version (int)	path_level_0 varchar(255)	path_level_1 varchar(255)	path_level_2 varchar(255)
---------------------------	--------------------------	-------------------------	-------------------------------------	-------------------------------------	-------------------------------------

table name : **CDB_MD**

object_classname varchar(255)	responsible varchar(255)	beam_period (int)	alroot_version varchar(255)	comment varchar(255)
---	------------------------------------	-----------------------------	---------------------------------------	--------------------------------

Examples of queries



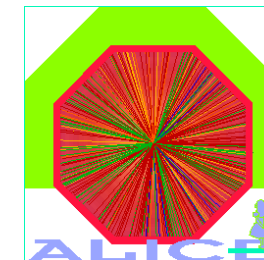
- Example (1):
 - ➔ find files valid for run 5 and path "TPC/*"

```
[alien] /prompt/ > find foldername Run%.root  
CDB:first_run<=5 and CDB:last_run>=5  
and CDB:path_level_0="TPC"
```

- Example (2):
 - ➔ Same query as before, plus use a **CDB_MD** tag

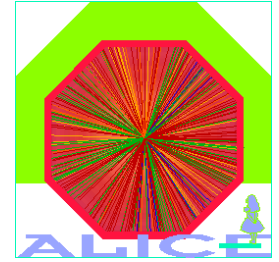
```
[alien] /prompt/ > find foldername Run%.root  
CDB:first_run<=5 and CDB:last_run>=5  
and CDB:path_level_0="TPC"  
and CDB_MD:alroot_version="04 Oct 06"
```


Examples of queries



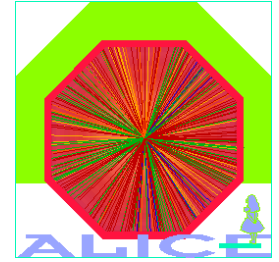
```
colla@PCALBE1:~  
File Edit View Terminal Tabs Help  
[aliendb5.cern.ch:3307] /alice/cern.ch/user/a/aliprod/ >  
<liprod/ > find /alice/simulation/2006/PDC06/Ideal/CDB/ Run%.root CDB:first_run<=5 and CDB:last_run>=5 and CDB:path_level_0="TPC"  
Oct 3 15:05:51 info Filtering according to 'and' CDB first_run<=5  
Oct 3 15:05:51 info Filtering according to 'and' CDB last_run>=5  
Oct 3 15:05:51 info Filtering according to 'and' CDB path_level_0="TPC"  
Oct 3 15:05:51 info The tag CDB has already been selected. Just add the constraint  
Oct 3 15:05:51 info The tag CDB has already been selected. Just add the constraint  
/alice/simulation/2006/PDC06/Ideal/CDB/TPC/Calib/PadGainFactor/Run0_9999999_v1.root  
/alice/simulation/2006/PDC06/Ideal/CDB/TPC/Calib/PadNoise/Run0_9999999_v1.root  
/alice/simulation/2006/PDC06/Ideal/CDB/TPC/Calib/PadPRF/Run0_9999999_v1.root  
/alice/simulation/2006/PDC06/Ideal/CDB/TPC/Calib/PadTime0/Run0_9999999_v1.root  
/alice/simulation/2006/PDC06/Ideal/CDB/TPC/Align/Data/Run0_9999999_v1.root  
/alice/simulation/2006/PDC06/Ideal/CDB/TPC/Calib/Parameters/Run0_9999999_v1.root  
/alice/simulation/2006/PDC06/Ideal/CDB/TPC/Calib/Pedestals/Run0_9999999_v1.root  
[aliendb5.cern.ch:3307] /alice/cern.ch/user/a/aliprod/ >  
[aliendb5.cern.ch:3307] /alice/cern.ch/user/a/aliprod/ >  
[aliendb5.cern.ch:3307] /alice/cern.ch/user/a/aliprod/ >  
[aliendb5.cern.ch:3307] /alice/cern.ch/user/a/aliprod/ >  
[aliendb5.cern.ch:3307] /alice/cern.ch/user/a/aliprod/ >  
[aliendb5.cern.ch:3307] /alice/cern.ch/user/a/aliprod/ >  
[aliendb5.cern.ch:3307] /alice/cern.ch/user/a/aliprod/ >  
[aliendb5.cern.ch:3307] /alice/cern.ch/user/a/aliprod/ >  
[aliendb5.cern.ch:3307] /alice/cern.ch/user/a/aliprod/ >  
[aliendb5.cern.ch:3307] /alice/cern.ch/user/a/aliprod/ >
```

CDB data storage and tagging



- CDB access classes automatically tag data during storage into a Grid storage
- Use usual methods `AliCDBStorage::Put ()` or `AliCDBManager::Put ()`
- Note: currently **aliproduct** privileges are required!

CDB access using tags



- Old implementation: each time the CDB was queried for an object (“`Get ()`” function) the logical file catalog was parsed for the valid file name
- AliEn catalogue implementation: **load list of files valid for a given run before actual queries**
- New functions implemented in AliCDBStorage:

→ `void QueryCDB(Long64_t run, const char* pathFilter="*", Int_t version=-1, AliCDBMetaData *mdFilter=0)`

- Queries the CDB base folder for files valid for **run**, **version** and **path**
- Allows to add **CDB_MD** filters
- Fills a `TObjArray` with corresponding file Id's

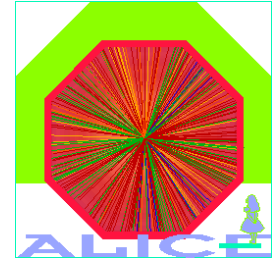
→ `void PrintQueryCDB()`

- Prints array of valid files

→ `TObjArray* GetQueryCDBList()`

- returns pointer to the array

CDB access using tags



- Examples:

```
AliCDBManager *man = AliCDBManager::Instance();  
AliCDBStorage *sto = man->GetStorage("alien://... ");
```

```
sto->QueryCDB(5, "TPC/*");
```

```
AliCDBEntry *entry;
```

```
entry = sto->Get("TPC/Calib/Data", 5);
```

➔ Previously list of valid files is used (file catalogue is not queried!)

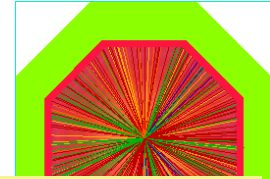
```
entry = sto->Get("TPC/Calib/Data", 10);
```

```
entry = sto->Get("ITS/Calib/Data", 5);
```

➔ Direct query to the file catalogue

Version selection functionality (selection criteria, etc) is still valid!

Example



WELCOME to ALICE

```
root [0]
root [0]
root [0] AliCDBManager* man = AliCDBManager::Instance()
I-AliCDBManager::Init: AliEn classes enabled in Root. AliCDBGrid factory registered.
root [1] AliCDBStorage* sto = man->GetStorage("alien://folder=/alice/simulation/2006/PDC06/Ideal/CDB")
I-AliCDBGrid::AliCDBGrid: Connection to the Grid...
=> Trying to connect to Server [0] http://pcapiserv01.cern.ch:10000 as User colla
*****
* Welcome to the ALICE VO at alien://pcapiserv01.cern.ch:10000
* Running with Server V2.0.8
*****

*****
AliEn v.2-11 has been released.
*****

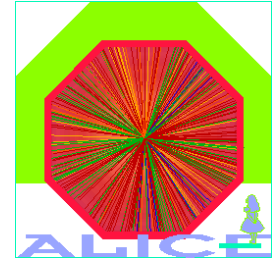
root [2]
root [2] sto->QueryCDB(5,"ITS/*");
I-AliCDBGrid::QueryCDB: Querying files valid for run 5 and path "ITS/*" into CDB storage "alien:///alice/simulation/2006/PDC06/Ideal/CDB/"
I-AliCDBGrid::QueryCDB: 7 valid files found!
root [3]
root [3]
root [3] sto->PrintQueryCDB()
I-AliCDBGrid::PrintQueryCDB: **** QueryCDB Parameters ****
    <path: "ITS/*"; run range: [5,5]>

I-AliCDBGrid::PrintQueryCDB: **** Id's of valid objects found ****
    path: "ITS/Calib/CalibSDD"; run range: [0,9999999]; version: v1
    path: "ITS/Calib/CalibSPD"; run range: [0,9999999]; version: v1
    path: "ITS/Calib/CalibSSD"; run range: [0,9999999]; version: v1
    path: "ITS/Calib/RespSDD"; run range: [0,9999999]; version: v1
    path: "ITS/Calib/RespSPD"; run range: [0,9999999]; version: v1
    path: "ITS/Calib/RespSSD"; run range: [0,9999999]; version: v1
    path: "ITS/Align/Data"; run range: [0,9999999]; version: v1

    Total: 7 objects found

root [4]
root [4] AliCDBEntry* entry = sto->Get("ITS/Calib/CalibSPD",5)
I-AliCDBGrid::Get: CDB object retrieved: path: "ITS/Calib/CalibSPD"; run range: [0,9999999]; version: v1_s0
root [5]
root [5]
```

AliCDBManager helper methods



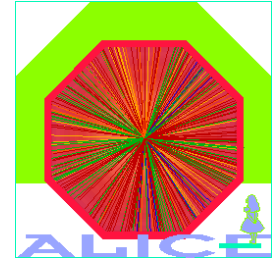
- New function `void QueryCDB()`
 - ➔ Load lists of files valid for the manager's "centralized" run number into the **default storage** and all the **specific storages**
 - ➔ Called automatically when run number is set
(`AliCDBManager::SetRun()`)

- Usage:

```
AliCDBManager *man = AliCDBManager::Instance();
man->SetDefaultStorage("alien://folder=DB1");
man->SetSpecificStorage("*/Align/*", "alien://folder=DB2");
...
man->SetRun(5); // → calls QueryCDB()
// start production!
```

- **Warning:** Be careful copying or moving CDB files, tags are NOT (yet (*)) copied!
 - ➔ (*) this will be implemented in the next alien release

Conclusions



- OCDB framework is being extensively **tested** in the ongoing PDC'06
 - ➔ using calibration and alignment object provided by the detector experts
- We are doing **performance tuning**
- We need that detector experts **cleanup** their code (e.g. break if conditions data is not found in main storage)
- To do (by Offline):
 - ➔ Implement and test **OCDB data replication** on local storage elements
 - ➔ **Group** the OCDB objects per run into a **single (zip) archive**, which will be accessed by the application