

AMGA Metadata Catalog for Belle II

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Overview

- 1 Current status in Belle Data Handling System
- 2 The usage in command line
- 3 The evaluation of the meta-data
- 4 Starting the construction of the LFC
- 5 Summary and next plan

- **Command Line Interface**

- **belle_amga_access:**

```
[amgadev]/home/jhkim > ./belle_amga_access
```

```
Usage : belle_access_amga [options] exp_type stream_or_skim exp_number
```

```
  -h                help message
  -d                debug
  -s                amga_server
  -p                port
  --start_run      #start_run
  --sr             #start_run
  --end_run        #end_run
  --er             #end_run
  --data_type      on_resonance | off_resonance
  --dt             on_resonance | off_resonance
  --type           uds |charm |charged | mixed
  --lib_version    #version
  --lv             #version
```

```
EX) belle_access_amga --start_run 1000 --end_run 1200 --type uds m 0 7
```

- What is benefit to use it?
 - We can control the event level in the meta-data catalog.
 - We can choose either the file level searching or the events level searching alternatively.
If we don't describe for event level, the answer will be file level.
 - We can use it at remote network with strong security (Grid-Proxy certificates, VOMS).
 - The command tool have simple question for user's convenience.
We don't need to describe as "any" or "legacy" of check_process_url.
 - We can use it based on Grid.

- Server:150.183.250.215, client:150.183.250.215
- We ask the question without the event level.

```
[amgadev] /home/jhkim > ./belle_amga_access -start_run 1000 -end_run 1002  
-type uds m 0 7
```

```
process_event bfss06:/bdata/mcprod/dat/e000007/evtgen/uds/00/all/0807/on_resonance/10/  
evtgen-uds-00-all-e000007r001000-b20030807_1600.mdst 0
```

```
process_event bfss06:/bdata/mcprod/dat/e000007/evtgen/uds/00/all/0807/on_resonance/10/  
evtgen-uds-00-all-e000007r001001-b20030807_1600.mdst 0
```

```
process_event bfss06:/bdata/mcprod/dat/e000007/evtgen/uds/00/all/0807/on_resonance/10/  
evtgen-uds-00-all-e000007r001002-b20030807_1600.mdst 0
```

```
[amgadev] /home/jhkim >
```

- We ask for the question by adding options.

```
[amgadev] /home/jhkim > ./belle_amga_access -start_run 100 -end_run 100 -type uds -ks=5 -kl=4  
-r2==0.5 m 0 7  
Exp 7 Run 2865 Events 91  
Total number of events 91  
7 2865 0 25  
7 2865 0 120  
7 2865 0 127  
7 2865 0 147  
7 2865 0 169  
7 2865 0 252  
7 2865 0 262  
7 2865 0 314
```

- We study to understand the File format conversion of the BASF.
- File format conversion : **bfcf**, **dblist**, **dbls**, **mkdb** and so on
- We are working to convert the answer into index. → “**mkdb**” is not working well.
- We need a contact person to solve the problem.

The evaluation of the meta-data.

- It is Founded from exp07 to exp55.

Sapce Occupation per file in DB	600bytes
Average number of events in a file	111,190
Sapce Occupation per event in DB	80bytes
Multiples in Belle II	60

	# of files	Size for file level	Size for event level	Size in Belle II for events
number of run in Belle	24,000	14 MB	125 GB	7.5TB
number of skim types	30			
total number of real files	720,000	412MB		7.5TB
number of MC streams	10			
total number of MC files	240,000	137MB	1,988GB	116TB
number of MC skim types	30			
total number of MC files	7,200,000	4120MB		116TB

The optimization of meta-data in AMGA.

- The meta-data size is great huge for event level.
- We are optimizing the meta-data again.
- However, We found the good solution. → By constructing DB in AMGA again We have a probability to reduce about 90% for the event level from the optimization. It is corresponding to 12TB.
- We are working on. → We will talk the status of optimization at next meeting.
- We can reduce the meta-data size. → By the limitation of applying. If we apply the event level only for a biggest skim type, the mata-data will be reduced from 12TB to less than 6TB.

The Design of the LFC service.

- We are constructing the LFC service with the concept of the simple system.
→ It is the idea of KEK people.
- We are consider the sites, KEK(master), KISTI(replica) and Austraila(replica), for LFC and searching service.
- The service will be with file level meta-data.
- We are discussing How to construct the LFC for Belle II with AMGA team.
- We are discussing converting LFN to PFN in simple system with AMGA team.
- **We are going to make the simplest system.**

- 1 We have Tried to control the event level with index. :doing
- 2 We evaluated the meta-data with the worst scenario.
→ We found the solution.(reduction from 120TB to 12TB).
- 3 We design the LFC for Belle II.
- 4 We will evaluate the meta-data with optimized that.

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