Grid-awaring and LFC registration of Local Belle Data for Belle2 LSDH Test

2010. 6. 17

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Outline

- Belle LSDH & NSDC
- Resources for LSDH
- Grid-waring of Local Belle Data
- Simple Test on LFC & SE
- LFCs at KEK & NSDC
- LFC test Outside by Thomas KUHR
- CE for Belle2 LSDH
- System upgrade of NSDC (KISTI)

Belle LSDH & NSDC

Belle Data Transfer	• KEK → KISTI • Currently, 147TB data are archived	• 93% of planned done
Metadata Extraction		
Scalability Test		
Metadata Replication		
Grid-awaring of Belle data	• SRMDoor & Disk Pool (SEDPM) • File registration to SE without copy • Registration to LFC • Co-test with SE & LFC	• SRM Door & Disk Pool → Done • File Registration to SE → Done • Registration to LFC → Done for KEK & NSDC • Test with SE & LFC → Simple test done • Outside test → done
Test on Grid Env.	• Job submission to Grid (with access to AMGA, SE, LFC)	• Basic Test was successful • Every Testers should have grid cert. and Belle VO membership
What Next ?	• Any other Belle2 SW tests on Grid?	

Resources for LSDH

- Disk Pool
  - dpmp1.sdfarm.kr
    - by GPFS, 170TB (147TB is occupied by bdata)
    - Now, in reorganizing to use IBRIX instead of GPFS
    - gLite 3.2
- SRM Door
  - se1.sdfarm.kr
    - 1G connection to outside & disk pool
    - gLite 3.2, DPM_mysql
    - Around 290,0000 entries
- LFC
  - @KEK : kek2-lfc.cc.kek.jp
  - @NSDC : lfc.sdfarm.kr (gLite 3.1, mysql base)
  - Both LFCs have identical entries which are mapped to se1.sdfarm.kr
- Computing Element
  - ce02.sdfarm.kr is tuned to accept Belle VO jobs

Grid-waring of Local Belle Data

- The detail information is in
  - http://134.75.123.21/twiki/bin/view/Main/EnableGridData
  - There are some works that should be done manually. See the above link.
  - Registration to SRM Door & SRM Pool was done in around 4 hours
  - Registration to LFC takes much more time, several days.
  - Registration to LFC@KEK took more time compared to that to LFC@NSDC
    - This might come from Network Latency and load of LFC@KEK
    - LFC@NSDC is only for Belle VO (Virtual Machine)

Simple Copy Test on LFC&SE (LFC@NSDC, Client@NSDC)

```
[ui-alice] /home/kyun/11-belle/lfc@kek > voms-proxy-init --voms belle
Enter GRID pass phrase:
Your identity: /C=KR/O=KISTI/O=GRID/O=KISTI/CN=84035421 Beob Kyum Kim
Creating temporary proxy ..... Done
Contacting  voms.cc.kek.jp:15020
[/C=JP/O=KEK/OU=CRC/CN=host/voms.cc.kek.jp] "belle" Done
Creating proxy ..................................................................
Done
Your proxy is valid until Mon May  3 20:51:20 2010
```

Proxy-init

```
[ui-alice] /home/kyun/11-belle/lfc@kek > echo $LFC_HOST
lfc.sdfarm.kr
```

Set LFC_HOST

```
[ui-alice] /home/kyun/11-belle/lfc@kek > lcg-cp --vo belle
lfn:/grid/belle/mcprod/dat/e000041/evtgen/charged/00/all/0311/on_resonance/00/evtgen-charged-00-
all-e000041r000095-b20050311_0738.mdst   file:////home/kyun/11-belle/lfc@kek/test0503-nsdc
```

File copy

```
[ui-alice] /home/kyun/11-belle/lfc@kek > export LFC_HOST=kek2-lfc.cc.kek.jp
[ui-alice] /home/kyun/11-belle/lfc@kek > echo $LFC_HOST
kek2-lfc.cc.kek.jp

[ui-alice] /home/kyun/11-belle/lfc@kek > lcg-cp --vo belle
lfn:/grid/belle/mcprod/dat/e000041/evtgen/charged/00/all/0311/on_resonance/00/evtgen-charged-00-
all-e000041r000095-b20050311_0738.mdst  file:////home/kyun/11-belle/lfc@kek/test0503-kek

[ui-alice] /home/kyun/11-belle/lfc@kek > ll
total 2401072
-rw-rw-r--  1 kyun kyun 1228141020 May  3 08:52 test0503-nsdc
-rw-rw-r--  1 kyun kyun 1228141020 May  3 08:54 test0503-kek
```

Belle II

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LFCs at KEK & NSDC

- LFC at KEK
  - On Hardware, should be stable and strong
  - Is being used by several users
- LFC at NSDC
  - On Virtual Machine, flexible but not sure on its stability
  - For local test, its performance seems reasonable

- Some number of simple tests show:
  - To local desktop machine (@NSDC)
    - Because of network latency and load of LFC@KEK, copy to desktop (from LFC@KEK) takes a little more time, but no serious diff. on time.
  - To other desktop machine (outside of NSDC)
    - Need outside tester to test copy from LFC's @KEK & @NSDC
    - **It is done by Thomas KUHR**

LFC Test from Outside by Thomas KUHR

LFC@NSDC(KISTI)
Virtual Machine
Client@gridka
Data@NSDC(KISTI)

```
[gridka25] ~ $ export LFC_HOST=lfc.sdfarm.kr
[gridka25] ~ $ time lcg-cp --vo belle
lfn:/grid/belle/mcprod/dat/e000041/evtgen/charged/00/all/0311/on_resonance/00/evtgen-
charged-00-all-e000041r000095-b20050311_0738.mdst file:////tmp/test0503-kisti

real    121m42.441s
user    0m4.897s
sys     0m11.094s
```

LFC@KEK
Physical Machine
Client@gridka
Data@NSDC(KISTI)

```
[gridka25] ~ $ export LFC_HOST=kek2-lfc.cc.kek.jp
[gridka25] ~ $ time lcg-cp --vo belle
lfn:/grid/belle/mcprod/dat/e000041/evtgen/charged/00/all/0311/on_resonance/00/evtgen-
charged-00-all-e000041r000095-b20050311_0738.mdst file:////tmp/test0503-kek

real    122m37.946s
user    0m5.179s
sys     0m11.496s
```

Seems Good !

CE for Belle2 LSDH

- Originally, planned to use CE@KEK

- ce02.sdfarm.kr

  - 304 cores in total

  - 248 cores are enabled for Belle VO
    - Shared by other experiments
    - In 2 months, we will have more concrete number of nodes for Belle
      - We will add more nodes into this cluster and shared portion by each experiment will be decreased.

  - $VO_BELLE_SW_DIR = /belle
  - $VO_BELLE_DEFAULT_SE = se1.sdfarm.kr

System upgrade of NSDC(KISTI)

- New storage is being setup, now.
  - For the Belle data migration to new storage, we need around 2 weeks.
    - We expect, it will finish by 6/25
  - New storage have 5 Parallel File Servers (IBRIX, commercial software)
    - 5 servers will balance their loads
    - SRM is the client of those PFSs

Thank you !!

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