Grid Infrastructure Collaboration between KISTI and EGEE-II: Current Status and Future Works

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Introduction to KISTI

- leading provider of science and technology information in Korea
  - high-end supercomputers and high-performance research network
  - accumulated expertise in high-performance computing.
- Mission of KISTI
  - Leading the national grid project called K*Grid and the national e-Science project
  - Responsible for the national cyberinfrastructure of Korea.

Introduction to KISTI-EGEE collaboration

- EGEE-II contracting partner
  - Unfunded partner in the EGEE-II project
  - Cooperating with CKSC team, another EGEE-II partner in Korea
- Participating area: SA1
  - Focusing on Grid infrastructure collaboration between KISTI and EGEE-II

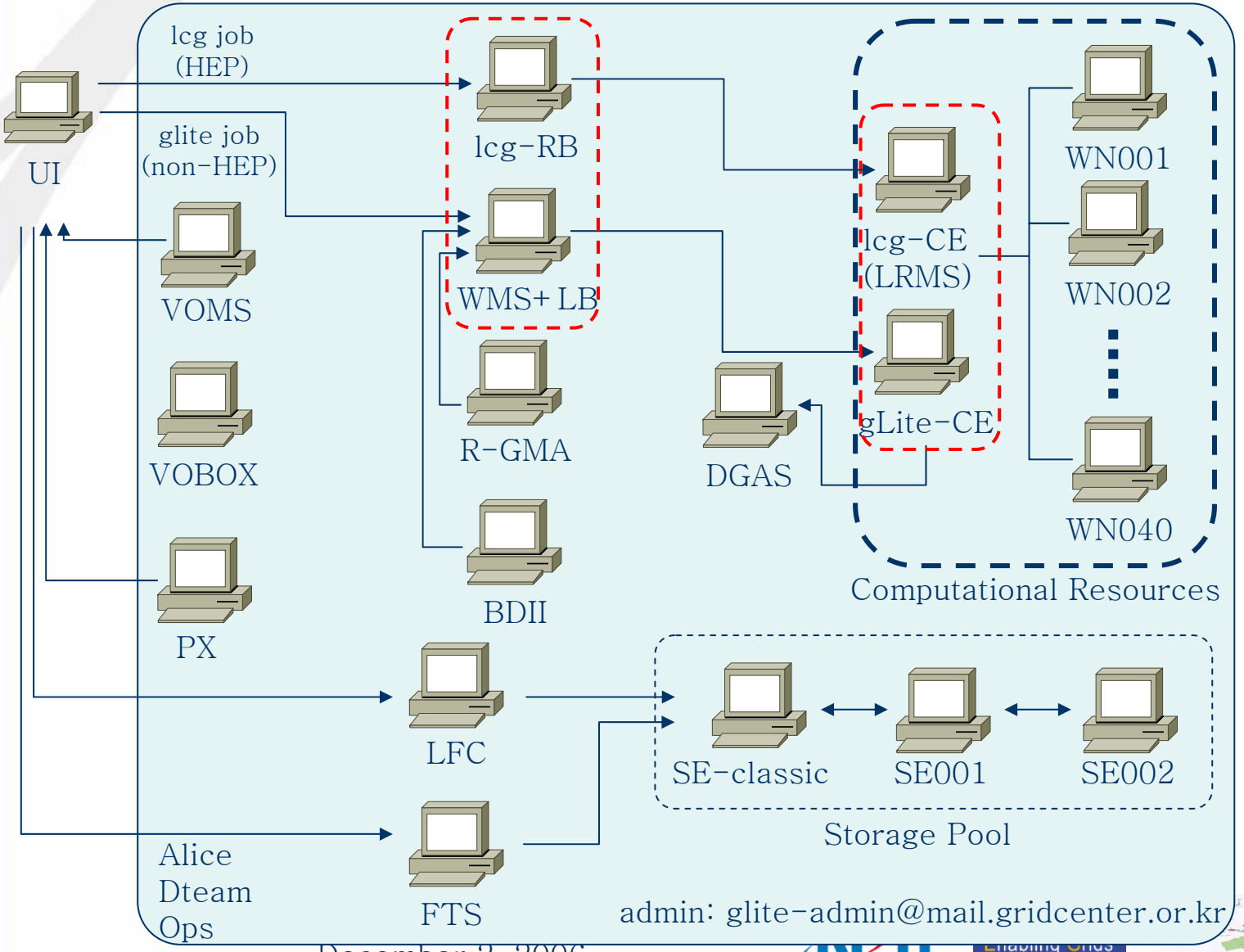
Goal :

- Gain experience with the EGEE middleware and operation procedures
  - Install and operate EGEE middleware (e.g., glite, lcg) on KISTI site
- Facilitate joint research activities between Korea and Europe based on EGEE infrastructure
  - HEP, FusionGrid,…
    - Currently, we are working with the ALICE group
- Investigate the feasibility of EGEE infrastructure for researchers in other scientific and engineering areas in Korea.

Work Schedule

- ~5/15: Cluster preparation for EGEE deployment
- ~5/31: gLite installation and configuration
- ~7/15: Internal testing of gLite installation and configuration
- ~8/15: ALICE experiment S/W(AliRoot,…) installation
- 9/15~: Register to APROC for EGEE certification(on-going)
- ~9/30: ALICE VOBOX installation
- 10/1~: ALICE VOBOX testing
- ~10/15: Installation and configuration of LCG components(lcg-RB, lcg-CE)
- 10/16: Removed KISTI CA from IGTF repository
- ~11/15: Apply for ASGC user/host certificates
- 11/15~: Resumed ALICE VOBOX testing
- 12/20~: Starting to production run as EGEE-certified site

EGEE M/W Deployment



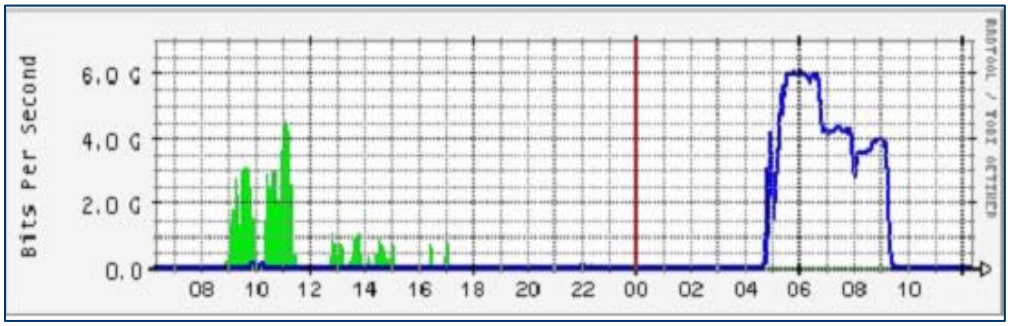
KISTI Testbed for EGEE Deployment

KISTI Testbed Specification

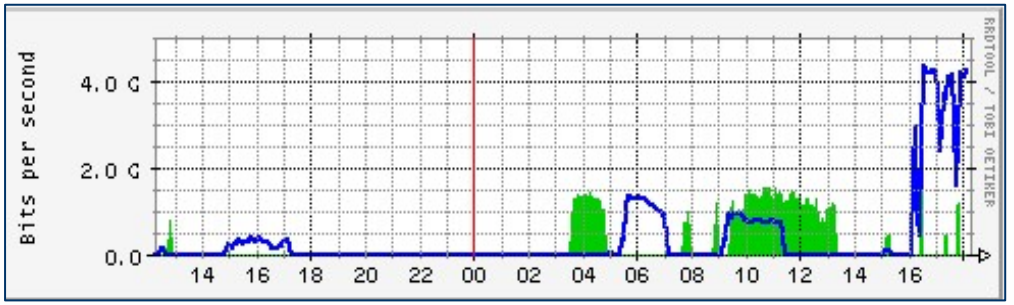
- OS: Scientific Linux 3.0.4
- CPU: Intel® Pentium-IV 2.0GHz
- Memory: 512MB
  - Swap Memory: 4GB per all nodes
- Disk: 40GB per all nodes
  - 500GB external storage are shared by CE and all WN as user home directory
- Network: 1Gbit Ethernet
- Note:
  - 2TB raid storages with 10G international connection is ready to be used as Storage Element for high-performance data transfer between CERN and KISTI

High Performance Network: Application Proxy Center

High Performance System
Connected to 10G Backbone



Memory Data Transfer
Between KISTI and Caltech



Disk Data Transfer
Between KISTI and UIC

Expected data transfer route between KISTI and CERN

Current Status of EGEE/ALICE Deployment

- Both APROC and VOBOX testing seem to have been stuck with the same problem
  - When a job is submitted to the KISTI CE, the following error keeps occurring:

    "[lcg00122] ~> globus-job-run venus.gridcenter.or.kr/jobmanager-lcgpbs `which id` submit-helper script running on host ve044 gave error: cache_export_dir (/home/dteam007/.lcgjm/globus-cache-export.L4HYxp) on gatekeeper did not contain a cache_export_dir.tar archive"
  - We're having a close look at the problem
  - Jason Shih is closely helping us to shoot the problem
- Working on KISTI CA for being accredited CA from APGRID PMA as production-level CA

Future Works

- APROC testing for EGEE-certified site
- VOBOX testing for ALICE production site
- Set up a SE on one of high performance machines at KISTI Proxy Center and configure FTS properly for high-performance data transfer between KISTI and CERN

감사합니다
Republic of Korea

Thanks
USA

Grazie
Italy

謝謝
China

ありがとう
Japan

Danke
Germany

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Performance results

- TCP Buffer Size of each system : 500MB
- Bandwidth : 10Gbps
- RTT : 288ms
- MTU: 9180

- Test result :
  - [yulli@proxy1 ~]$ iperf -s -w 16m
  - [4] 0.0-50.0 sec 4.47 GBytes 767 Mbits/sec
  - [yulli@proxy1 ~]$ iperf -s -w 32m
  - [4] 0.0-50.1 sec 8.55 GBytes 1.46 Gbits/sec
  - [yulli@proxy1 ~]$ iperf -s -w 64m
  - [4] 0.0-50.0 sec 16.0 GBytes 2.74 Gbits/sec
  - [yulli@proxy1 ~]$ iperf -s -w 128m
  - [4] 0.0-50.0 sec 19.8 GBytes 3.41 Gbits/sec

  - But CERN-KISTI performance result was 2.82MB/s(about 24Mbps)
  - It seems to be lack of small TCP Buffer size

Outline

- Introduction to KISTI & KISTI-EGEE Collaboration
- Goal
- Work Schedule
- Current Status of EGEE Deployment
- Future Works