Introduction to Computing Environments at KISTI-GSDC LDG

KISTI (Korea Institute of Science and Technology Information)
GSDC (Global Science experimental Data hub Center)

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01 Introduction to KISTI-GSDC

02 Introduction to GSDC-LDG

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Introduction to KISTI-GSDC
KISTI
Korea Institute of Science and Technology Information

- Government-funded research institute founded in 1962 for National Information Services and Supercomputing
- National Supercomputing Center
  - **Nurion** - Cray CS500 system
    - 25.7 PFlops at peak, ranked 11th of Top500 (2018) => 21st (Nov 2020)
  - **Neuron** - GPU system, 1.24 PFlops
  - **KREONet/KREONet2** - National R&E network
Large-scale Scientific Data: 20Km CD stack with data produced per year in CERN

Global Science

Experimental Data

Hub Center

(Global)
Asia representative Data Hub

(Domestic)
Scientific data management and analysis platform service

Collaboration with global laboratories

Data from large and high-valued research equipment
GSDC
Global Science experimental Data hub Center

- Government-funded project, started in 2009 to promote Korean fundamental research through providing computing power and data storage

- Datacenter for data-intensive fundamental research
  - 17 staff: system administration, experiment support, external-relation, management and planning
Experiments Support

- Heavy-Ion Physics
  - WLCG Tier-1 (2014)
- Astrophysics
  - LDG Tier-2 (2019)
- Elementary Particle Physics
  - B2G Tier-2 (TBD)
- Elementary Particle Physics
  - WLCG Tier-2 (2018)
- Medical Science
  - ARGO Regional Center
- Neutrino Physics
  - RAW Storage
- Structural Biology
  - Data Sharing Platform
Introduction to GSDC-LDG
GSRC-LDG Overview

User

Login Node
ldg-ui.sdfarm.kr
ldg-ui01.sdfarm.kr
(HTCondor)

Tier3 Job

Open Science Grid

550TB Storage

996cores Cluster

LIGO Data

KAGRA Data

Grid Job

LIGO Data

KAGRA Data

Tier3 Job

July, 9, 2021

The 8th KAGRA International Workshop
Status of GSDC-LDG

Open Science Grid

HTCondor CE

LIGO Data
KAGRA Data Tier0

Batch System: HTCondor

User

Lgmm

condor

osg

condor

gridftp

osg

Worker Nodes

Storage

Storage Resources

Computing Resources

UI Authentication Proxy

Squid

cvmfs

condor

osg

cvmfs

cvmfs

condor

osg
## Resources

### Computation Resource

<table>
<thead>
<tr>
<th>Resource</th>
<th>Physical Core</th>
<th>Memory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Node</td>
<td>996 (66 servers)</td>
<td>72GB X 27, 96 GB X 33, 384 GB X 6</td>
</tr>
<tr>
<td>UI, CE, LGM, LDAS, LDR</td>
<td>60 (5 servers)</td>
<td>24GB X 5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1056</strong></td>
<td><strong>7416</strong></td>
</tr>
</tbody>
</table>

| Work Node (GPU)           | 3 Servers     | 6 GPU Cards (P40) |

### Storage Resources

<table>
<thead>
<tr>
<th>Mount on</th>
<th>Size</th>
<th>Used</th>
<th>Avail</th>
<th>Use</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIGO</td>
<td>400T</td>
<td>317T</td>
<td>84T</td>
<td>80%</td>
<td>pool0.gsn.sdfarm.kr:/ifs/service/ligo</td>
</tr>
<tr>
<td>KAGRA</td>
<td>150T</td>
<td>113T</td>
<td>38T</td>
<td>76%</td>
<td>pool0.gsn.sdfarm.kr:/ifs/service/kagra</td>
</tr>
</tbody>
</table>
LDG WatchTower

- LDG central monitoring system
- Ganglia installed on all GSDC-LDG resource

http://watchtower.phys.uwm.edu/ganglia/?r=hour&cs=&ce=&m=load_one&s=by+name&c=&tab=m&vn=&hide-hf=false
Conclusion
Conclusion

• We briefly introduced the configuration resources, environment and operation status of KISTI-GSDC LDG.

• We hope to develop a good collaboration in the computing and data management of KAGRA.

GSDC Promoting Science
THANK YOU