KISTI-GSDC Site Report

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1. KISTI GS DDC Overview

Government-funded Datacenter
KISTI
Korea Institute of Science and Technology Information

- Government-funded institute
- From 1962
- National Supercomputing Center
- National R&D network (KREONet)
- National R&D Information Service
• Government-funded project
• From 2009
• Datacenter for data-intensive fundamental research
• 16 staffs
• Promote Korean fundamental research through our Datacenter
Resources

25 Storage Racks with 6 Different Models

Storage Area Network 6.5 PB

50 Switches with 10 Different Models

Backbone Switch

Network Attached Storage 3.5 PB

650 Server with 14 Different Models

ALICE

CMS

BELLE

RENO

Admin

TEM

Genome

Testbed
2. Tier-1 Operations

3.68 million jobs during last 6 months
Computing Jobs
ALICE Tier-1

KISTI Tier-1 has been providing reliable and stable service

Max 3,488 concurrent jobs
(84 nodes x 32 cores, 10.5 HS06/core)
(20 nodes x 40 cores, 11.4 HS06/core)
= 38 kHS06

Meet the pledge of 2017 (>36kHS06)

More than 3.68 million jobs during last 6 months
Storage(Disk)
ALICE Tier-1

- 1500TB (Disk) -> 3000TB (in October)
- XRootD based Data Handling
  (1 redirector + 10 storage nodes)

![Graph showing storage status for last 6 months]

- Storage status for last 6 months:
  - April 2017 → Oct 2017
  - Disk usage: 94%
  - Disk usage: 75%
  - Tape usage: 2271 TB used (75%)
  - Tape usage: 1359 TB used (94%)

- Disk usage: 94%
- > 97% and 95% Availability in reading and writing for last 6 months

- Write test failed while 98% disk usage (correction requested to CERN)
- Disk read/write test filed by catalog error
- 99.7% tape read/write availability
Storage(Tape)  
ALICE Tier-1

- 3000TB (Tape)
  - 2,271TB ALICE Raw Data Stored
  - ~1,911TB RUN2 Data Transferred
  - 799 Tapes (4TB each)
  - 8 Tape Drivers with 2GB/s Throughput

Tape Pool (XRootD)
Service Servers

Cache Pool 600TB
XRootD(400TB) + GPFS(200TB)

Tape 3PB

GPFS/TSM Server
(XRootD → Tape)

Using Disk-based Cache to speed up the read/write from tape system
3. GSDC System & Plan

CentOS 7, Katello, OpenSCAP
OpenSCAP with Foreman
Tested with CentOS 7

- Foreman 1.15 with Katello 3.4
- CentOS 7
OpenSCAP with Foreman
Anaconda Post Script

• Based on remediation shell script at the OpenSCAP Evaluation Report
• CentOS 7

```
### NIST 800-53 Requirements ###

# 2.6.2.4.1 Records Events that Modify Date and Time Information
echo "-a always,exit -F arch=b32 -S adjtimex -S settimeofday -S stime -k time-change" >> /etc/audit/rules.d/time_modification.rules
echo "-a always,exit -F arch=b64 -S adjtimex -S settimeofday -k time-change" >> /etc/audit/rules.d/time_modification.rules
echo "-a always,exit -F arch=b32 -S clock_settime -F a0=0x0 -k time-change" >> /etc/audit/rules.d/time_modification.rules
echo "-a always,exit -F arch=b64 -S clock_settime -F a0=0x0 -k time-change" >> /etc/audit/rules.d/time_modification.rules
echo "-w /etc/localtime -p wa -k time-change" >> /etc/audit/rules.d/time_modification.rules

# 2.6.2.4.2 Record Events that Modify User/Group Information
echo "-w /etc/group -p wa -k identity" >> /etc/audit/rules.d/usergroup_modification.rules
echo "-w /etc/passwd -p wa -k identity" >> /etc/audit/rules.d/usergroup_modification.rules
echo "-w /etc/gshadow -p wa -k identity" >> /etc/audit/rules.d/usergroup_modification.rules
echo "-w /etc/shadow -p wa -k identity" >> /etc/audit/rules.d/usergroup_modification.rules
echo "-w /etc/security/opasswd -p wa -k identity" >> /etc/audit/rules.d/usergroup_modification.rules

# 2.6.2.4.3 Record Events that Modify the System's Network Environment
echo "-a always,exit -F arch=b32 -S sethostname -S setdomainname -k network_modification" >> /etc/audit/rules.d/networkconfig_modification.rules
echo "-a always,exit -F arch=b64 -S sethostname -S setdomainname -k network_modification" >> /etc/audit/rules.d/networkconfig_modification.rules
echo "-w /etc/issue -p wa -k network_modification" >> /etc/audit/rules.d/networkconfig_modification.rules
echo "-w /etc/issue.net -p wa -k network_modification" >> /etc/audit/rules.d/networkconfig_modification.rules
```
OpenSCAP with Foreman
DISA STIG for CentOS Linux 7

• Anaconda post script for the DISA STIG for CentOS Linux 7 OpenScap Profile

Compliance and Scoring

The target system did not satisfy the conditions of 52 rules! Please review rule results and consider applying remediation.

Rule results

144 passed 52 failed

Severity of failed rules

7 low 37 medium 8 high

Score

<table>
<thead>
<tr>
<th>Scoring system</th>
<th>Score</th>
<th>Maximum</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>um:xccdf:scoring:default</td>
<td>78.59338</td>
<td>100.000000</td>
<td>78.56%</td>
</tr>
</tbody>
</table>

• Tailoring required
OpenSCAP with Foreman

Ansible Code

- Role for the Katello System installation
  - on Smart Proxy
    - Install theforeman-foreman_scap_client puppet module
    - Import foreman_scap_client puppet module
  - on Katello Server
    - Refresh smart proxy features
    - Create default SCAP content
    - Create default policy
    - Set OpenSCAP Proxy on default hostgroup
    - Set OpenSCAP Proxy on registered hosts
    - Create job for running puppet on registered hosts
Thanks