IHEP Computing Site Report

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Outline

- Local Cluster
- LCG Site
- Network
- Infrastructure Upgrade
- Summary

Local Cluster

- 1000+ users, 200+ active ones
- For BES,YBJ,DYB experiments
  - 6500+ job slots (include 1500 slots new added)
  - Storage:
    - 3PB+ lustre
    - 5PB+ tape lib
  - Scheduler: Torque + maui

Trouble in Lustre

- Lustre had been running well with high performance
- MDS problem happened by the end of Sept.
- Big task to save data from the damaged Lustre

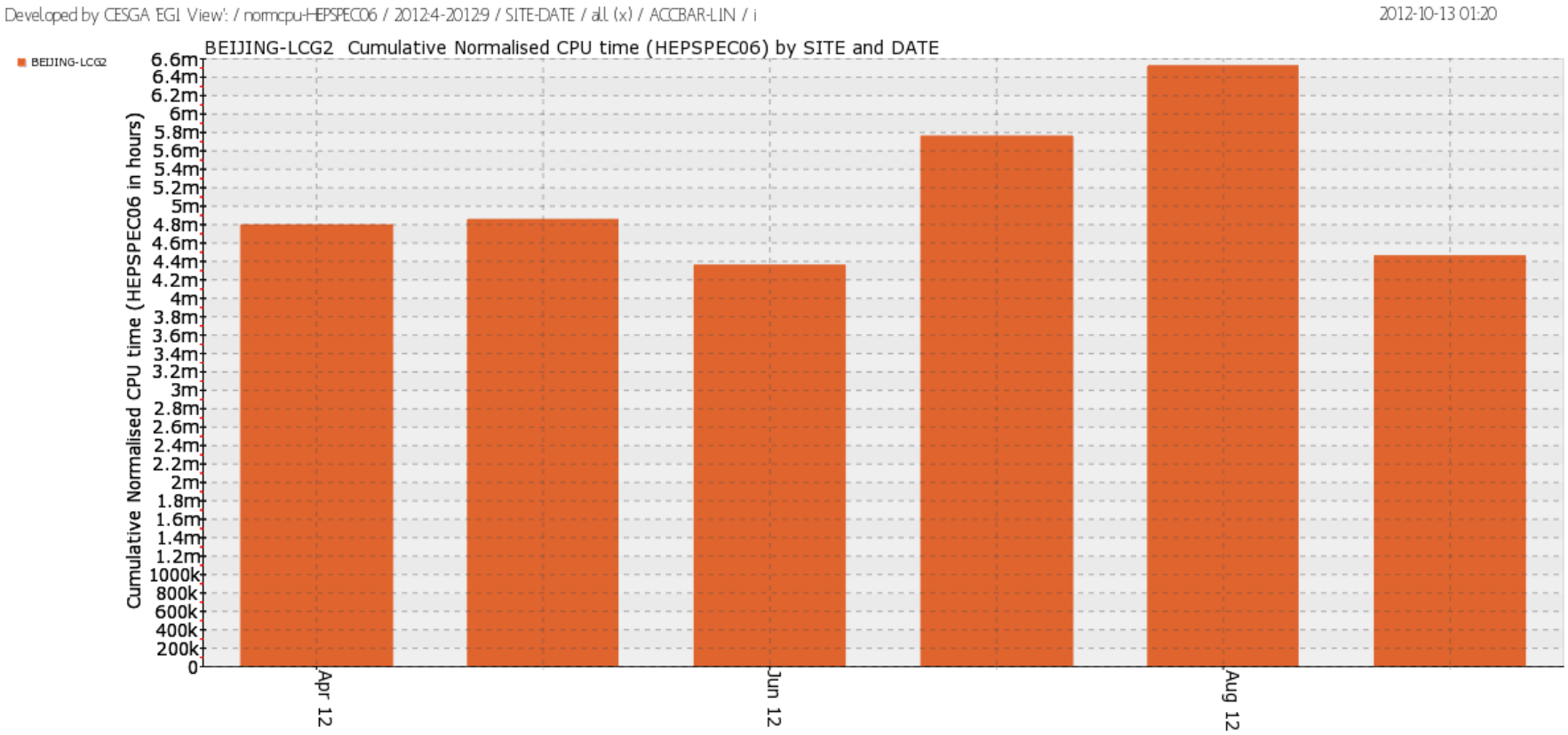
Trouble in Lustre (cont.)

- New rules need to be established to regulate storage usage
  - Limit users' small size files
  - Data file and user file should be kept in separated storage
  - Any suggestion are warmly welcome

LCG Tier II Site

- For CMS, ATLAS experiments
- 1000+ Job slots
- Storage:
  - 320TB dCache
  - 320TB dpm
  - 1T disks will be replaced by 2T disks
  - 50T extra space will be added

BEIJING-LCG2 Site report

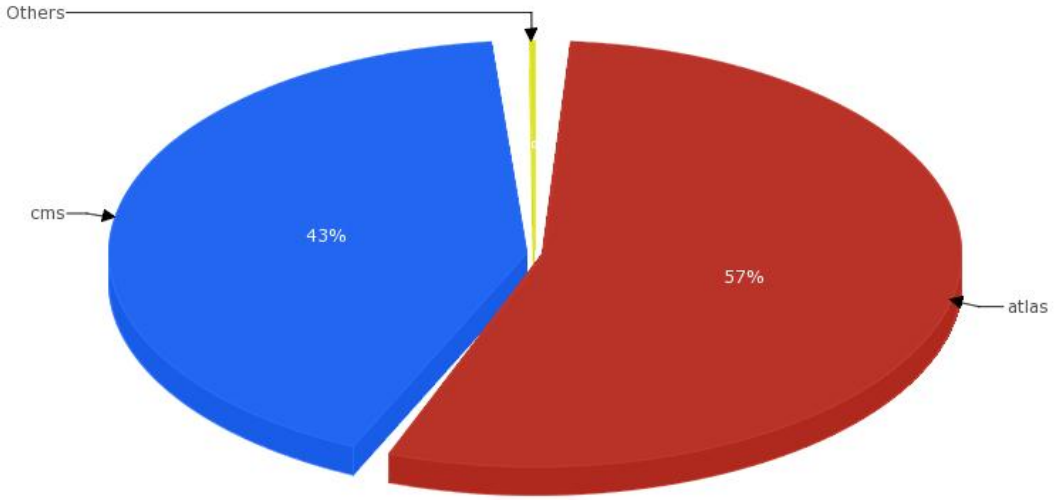


BEIJING-LCG2 Site report

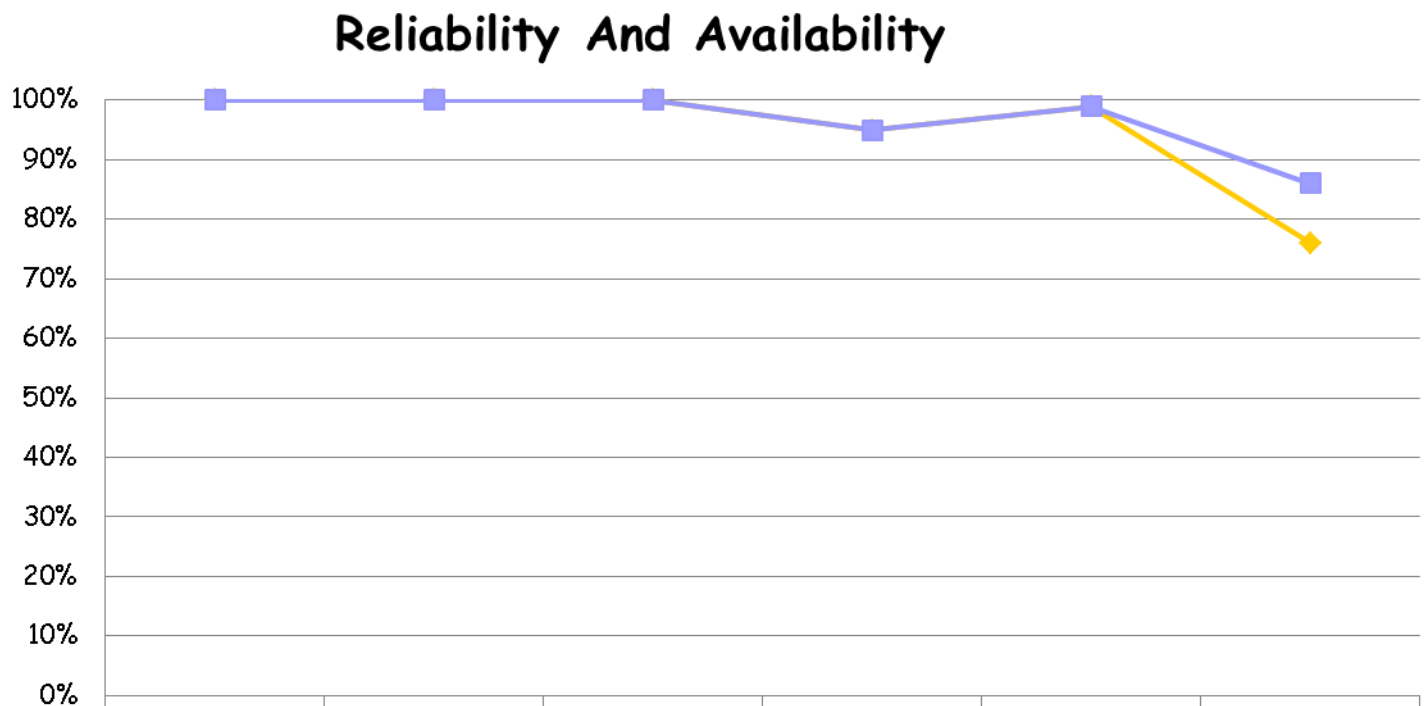
Developed by CESGA 'EGI View': / normcpu-HEPSPEC06 / 2012:4-2012:9 / SITE-VO / all (x) / ACCBAR-LIN / l

2012-10-13 01:20

BEIJING-LCG2 Normalised CPU time (HEPSPEC06) per VO



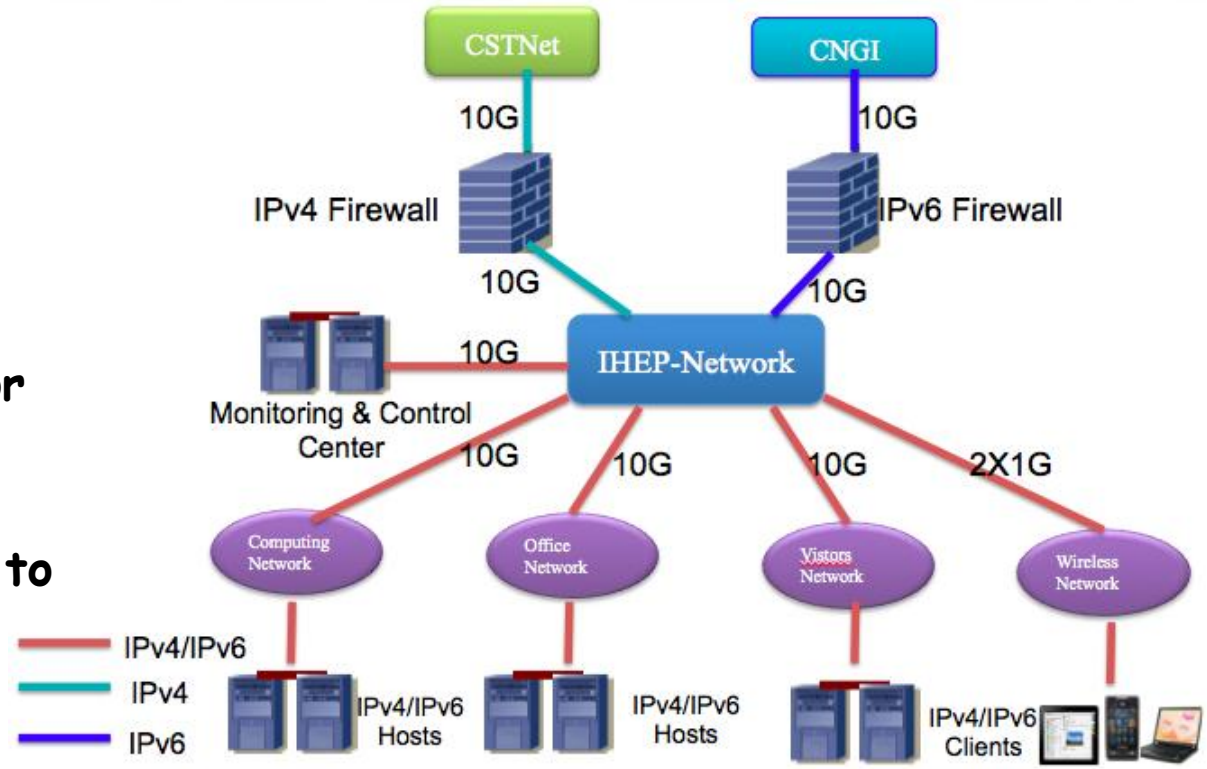
Reliability and Availability



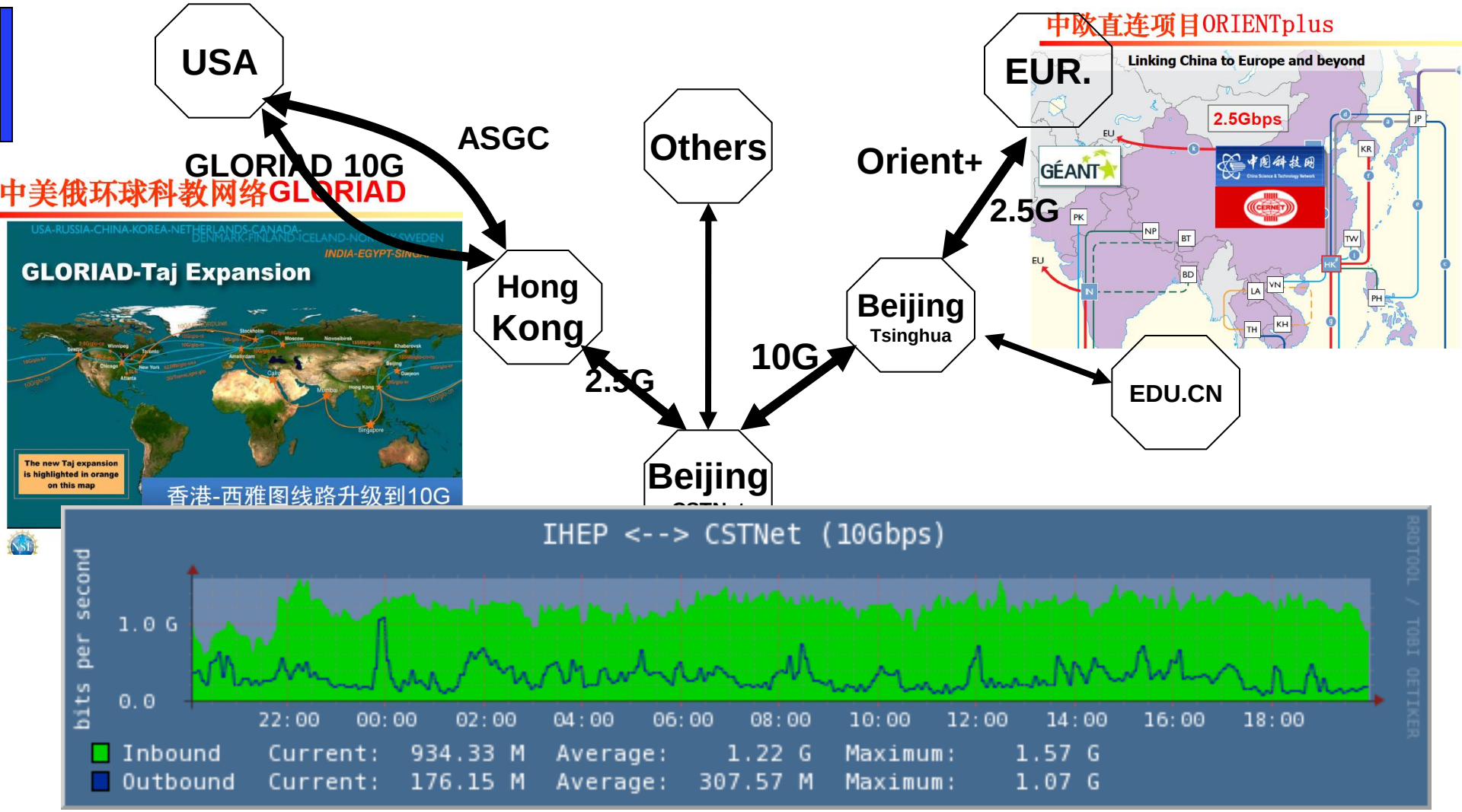
	04/12	05/12	06/12	07/12	08/12	09/12
Avalability	100%	100%	100%	95%	99%	76%
Reliability	100%	100%	100%	95%	99%	86%

IHEP Campus(Office) Network

- Star structure
- 10G Backbone
- WIFI Covered
- Over 3000 Users
- IPv4/IPv6 available for Users
- 10G IPv4 & IPv6 Link to CSTNet



Network connection



Perfsonar @ihep

- Two hosts for perfsonar
  - Perfsonar.ihep.ac.cn for Bandwidth test
  - Perfsonar2.ihep.ac.cn for Latency test
- Network performance tuning is in progress between IHEP and Eur. Sites
  - http://twiki.ihep.ac.cn/twiki/bin/view/InternationalConnectivity/IHEP-CCIN2P3
- Discussing with related people about the possibility in connecting IHEP to LHCONE

Test Members	
hcc-ps02.unl.edu	T2_US_Nebraska
193.109.172.190	SPAIN
perfsonar-ps01.gridpp.rl.ac.uk	UK
lhc-bandwidth.twgrid.org	lhc-bandwidth.twgrid.org
perfsonar-ps.cern.ch	CERN
perfsonar.nersc.gov	NERSC
perfsonar-ps.cnaf.infn.it	INFN
perfsonar1.cc.kek.jp	KEK
psonar2.lal.in2p3.fr	psonar2.lal.in2p3.fr
heplnx128.pp.rl.ac.uk	heplnx128.pp.rl.ac.uk
ps.lhcopn-ps.sara.nl	SARA
perfsonar-ps2.ndgf.org	Nordic countries
157.82.112.69	Japan
perfsonar2.ihepa.ufl.edu	perfsonar2.ihepa.ufl.edu
sunn-pt1.es.net	1
210.72.16.8	210.72.16.8
perfsonar-bw.sprace.org.br	perfsonar-bw.sprace.org.br
perfsonar-ps-02.desy.de	perfsonar-ps-02.desy.de
193.48.99.79	IN2P3-20121006
cmsperfsonar01.fnal.gov	FNAL
perfsonar-de-kit.gridka.de	KIT

Upgrade for Data Center Network

Device Expansion

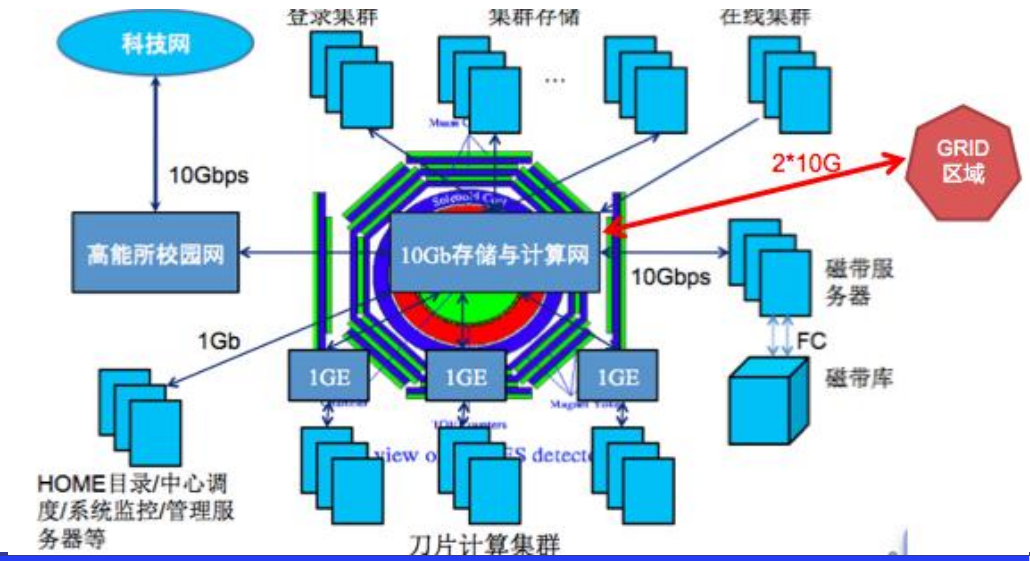
- Performance
  - The 10G(2Gbps->10Gbps) firewall is ready(based on Linux & iptables)
- The lack of 10G ports
  - Some devices are under test

    FROCE10 Z9000/4810

    Arista 7148/7508

Topology Upgrade

- The Grid Area is isolated
  - Arista 7148: for the area core switch



Infrastructure Upgrade

——Power System Upgrade

- Before the Upgrade
  - Power consumption reached 90% of total capacity
  - Power supply of per rack can not support high density blade servers
  - Single-phase supply can not meet the needs of power system

Power System Upgrade

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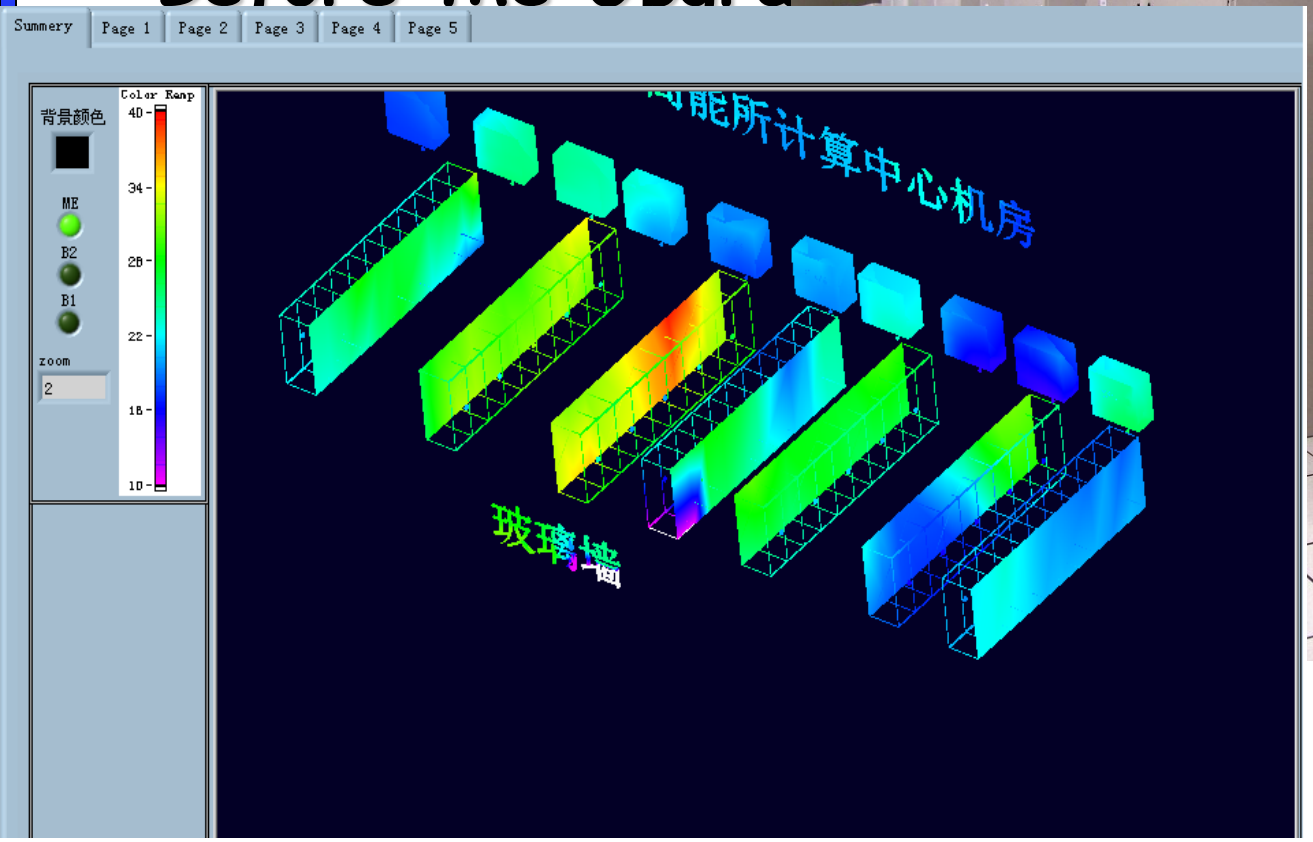
Infrastructure Upgrade --

- Before the Upgra



Cooling System Upgrade

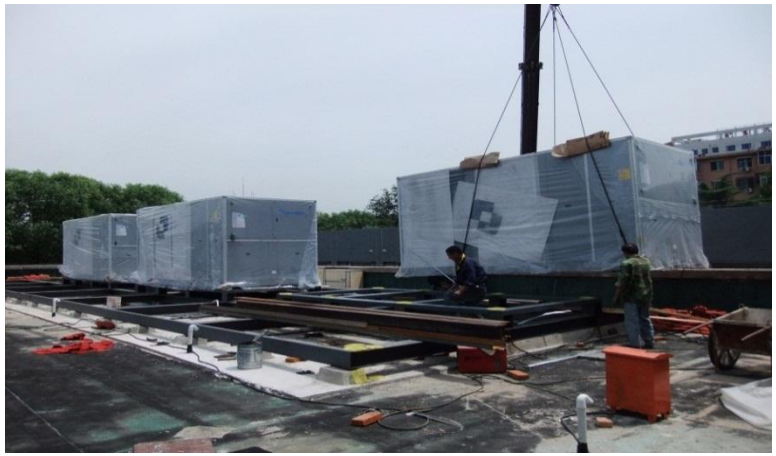
- Water cooling rack
  - Inter-row air conditioning
  - Cooling capacity per rack reaches 28kw

Infrastructure Upgrade

——Unfinished Work

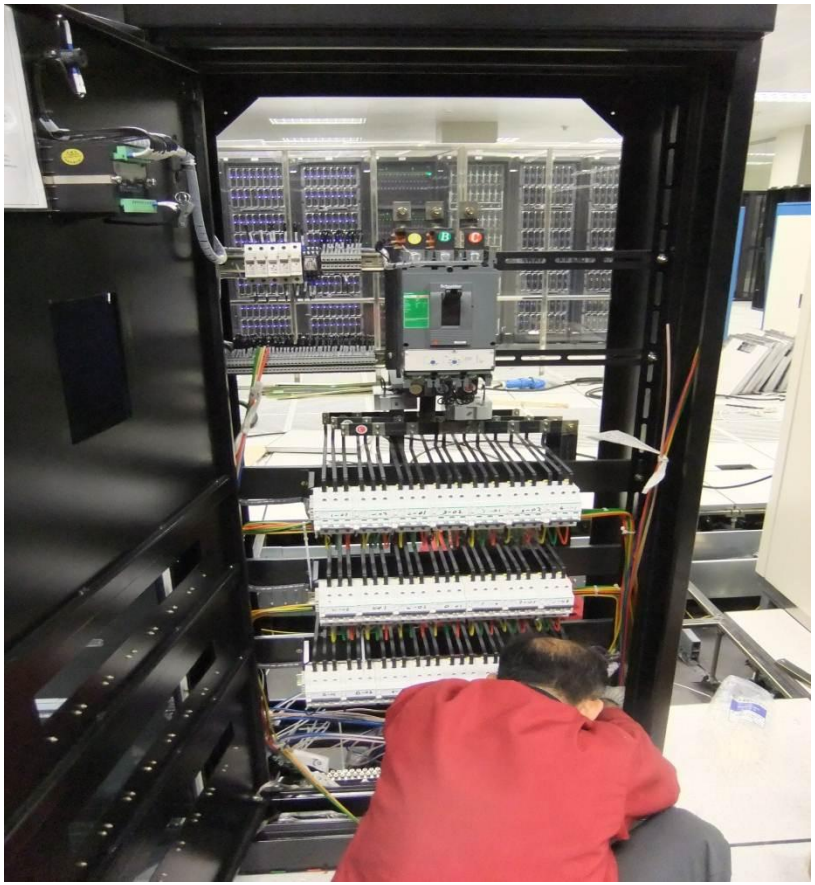
- Sound barrier screen of outdoor unit
  - Reduce running noise
- Cooling air partition need to be built
  - Improve cooling efficiency
- Monitoring System

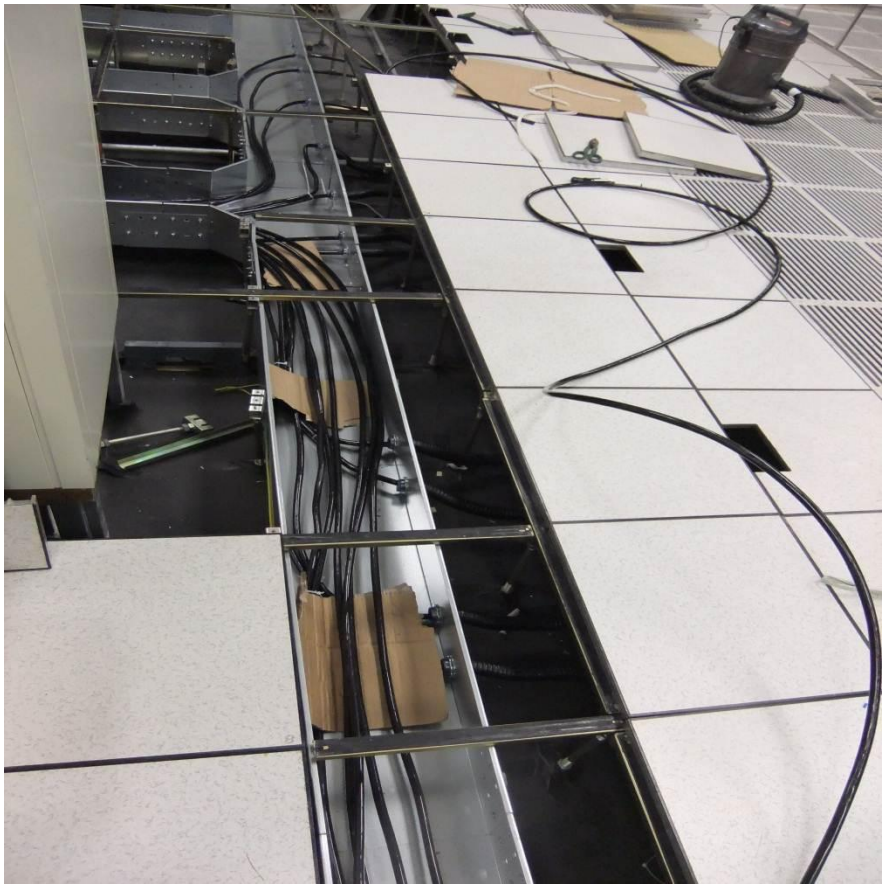
Outdoor Unit installation



Outdoor Pipeline Installation

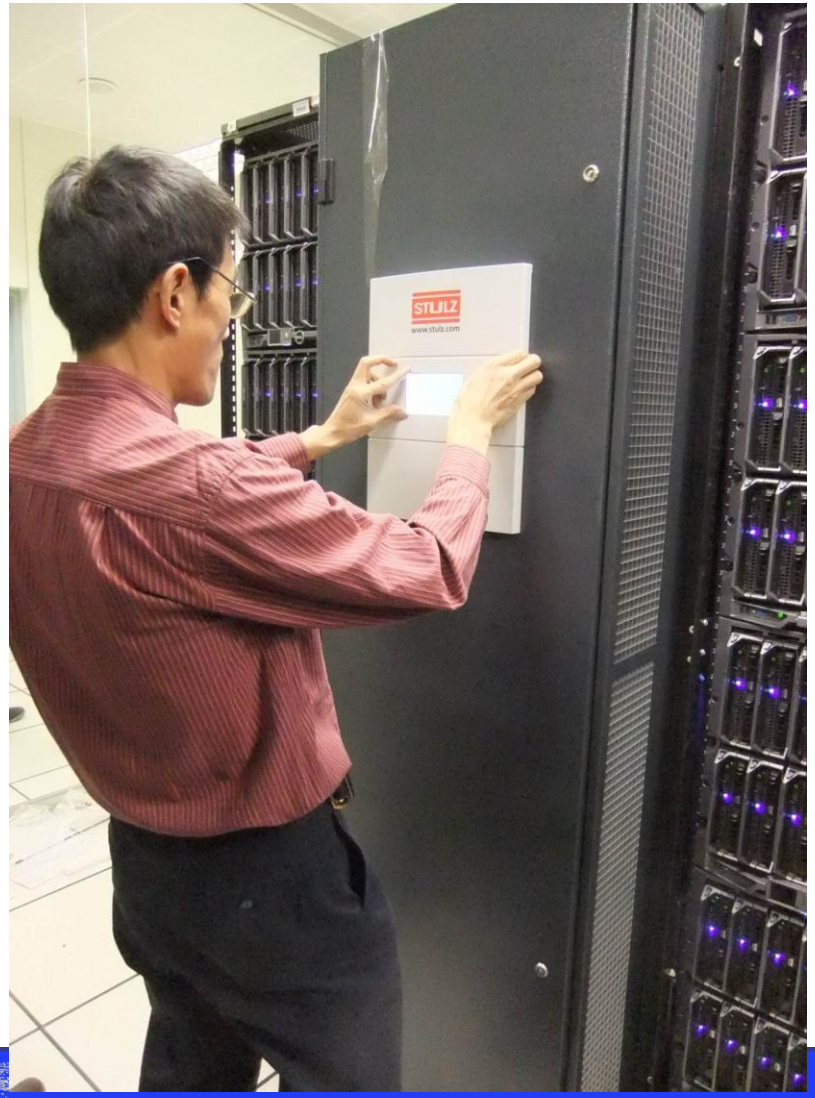
Power Distribution Cabinet Installation





Water cooling Rack Installation

System Tuning



Summary

- Most part of computing environment running well
- Trouble in Storage
- Infrastructure upgrade meet its aim
  - Power supply 800kw → 1800kw
  - Eliminate overheated island
  - Outlet air temperature of servers: 40℃→27℃

Thank you!

Questions?