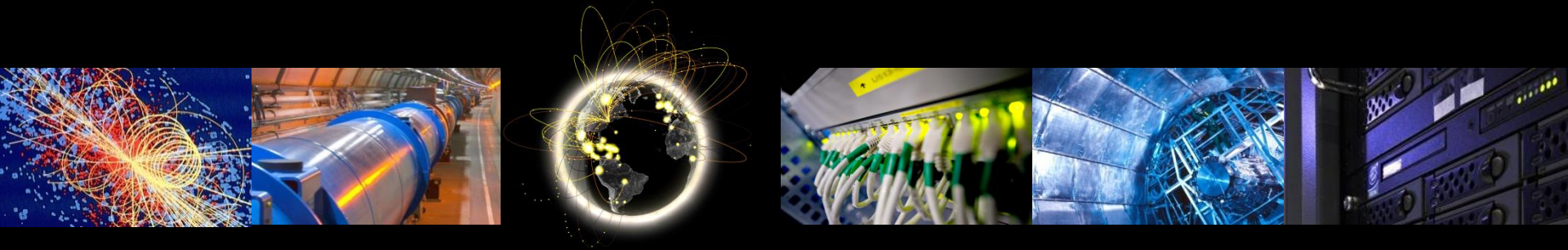


Status Report of WLCG Tier-1 candidate for ALICE @ KISTI-GSDC

Sang-Un Ahn, for the GSDC Tier-1 Team
sahn@kisti.re.kr

ATHIC2012, Busan, Republic of Korea



Outline

- Current Status
 - Resource: Nodes, Services and TAPE
 - Operation
 - Network
- Plan
 - Next Milestones
 - Pledges
 - Network upgrades
- Conclusion

GSDC Tier-1 Team

ROLE	Name
Representative	Haeng Jin Jang
	Heejun Yoon
System Administration	Seunghee Lee
	Gianni Mario Ricciardi
Storage: Disk & Tape	Heejun Yoon
	Sang-Oh Park
Network	Hyeongwoo Park
	KISTI support
Power supply & Cooling	KISTI support
Grid Middleware	Il-Yeon Yeo
	Sang-Un Ahn
KiAF support & Production	Sang-Un Ahn
	Sul-Ah Ahn



Activities

- In March, approved as a Tier-1 candidate for ALICE by WLCG Overview Board and acquired full membership for ALICE at ALICE Collaboration Board
- In June, the first demonstration plan for Tier-1 submitted to WLCG Management Board
 - The first one revised, then the second version has been prepared reflecting the comments by WLCG and our recent progress
- In August, agreement on the collaboration with KIT (DE) especially for TAPE library: set-up and test



Resources: Nodes & Services

- CPUs
 - Intel Xeon 12 physical cores -> 24 logical cores w/ HT per Worker Nodes (WN)
 - Total ~1500 cores (~17k HepSpec06) dedicated to Tier-1: 62 WNs
 - Capable to run ~1500 jobs (1 job per 1 logical core)
- Disks
 - 1000 TB disks: Hitachi + EMC²

Storage Element Status @ MonALISA

SE Name	AliEn SE	Statistics						Xrootd info			
	AliEn name	Size	Used	Free	Usage	No. of files	Type	Size	Used	Free	Usage
34. KISTI_GSDC - SE	ALICE::KISTI_GSDC::SE	100 TB	61.62 TB	38.38 TB	61.62%	1,424,411	FILE	101.8 TB	99.74 TB	2.033 TB	98%
35. KISTI_GSDC - SE2	ALICE::KISTI_GSDC::SE2	966.8 TB	73.81 TB	893 TB	7.634%	1,914,528	FILE	966.8 TB	94.88 TB	871.9 TB	9.814%

- EMI migration in progress (on SL6)
 - Services w/ gLite 3.2 middleware (on SL5) in production
 - 2 CEs, Top|site BDII, VOBOX, XROOTD (1 redirector and 9 pools)



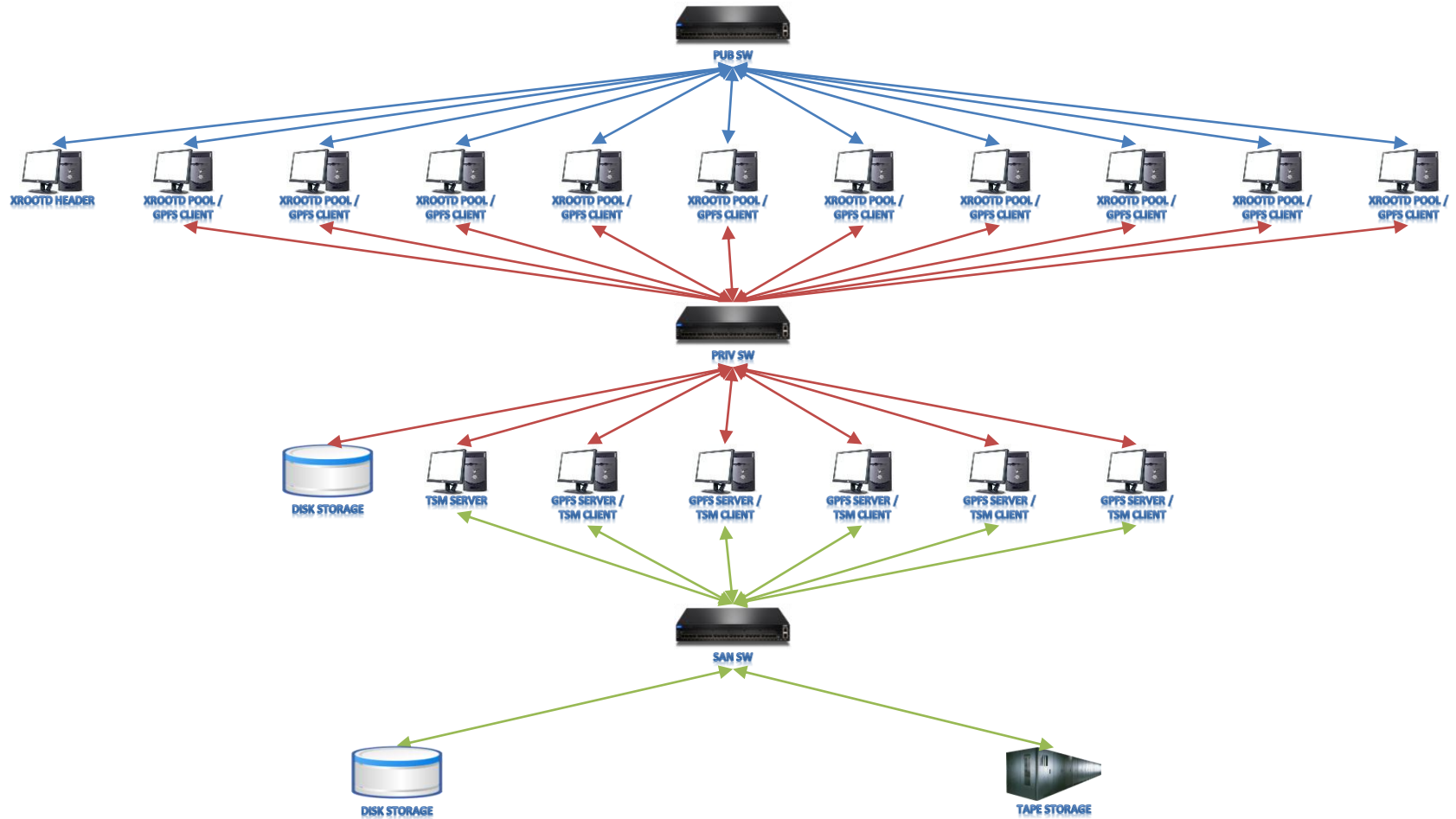
Resources: TAPE

- TAPE library pre-test (FS + TM + XROOTD) completed
 - IBM test (Mar. 2012): GPFS+TSM+XROOTD
 - ORACLE test (Aug. 2012): QFS+SAM+XROOTD
- IBM TAPE library: hardware delivery and installation on going
 - 1PB media capacity (extendable up to 3 PB): 4(+1) Modules
 - Min 1.92 GB/s throughput: 8 tape drives (R/W @ 240 MB/s per drive)
 - Dual robot arms = Single robot arm + 1 backup arm
 - 3 years maintenance support + recovery services within 24hrs
- TSM and GPFS installation and configuration in progress
 - Overall functioning test will start on 20th November
- For cache (allows prompt access to archived data), additional disk pool (as a buffer) is required
 - ALICE request: Min. 200 TB; max. 400 TB for pA
 - 220 TB is now assigned to the pool



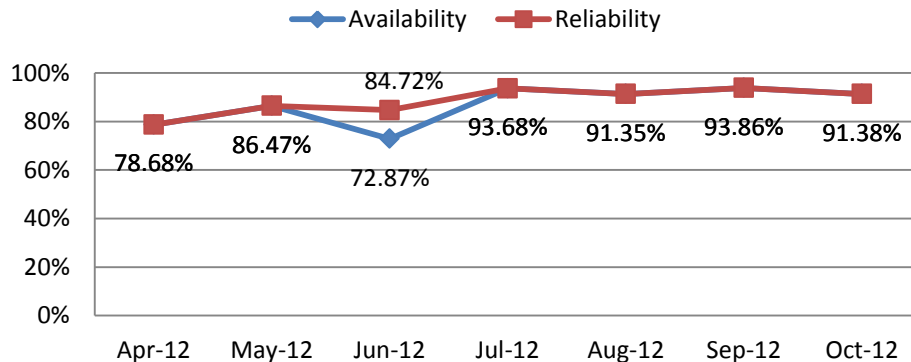
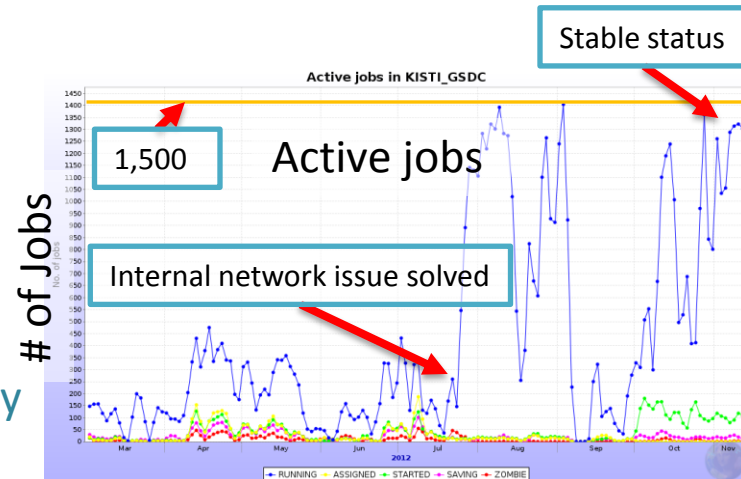
Tape Storage System

Tape System (TSM+GPFS)



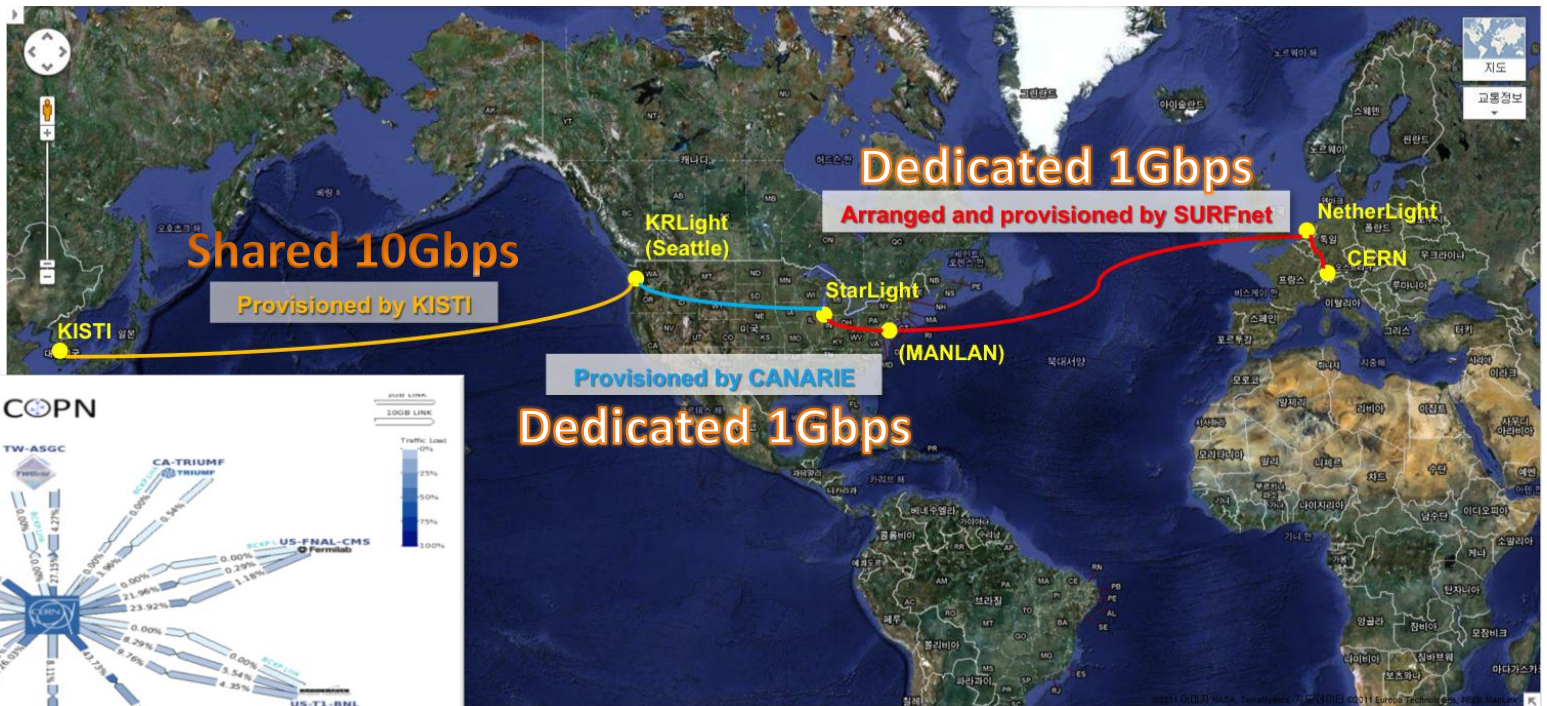
Operation

- On service for ALICE as WLCG Tier-1 candidate since March in 2012
 - Test-bed from October in 2010
 - Capable to run ~1500 jobs, >7000 jobs done everyday
 - Up to now, total 820k jobs performed successfully
 - Site Availability/Reliability reported monthly by WLCG MB since Aug. 2012
 - PBS instability issue affects Availability/Reliability



Network to LHCOPN

- Currently, 1Gbps (dedicated) connection is established CERN-KISTI
- 10Gbps connection is required to join LHC OPN (Optical Private Network) among Tier-0 (CERN) and other Tier-1s



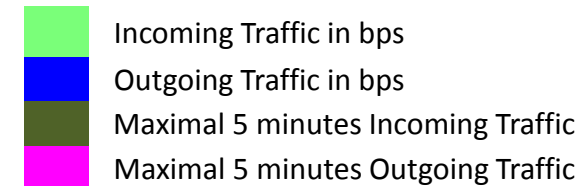
Private Networks among Tier-0/1 sites



Network Traffic Status

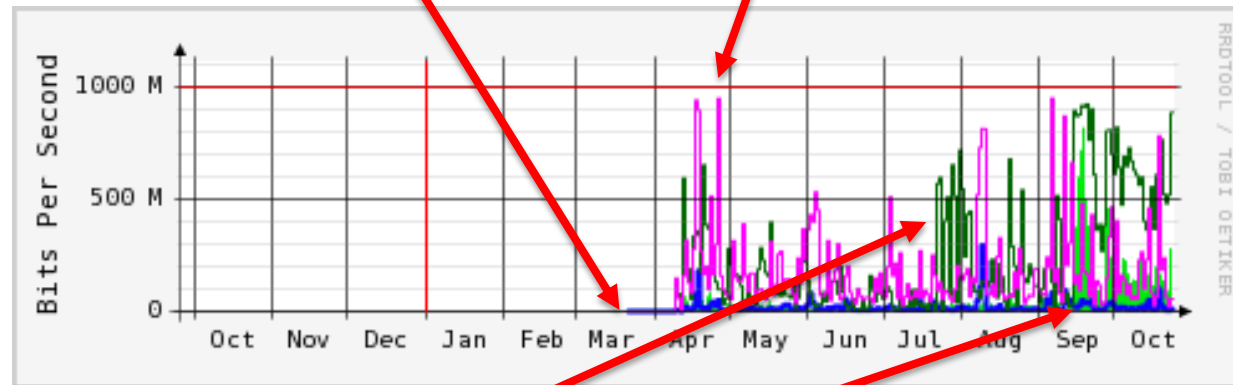
- GLORIAD-KR – CERN

- ‘Yearly’ graph (1 Day Average)
- Correlation with # of active jobs



Dedicated 1Gbps established

Functional test



Internal network issue solved

Start of torrent-based ALICE package distribution service:
Observed large incoming traffic (maximal 5 minutes) after



Next Milestones

KISTI-GSDC WLCG Tier I Demonstration Plan Roadmap

v0.4

SA	2012					2013								
	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
OBJECTIVE														
LHC Schedule	pp					AC	pA	Long Shutdown I						
Setting-up of the Tape system (procurement, installation and configuration)														
Data transfer from CERN to KISTI::Tape at the required speed Archiving 10% of the ALICE Pb-Pb raw data														
Provide a precise plan for when 3Gbps (or higher) connectivity to CERN will be provided														
Present a plan for providing on-call services/support according to the Tier I specifications														
Test of on-call services/support														
90% of the storage element availability (functional tests) for at least 2 months														
85% of the job capacity running for at least 2 months														
90% of the targeted WLCG Tier I services for at least 2 months														

1. TAPE library set-up and data transfer test (to be ready before pA)
2. Upgrading plan for network bandwidth > 3Gbps (up to 10Gbps)
3. Plan for 24 hours on-call: shift scheme and notification methods (SMS, E-mail, etc.)
 - Started internal discussion for the detailed plan
4. Tier-1 service stability test: demonstration at least 2 months (>90%)



Network Upgrade

- In 2013, dedicated 2Gbps will be established
- Plan to upgrade up to 10Gbps connection in a few years



Pledged

- Pledged resources
 - Based on WLCG & ALICE Collaboration MoU
 - Provides 2000 cores for Tier-1, 2PB for TAPE by 2014
 - Meeting ALICE requirement by 2013

	Current (ALICE Req.)	Pledged		
		2012	2013	2014
CPUs	1,000 (2,000)	1,500	2,000	2,000
Disk (TB)	1,000 (1,000)	1,000	1,000	1,000
Tape (TB)	- (1,500)	700	1,500	2,000



Conclusion

- Demonstration of WLCG Tier-1 for ALICE is going well according to plan:
 - ALICE collaboration appreciated its progress of KISTI-GSDC as WLCG Tier-1 candidate (ALICE collaboration board in 12th Oct. 2012)
- For pA data @ LHC in 2013, it is crucial that TAPE library has to be fully functioning by the end of this year
- Precise plan for upgrading network >3Gbps is mandatory to be integrated into LHCOPN



Thank you

