

# **ALICE Tier-2 at Hiroshima**

**LHCONE workshop at the APAN 38<sup>th</sup> Meeting  
in National Chi Nan University, Taiwan, on  
Aug. 13, 2014**

**Toru Sugitate of Hiroshima University  
for ALICE-Japan GRID Team**

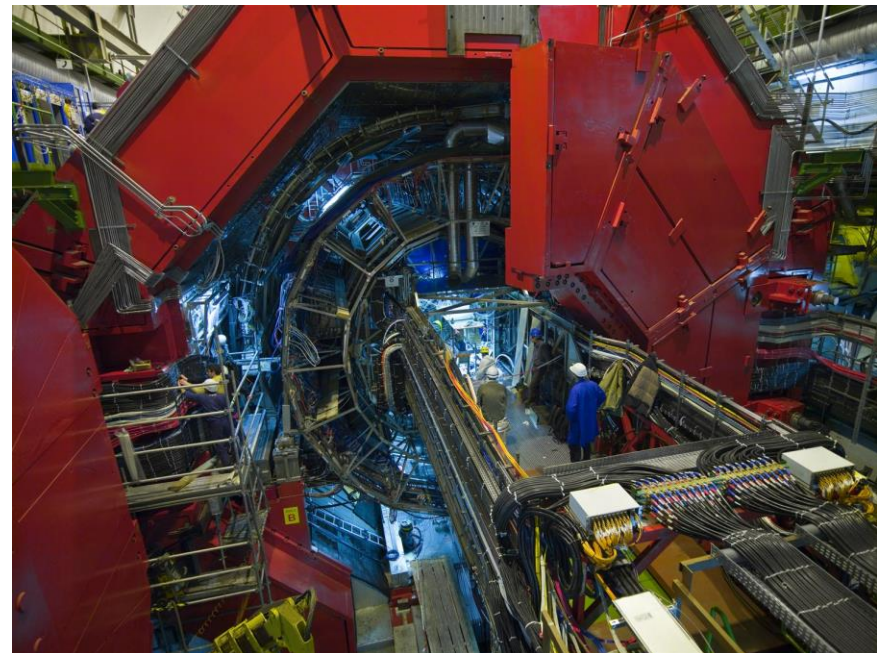
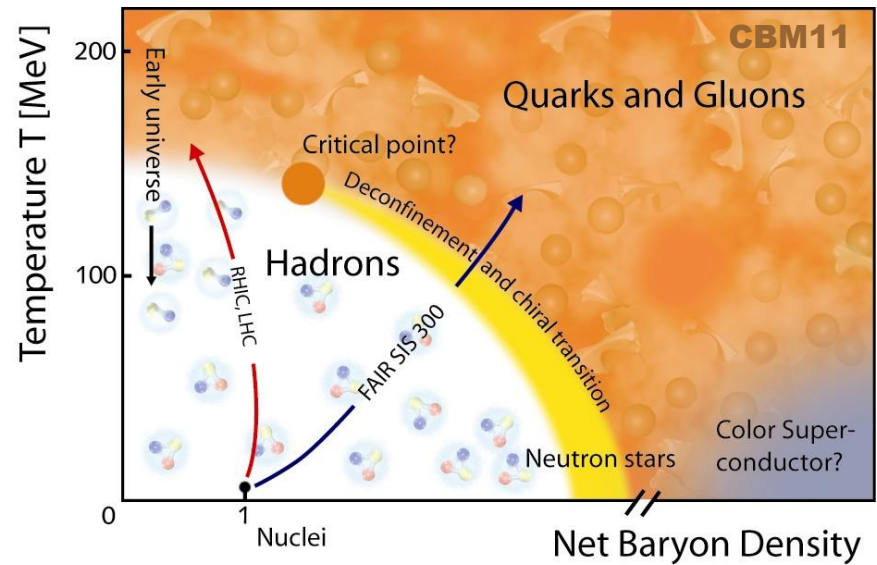
**[sugitate@hiroshima-u.ac.jp](mailto:sugitate@hiroshima-u.ac.jp)**



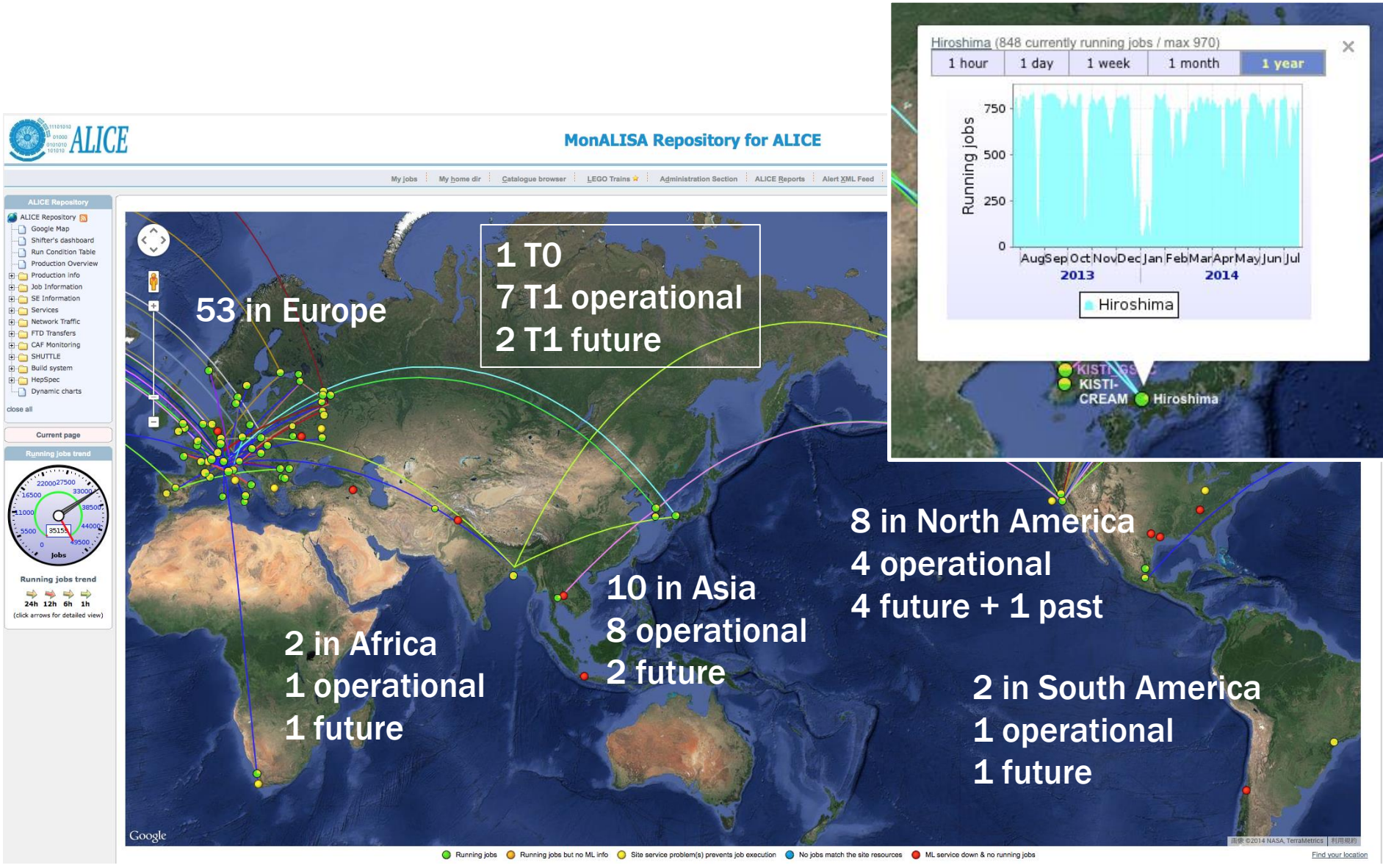


ALICE has unique capabilities measuring **various** particles in **wide**  $p_T$  ranges (e.g. 0.1-100 GeV) with excellent **PID** abilities in extreme particle **densities** at the LHC, to

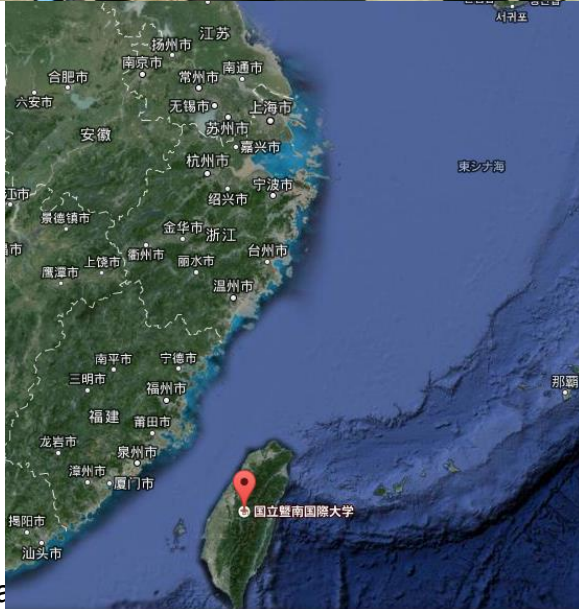
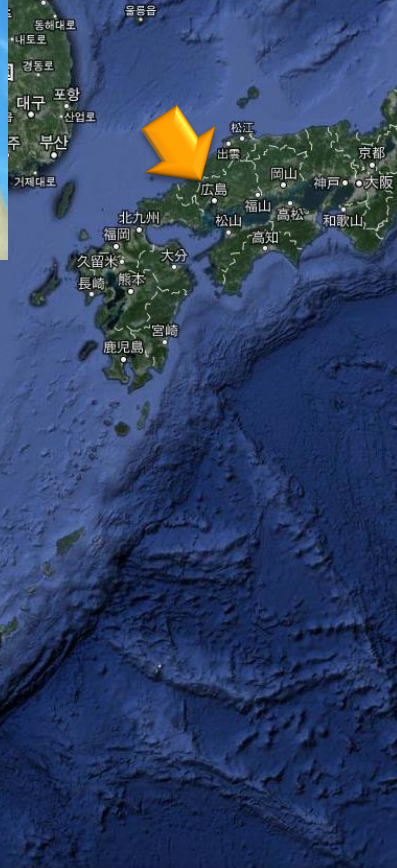
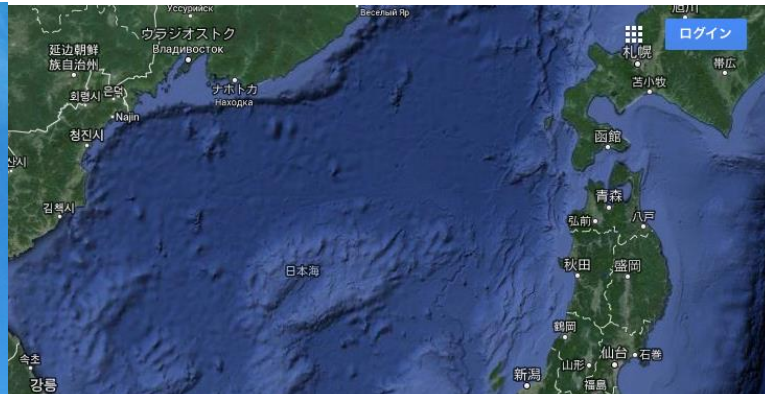
- ◆ study **Quark-Gluon-Plasma**,
- ◆ Understand the properties of **strong QCD**, and then to
- ◆ reveal the **primordial Universe** filled with the **QGP**.



# ALICE Tiers in WLCG



# A Little Information about Us



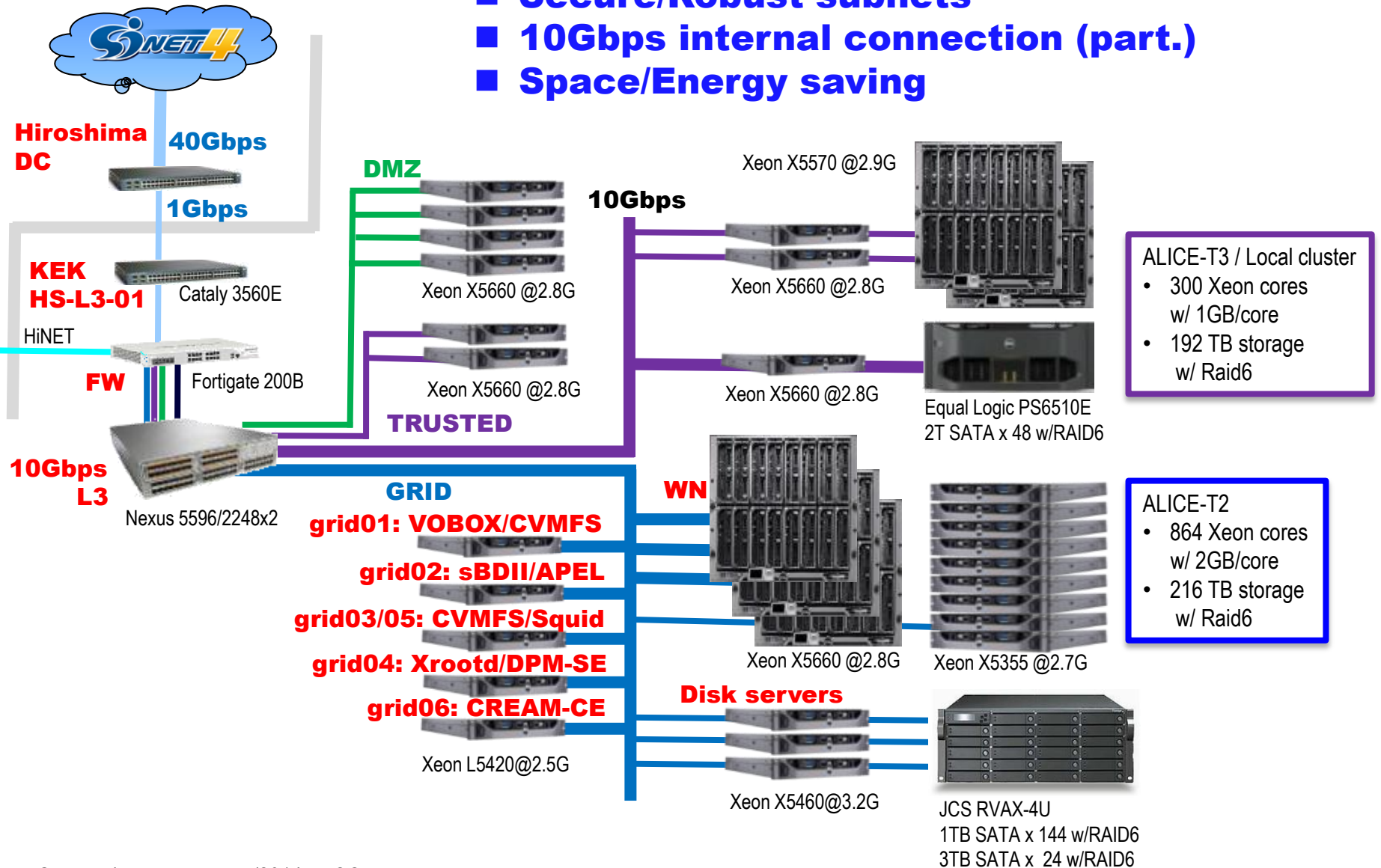
# ALICE Tier-2 at Hiroshima

- The ALICE T2 site “JP-HIROSHIMA-WLCG” with grid middleware EMI-3 on SL6.4... **as stable as possible.**
- GRID service; APEL, sBDII, CREAM-CE, XROOTD, DPM-SE, VOBOX... **as compact as possible.**
- WN resources; **1164 Xeon-cores in total**  
Xeon5355(4cores@2.6GHz) x 2cpu x 32 boxes  
Xeon5365(4cores@3.0GHz) x 2cpu x 20 blades  
Xeon5570(4cores@2.9GHz) x 2cpu x 26 blades  
Xeon5670(6cores@2.9GHz) x 2cpu x 3 blades  
Xeon5660(6cores@2.8GHz) x 2cpu x 42 blades
- Storage cap; **408TB disks on 6 servers and no MS**
- Around **2/3 resource** deployed to the ALICE GRID
- The rest in a local cluster
- Network B/W: **1Gbps** on 40Gbps-SINET4 in Japan
- WLCG support by ASGC in Taiwan
- Responsible by Prof. Toru Sugitate
- Operated by TS with remote technical support by a part-time SE of **SOUM** corp. in Tokyo



# Configuration since Feb. 2012

- Secure/Robust subnets
- 10Gbps internal connection (part.)
- Space/Energy saving



# Daily Score in July 2014

Select site:

## Current job status

What is this about?

MonALISA information Version: 13.11.04 (JDK 1.7.0\_45)  
Running on: grid01.hepl.hiroshima-u.ac.jp  
Administrator: Toru Sugitate,Hiroshima <sugitate@hiroshima-u.ac.jp,wlcg-hiro@r

**Services status**  
AliEn: v2-19.239  
ClusterMonitor: **OK**  
PackMan: n/a  
CE: **OK**  
CE info: **We could start 1 agents**  
Max running jobs: 1000  
Max queued jobs: 50

**Proxies status**  
AllEn proxy: **OK** (Delegated proxy: **OK**)  
Proxy server: **OK**  
Proxy of the mact

**Current jobs status**  
Assigned: 0  
Running: **826**  
Saving: 5

**Accounting**  
(last 24h)  
Success jobs: **75**  
Failed jobs: 0  
Error jobs: 236  
kSI2k units: 2306

**Storages status**

Name	Status	Size	Used
ALICE::Hiroshima::SE	OK	177.3 TB	69.76%

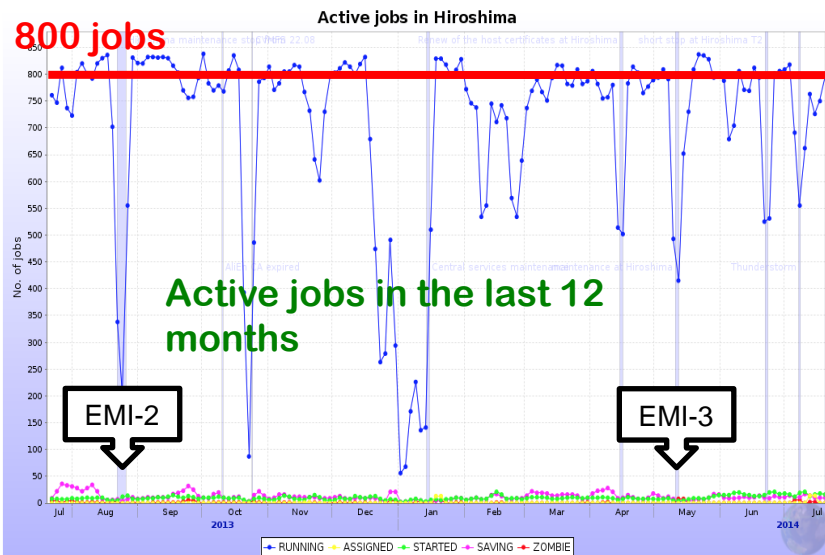
**VoBox health**  
CPUs: 24x 2793MHz  
Mem usage: 24.8% of 23.45 GB  
Processes: 453  
Sockets: 369 TCP / 27 UDP  
Uptime: 12 days, 01:43

**CPU usage**  
(last 1h avg)  
Load: **0.145**  
User: 0.843%  
System: 0.12%  
IOWait: 0.005%  
Idle: 99.03%

AliEn LDAP var	VoBox path
<b>TMP</b>	/home/sgmali01/ALICE/tmp
<b>LOG</b>	/home/sgmali01/ALICE/alien-logs
<b>CACHE</b>	/home/sgmali01/ALICE/cache

**Job status**

Service	Address	Jobs				Total (R+S+S+Z)
		Running	Started	Saving	Zombie	
39. FZK	alice-kit.gridka.de	2981	59	65	0	
19. CERN (Wigner)	voalice13.cern.ch	2811	18	12	40	
23. CERN (Meyrin)	voalice11.cern.ch	2579	13	21	179	
29. CNAF	ui01-alice.cr.cnaf.infn.it	2455	5	53	37	
67. KISTI_GSDC	vobox11.sdfarm.kr	2132	13	25	0	
82. NIHAM	hgate.nipne.ro	1254	17	7	0	
13. CCIN2P3	ccwlcgalice02.in2p3.fr	1113	12	17	1	
24. CERN-TEST	voalice10.cern.ch	963	9	17	13	
94. Prague	147.231.25.183,2001:718:1e01:1724:0:0:0:183,2001:718:1e01:1724:221:5eff:fe27:9230	920	7	9	10	
44. GRIF_IRFU	node09.datagrid.cea.fr	913	14	31	0	
124. UNAM_T1	tuul.grid.unam.mx	910	0	3	0	
4. Bari	vobox-alice.ba.infn.it	887	0	4	0	
93. Poznan	vobox.reef.man.poznan.pl	863	1	8	0	
54. Hiroshima	grid01.hepl.hiroshima-u.ac.jp	823	1	9	0	
74. Legnaro	vobox-alice.inl.infn.it	774	0	17	8	
73. LBL	palicevo1.nersc.gov	750	31	32	1	
48. GSI_2	lxcealice01.gsi.de	686	9	7	0	
43. GRIF_IPNO	ipnvobox.in2p3.fr	685	11	16	0	
37. DCSC_KU	130.226.158.62,2001:878:186:1:211:25ff:feab:baf5	677	7	9	0	
100. RRC_KI_T1	rhole.t1.grid.kiae.ru	675	0	4	0	
12. Catania	vobox.ct.infn.it	665	11	40	0	
99. RRC-KI	house.grid.kiae.ru	624	5	12	2	
6. Birmingham	epgr10.ph.bham.ac.uk	569	0	5	1	
83. NIKHEF	erf.nikhef.nl	557	0	15	0	
10. Bratislava	lcvboxtwo.dnp.fmph.uniba.sk	554	1	26	58	
122. UIB	alien.bccs.uib.no	549	12	6	0	
76. LLNL	glcc37.ucllnl.org	530	2	36	10	
63. JINR	lcvbox02.jinr.ru	490	13	15	0	
128. ZA_CHPC	grid-vobox.chpc.ac.za	394	1	5	0	
105. CNIC	alien.brislab.org	250	103	16	0	



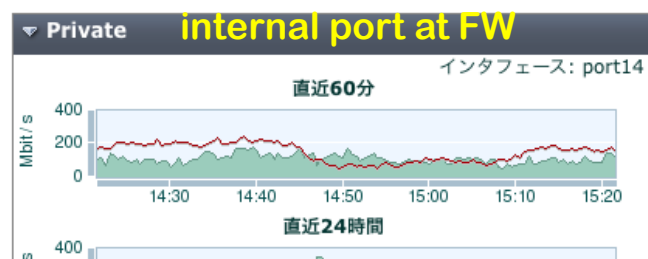
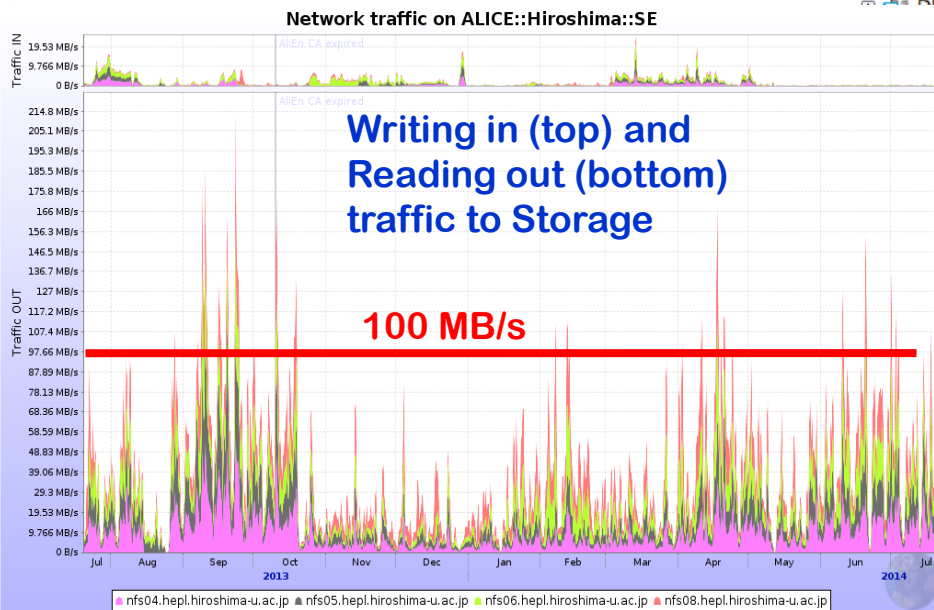
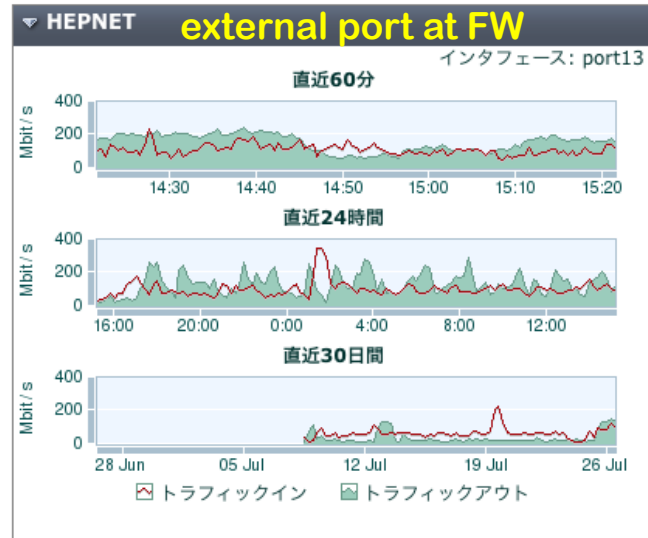
- ◆ 864 Xeon-cores in CRAEM-CE.
- ◆ Stably accepting over 800 jobs and process around 7,000 jobs a day.
- ◆ They produces 0.1-0.5 Gbps traffic in WAN at peaks.

## FortiGate 200B

### システム

- ダッシュボード
  - Status
  - Usage
- ネットワーク
- DMZサーバー

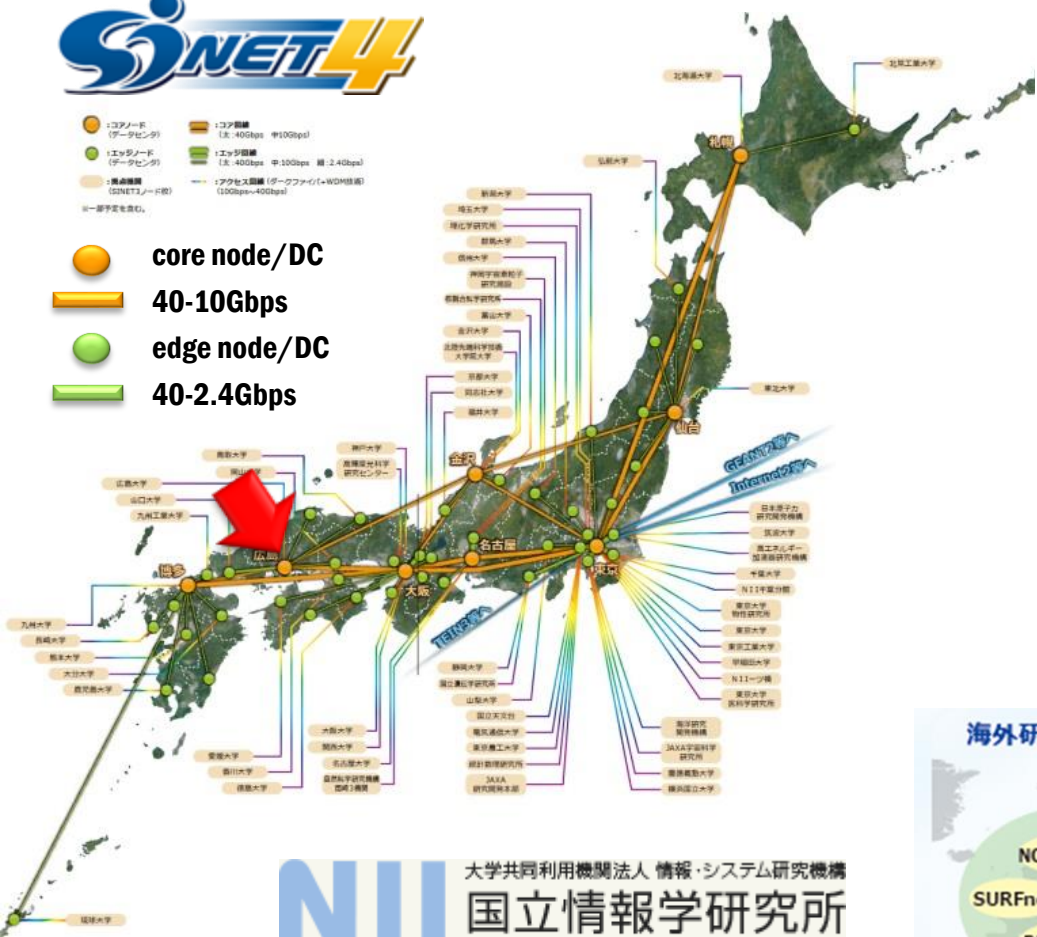
Widget Dashboard







- コアノード (アータセンター)
  - エッジノード (データセンター)
  - コア間接続 (SINET4ノード間) (100Gbps-400Gbps)
  - コア間接続 (1G-40Gbps 中100Gbps)
  - エッジ間接続 (1G-40Gbps 中100Gbps 超2.4Gbps)
  - アクセスマルチキャストネットワークファイバー(WDM技術) (100Gbps-400Gbps)
- core node/DC
- 40-10Gbps
- edge node/DC
- 40-2.4Gbps



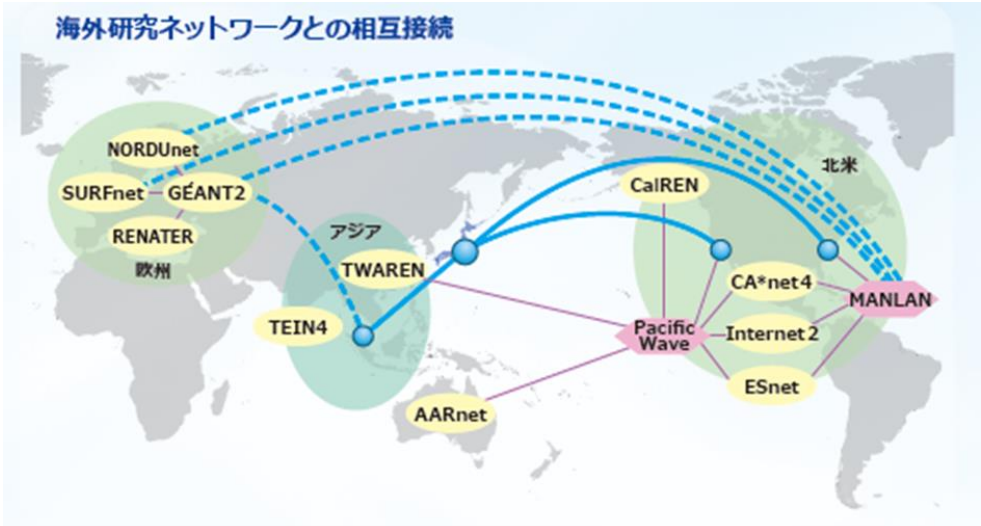
**NII** 大学共同利用機関法人 情報・システム研究機構  
**国立情報学研究所**  
 National Institute of Informatics

## Present on SINET4

- Hiroshima DC: 40Gbps Core node
- T2 to KEK via Hiroshima DC on 1Gbps-MPLS of HEPNet-J
- Internat'l connection via a default SINET routing

## Recently NII declares major upgrade to SINET5 in 2016

- Domestic nodes at 100Gbps, and 400Gbps/1Tbps later
- Direct links to US/Eu at 100Gbps



- ◆ Hiroshima Tier-2 has been in operation since 2009.
- ◆ Accepts over 800 jobs stably and process around 7,000 jobs a day, which
- ◆ produces 0.2-0.5 Gbps traffic in WAN at peaks.
- ◆ Trace network and tune up connection may increase the productivity, but ...
- ◆ The T2 site declares a 10 Gbps connection to SINET5.
  - 2015 University campus LAN upgrade to multi-10 Gbps connection
  - 2015 A 10 Gbps line between the T2 site and Hiroshima DC
  - 2016 Transition to SINET5; 10 Gbps ports at Hiroshima DC
  - 2016 Replace the Router and FW with 10 Gbps ports (TBC)
  - 2016 Approach to LHCONE
  - 2017 Replacement of the T2 equipment may backup the plan