

# **ALICE T2 Operation at Hiroshima & Tsukuba**

**5<sup>th</sup> Asia Tier Center Forum  
in TIFR, Mumbai, India  
24-26 October 2019**

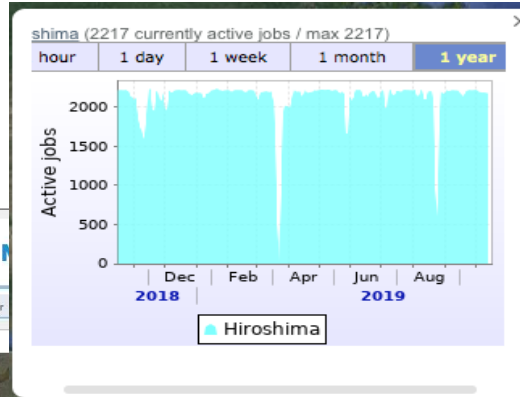
**Toru Sugitate of Hiroshima University  
on behalf of ALICE-Japan-GRID Team**

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

- ◆ **Overview of Japan**
- ◆ **Status of Hiroshima T2**
- ◆ **Status of Tsukuba T2**
- ◆ **Summary and issues**

# ALICE GRID Map

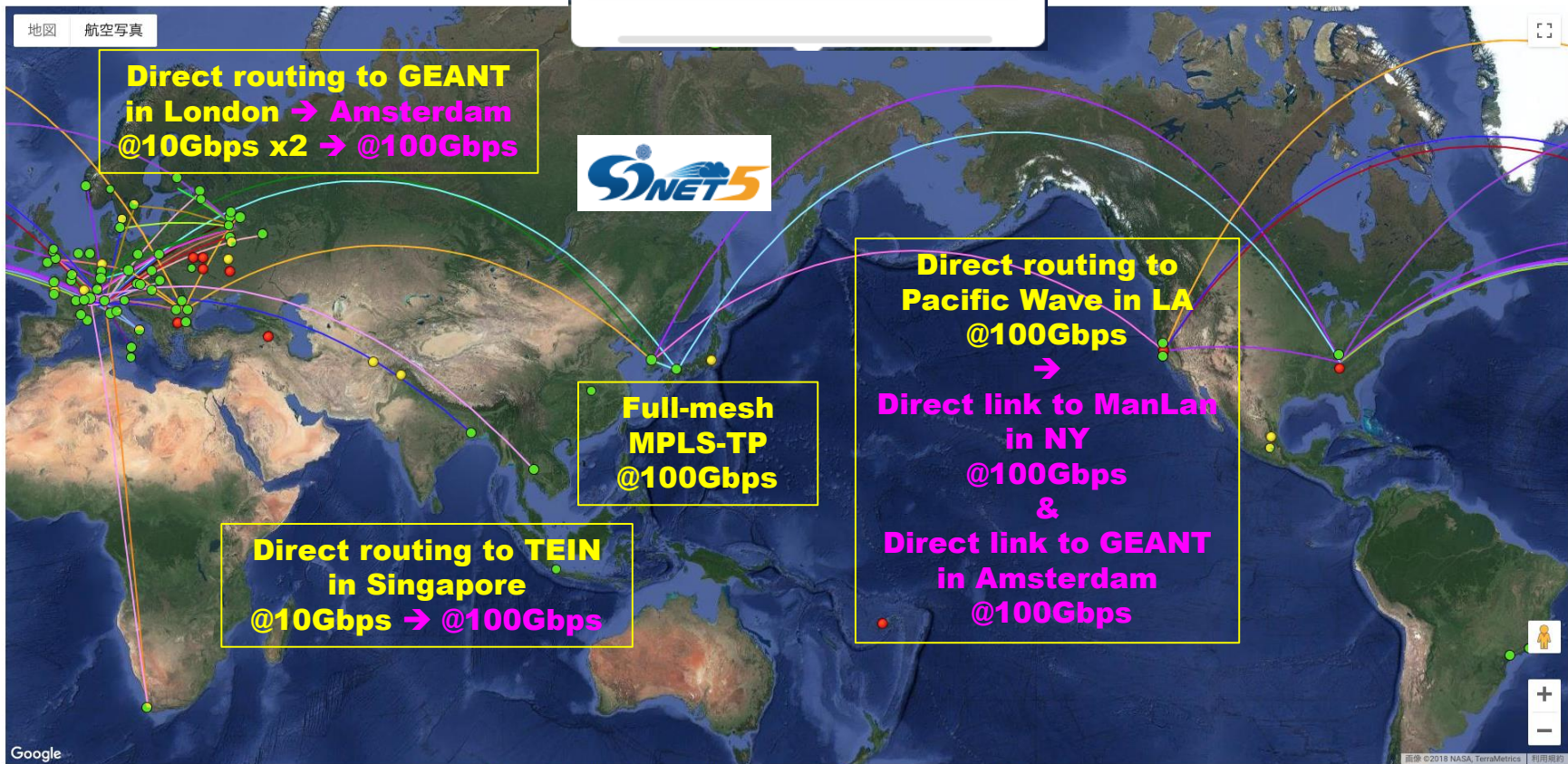
**More Tiers in Japan;  
ATLAS-T2 (x10) and  
Belle-II-T0 (x??)**



**Tsukuba T2;  
No productions  
since Nov. 2017 due  
to local problems.**

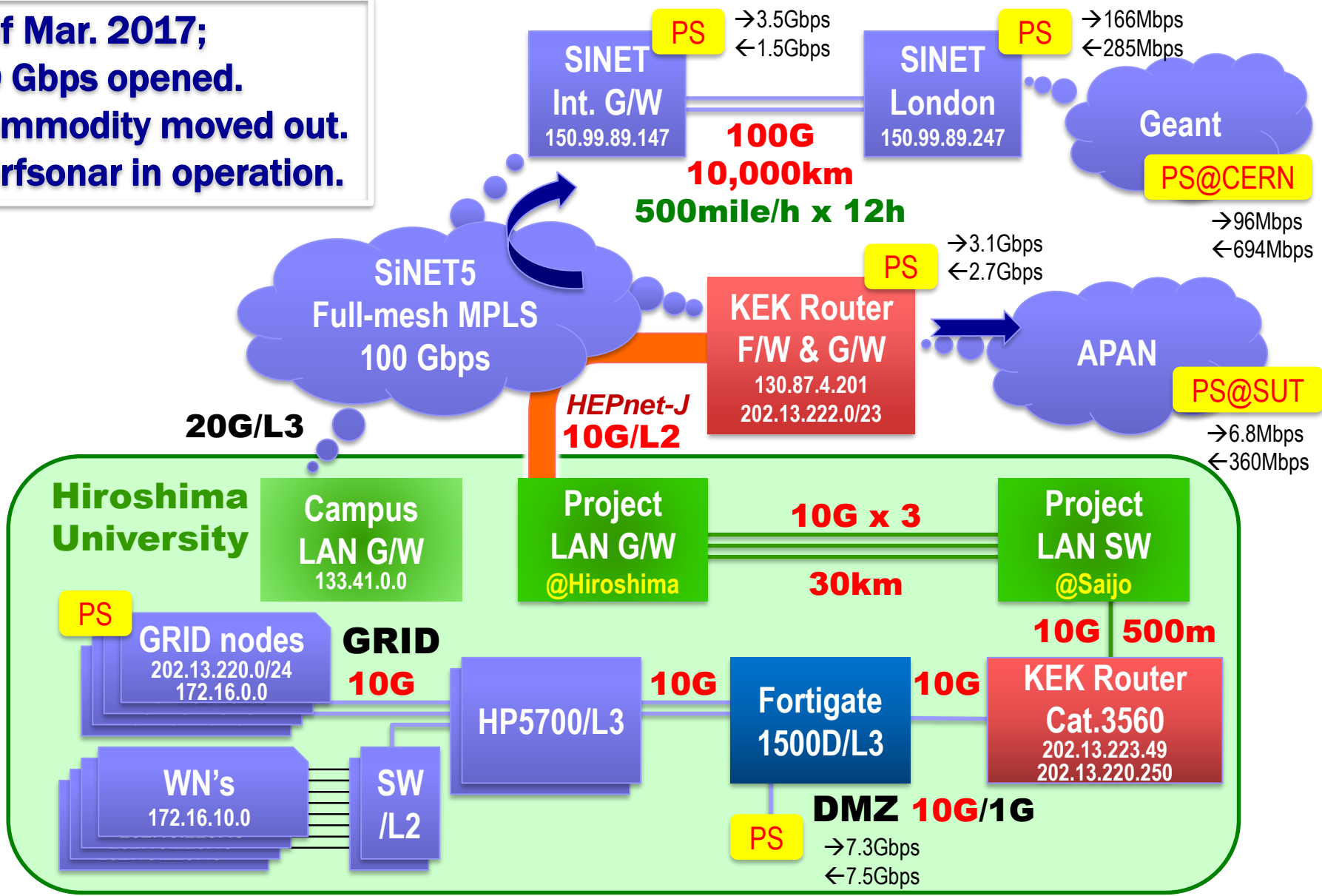


- ALICE Repository
  - ALICE Map
  - Shifter's dashboard
  - Run Condition Table
  - Production Overview
  - Production Info
  - Job Information
  - SE Information
  - Services
  - Network Traffic
  - FTD Transfers
  - CAF Monitoring
  - SHUTTLE
  - Build system
  - HepSpec
  - Dynamic charts



# Network Topology in Hiroshima

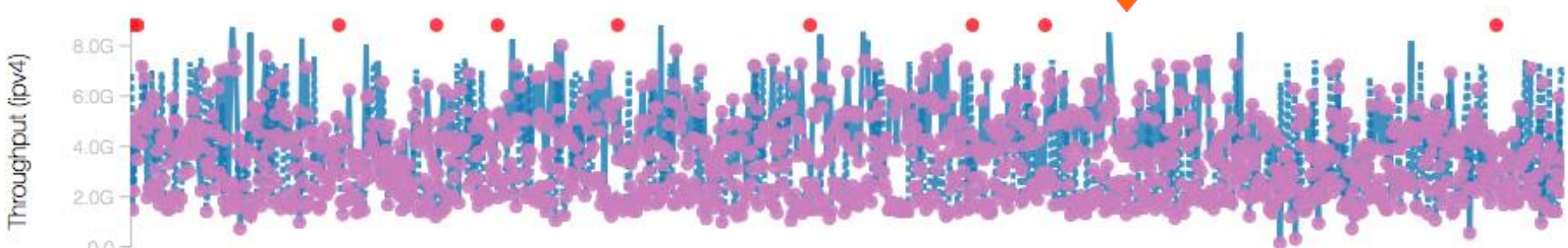
- As of Mar. 2017;
- 10 Gbps opened.
  - Commodity moved out.
  - Perfsonar in operation.



- ALICE T2 site “JP-HIROSHIMA-WLCG” with EMI-3 on **SL6.8...** as stable as possible.
- GRID service; APEL, sBDII, **CREAM-CE**, CVMFS/Squid, EOS, VOBOX... as compact as possible.
- Job Scheduler; **PBS/Torque/Maui**
- WN resources; **1,284 Xeon-cores in total**
  - Xeon5365(4c@3.0GHz) x 2cpu x 20 blades
  - Xeon5570(4c@2.9GHz) x 2cpu x 26 blades
  - Xeon5670(6c@2.9GHz) x 2cpu x 3 blades
  - E5-2470v2(10c@2.4GHz) x 2cpu x 16 blades
  - E5-2640v4(10c@2.4GHz) x 2cpu x 28 mod's
- Storage; **1,032TB disks** on 8 servers, but **no MS**
- Around **3/4 resource** deployed to ALICE GRID, and the rest for local commodity
- Firewalled; **Fortigate 1500D/L3**
- Network; **10Gbps/IPv4** connected to SINET5 at Hiroshima DC
- WLCG support by ASGC in Taiwan
- Responsible/operated by Prof. **Toru Sugitate** w/remote technical support by **SOUM corp.**, Tokyo



SOURCE	DESTINATION	THROUGHPUT	LATENCY (MS)	LOSS
grid00.hepl.hiroshima-u.ac.jp 202.13.220.40 <a href="#">Details</a>   <a href="#">Traceroute</a>	1608-008.a.hiroshima-u.ac.jp 133.41.115.8	→ 543 Mbps ← 571 Mbps	→ n/a ← n/a	→ n/a ← n/a
grid00.hepl.hiroshima-u.ac.jp 202.13.220.40 <a href="#">Details</a>   <a href="#">Traceroute</a>	perf-tokyo.sinet.ad.jp 150.100.208.29	→ 3.89 Gbps ← 3.09 Gbps	→ n/a ← n/a	→ n/a ← n/a
grid00.hepl.hiroshima-u.ac.jp 202.13.220.40 <a href="#">Details</a>   <a href="#">Traceroute</a>	perfsonar-test3.kek.jp 130.87.106.86	→ 3.40 Gbps ← 3.47 Gbps	→ a ← a	→ n/a ← n/a



**Throughput between Hiroshima – Sinet@Tokyo in 1 mon.**

# Connectivity to ALICE Sites as of 2019.10

Hiroshima

Links: FDT, Kernel parameters tuning

<Hiroshima>

Alternative views: Chart | Map

IN from							
No.	ID	Site	When	Speed (Mbps)	Hops	RTT (ms)	Streams
1.	3573794	Tsukuba	yesterday 21:38	956.35	7	14.41	1
2.	3569117	KISTI_GSDC	10 Oct 2019 20:30	461.40	18	107.71	1
3.	3573776	SUT	yesterday 21:10	385.90	22	134.18	1
4.	3571331	Wuhan	13 Oct 2019 05:48	369.12	26	125.59	1
5.	3569785	CERN-CORONA	11 Oct 2019 13:46	285.23	22	185.14	1
6.	3568092	NIHAM	09 Oct 2019 17:57	285.23			1
7.	3570548	CERN-AURORA	12 Oct 2019 09:28	276.84	22	184.95	1
8.	3570442	Grenoble	12 Oct 2019 06:45	276.84	20	189.40	1
9.	3571640	Kosice_ARC	13 Oct 2019 13:47	276.84	18	195	1
10.	3569265	GSI_AF	11 Oct 2019 00:21	260.06			1
11.	3572458	Prague_ARC	14 Oct 2019 11:02	260.06	17	182.76	1
12.	3571763	IPNL	13 Oct 2019 16:58	251.67	18	186.68	1
13.	3571433	ISS_LCG	13 Oct 2019 08:26	251.67	20	213.94	1
14.	3571610	MEPHI	13 Oct 2019 13:01	251.67	20	207.60	1
15.	3481915	NIPNE	07 Jul 2019 00:42	251.67	20	205.31	1
16.	3569111	ORNL	10 Oct 2019 20:20	251.67	21	189.37	1
17.	3567158	SNIC	08 Oct 2019 17:45	251.67	21	190.54	1
18.	3476612	Kosice	01 Jul 2019 04:09	243.28	18	195.58	1
19.	3393739	LBL	01 Apr 2019 01:55	243.28			1
20.	3570646	Strasbourg_IRES	12 Oct 2019 12:00	243.28	19	194.09	1
21.	3571537	Subatech	13 Oct 2019 11:07	243.28	19	196.04	1
Obsolete							
23.	3571262	JINR	13 Oct 2019 03:55	234.89	15	215.36	1
24.	3570038	RRC_KI_T1	11 Oct 2019 20:23	234.89	14	219.73	1
25.	2970070	Juno	28 Oct 2017 08:18	226.50	20	203.44	1
Obsolete							
27.	3293722	Subatech_C7	13 Dec 2018 01:31	226.50	19	207.19	1
28.	3569						1
29.	2831				20	212.84	1
30.	3570				18	189.80	1
31.	3573						1
32.	3572				20	202.16	1
					20	208.69	1
34.	3571143	Oxford	13 Oct 2019 00:49	200.74	21	179.65	1

OUT to							
No.	ID	Site	When	Speed (Mbps)	Hops	RTT (ms)	Streams
1.	3569797	Tsukuba	11 Oct 2019 14:08	562.07	7	14.40	1
Obsolete							
3.	3573798	SUT	yesterday 21:44	352.34	16	131.91	1
4.	3567964	UiB	09 Oct 2019 14:40	260.06	20	193.37	1
5.	3567967	NIHAM	09 Oct 2019 14:45	251.67	20	204.21	1
6.	3573344	ORNL	yesterday 10:01	251.67	21	189.46	1
Obsolete							
8.	3567636	ISS	09 Oct 2019 06:13	226.50	21	216.70	1
9.	3474526	Kosice	28 Jun 2019 21:13	226.50			1
10.	3569770	Kosice_ARC	11 Oct 2019 13:23	218.12			1
11.	3569413	Legnaro	11 Oct 2019 04:11	218.12	20	199.03	1
12.	3572391	SNIC	14 Oct 2019 09:19	192.95	22	190.45	1
13.	3570540	RRC_KI_T1	12 Oct 2019 09:16	184.56			1
14.	3569482	FZK_ARC	11 Oct 2019 05:58	167.78	17	197.38	1
15.	3571455	Subatech_CCIPL	13 Oct 2019 09:00	167.78	20	196.36	1
16.	3569824	GRIF_IPNO	11 Oct 2019 14:49	159.39			1
17.	3571995	RAL_ARC	13 Oct 2019 22:58	159.39			1
18.	3573202	WUT	yesterday 06:21	159.39	15	191.07	1
19.	3570909	LUNARC	12 Oct 2019 18:51	151			1
20.	3571757	Oxford	13 Oct 2019 16:49	151	21	180.09	1
Obsolete							
22.	3571751	CNAF-HTC	13 Oct 2019 16:39	142.61	20	195.88	1
23.	3572887	DCSC_KU	14 Oct 2019 22:10	142.61			1
24.	3573828	HIP	yesterday 22:30	142.61	20	202.85	1
25.	3569053	ICM	10 Oct 2019 18:48	142.61			1
26.	3482899	NIPNE	08 Jul 2019 02:09	142.61	20	205.34	1
27.	3572399	SaoPaulo	14 Oct 2019 09:31	142.61	21	293.75	1
							1
					20	212.84	1
					18	189.80	1
							1
					20	202.16	1
					20	208.69	1
34.	3570991	NIPNE_ARC	12 Oct 2019 20:56	125.84	20	204.40	1

- Tsukuba link at Gbps.
- About 250 Mbps to/from EU, US and Asians.

# Daily Score at Hiroshima as of 2019.10

Select site:  »

**MonALISA information** Version: 19.03.05 (JDK 1.8.0\_92) **Service health** NTP: SYNC, offset: 0.009s  
 Running on: grid01.hepl.hiroshima-u.ac.jp  
 Administrator: Toru Sugitate,Hiroshima <sugitate@hiroshima-u.ac.jp,wlcg-hiro@ml.hiroshima-u.ac.jp>

**Services status** ClusterMonitor: **OK** **Proxies status** AliEn proxy: **OK** (1 day, 23:52)  
 AliEn: v2-19.395 PackMan: n/a Delegated proxy: **OK** (1 day, 23:59)  
 CE: **OK** Proxy server: **OK** (37 days, 04:42)  
 CE info: <font color=#999900>At the moment we are busy (we </font>... Proxy of the machine: **OK** (18:55)  
 Max running jobs: 2300  
 Max queued jobs: 50

**Current jobs status:** Assigned: 0 **Accounting** (last 24h) Success jobs: **13235** (profile)  
 Running: **2198** Error jobs: **869 + 11** expired  
 Saving: 25 kSI2k units: **9965** / pledged **Site averages** (last 24h) Active nodes: 81.29  
Average kSI2k/core: 3.682

**Storages status**

Name	Status	Size	Used	Free	Usage	No of files	Type	ADD test
ALICE::Hiroshima::EOS	OK	640.3 TB	66.02%	217.5 TB	422.7 TB	10.83 M	FILE	OK

**VoBox health** CPUs: 20x 1200MHz **CPU usage** (last 1h avg) Load: <font color=#999900>  
 Mem usage: 17.95% of 31.23 GB User: 1.85  
 Processes: 468 System: 0.

**Usage as of 2018.11; 460TB**  
**Usage as of 2017.10; 260TB**

**Traffic IN**

Series	Last value	Min	Avg	Max	Total
1. nfs07.hepl.hiroshima-u.ac.jp	4.034 MB/s	42.44 B/s	6.345 MB/s	59.78 GB/s	190.4 TB
2. nfs08.hepl.hiroshima-u.ac.jp	1.423 MB/s	42.79 B/s	2.084 MB/s	295.4 MB/s	62.53 TB
3. nfs09.hepl.hiroshima-u.ac.jp	1.564 MB/s	43.98 B/s	2.334 MB/s	351.2 MB/s	70.03 TB
4. nfs10.hepl.hiroshima-u.ac.jp	1.531 MB/s	44.11 B/s	2.498 MB/s	456.4 MB/s	74.97 TB
<b>Total</b>	<b>8.551 MB/s</b>		<b>13.26 MB/s</b>		<b>397.9 TB</b>

**Traffic OUT**

Series	Last value	Min	Avg	Max	Total
1. nfs07.hepl.hiroshima-u.ac.jp	323.7 MB/s	20.21 B/s	100.8 MB/s	424.6 GB/s	2.954 PB
2. nfs08.hepl.hiroshima-u.ac.jp	155.5 MB/s	20.41 B/s	84.84 MB/s	1.393 GB/s	2.486 PB
3. nfs09.hepl.hiroshima-u.ac.jp	175.6 MB/s	20.38 B/s	107.7 MB/s	1.376 GB/s	3.156 PB
4. nfs10.hepl.hiroshima-u.ac.jp	187.1 MB/s	20.38 B/s	148.9 MB/s	2.738 GB/s	4.363 PB
<b>Total</b>	<b>841.9 MB/s</b>		<b>442.2 MB/s</b>		<b>12.96 PB</b>



## Tsukuba T2 status

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- **Member**

- Tatsuya Chujo (responsible)
- Sumio Kato (technical staff)

- **Status**

- 6 service nodes (X5355; 4 cores x 2 cpu, @2.6GHz)
- 20 worker nodes (X5355; 4 cores x 2 cpu @2.6GHz)
- Network: connected to



**Network @10Gbps.  
6 HN's & 20 WN's.  
192TB disk installed.  
Pledged by June, but  
Need more time.**

- July 2016, Tsukuba T2
- was able to accept 125
- Suspended the operation (manpower) in October,
- **We decided to come back**

## Tsukuba T2 status & plan

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- **Status (cont.)**

- on Feb. 2019, **a mass storage has been purchased and delivered.**
- on May 2019, new optical fiber has been installed, enabling a direct link between server room and SINET5 (via dedicated campus network) @ 10Gbps.
- Updated high speed switch by Hepnet-J (KEK)

- **Plan**

- Establish the high speed network by using the newly installed fiber and switch, direct link between server room and ACCC @ U. Tsukuba (May).
- configuring mass storage for EOS (May-June).
- CE configuration and WN configuration in May - June.
- **Re-establish T2 operation by the end of June.**
- seek a funding to add more WNs, probably together with detector upgrade proposal (FoCal), to be requested in 2019 fall.



↑ ZE-G824F16-4G-N8000x24  
(8TB SATA HDD x 24,  
effective 168 TB (RAID6/SPARE1))



cisco Catalyst 3650-24TD



New optical fiber  
@ server room

## Tsukuba T2;

- Operation down since Oct. 2017, then pledged to resume in June, 2019.
- Worker nodes and a new SE ready. It's small, but important for future.
- Network connected to SINET5 at 10Gbps.
- Some time/efforts needed to restart.

## Hiroshima T2;

- Non-stop operation since 2009, and major upgrade in 2017.
- Running 2300 jobs and completing around 10K jobs a day.
- SE/EOS service of 640TB; 13PB/year transaction fills 2/3 of cap.
- Issues to be solved for future operation;
  - Old environment; eg, SL6, PBS/Torque/Maui, CREAMCE, should be replaced.
  - KEK has declared to terminate the HEPnet-J service in 2023.
  - None of Hiroshima colleagues take over the Tier responsibility.

**Thanks for your attention**