

JCAHPC

<http://jcahpc.jp/eng/index.html>



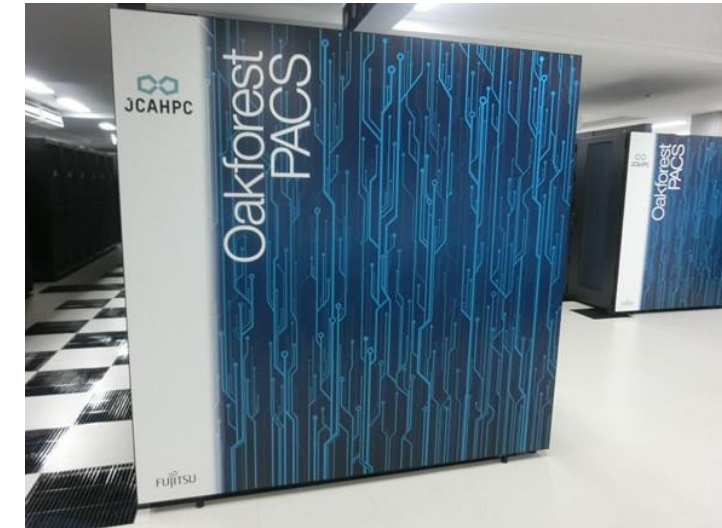
筑波大学
University of Tsukuba

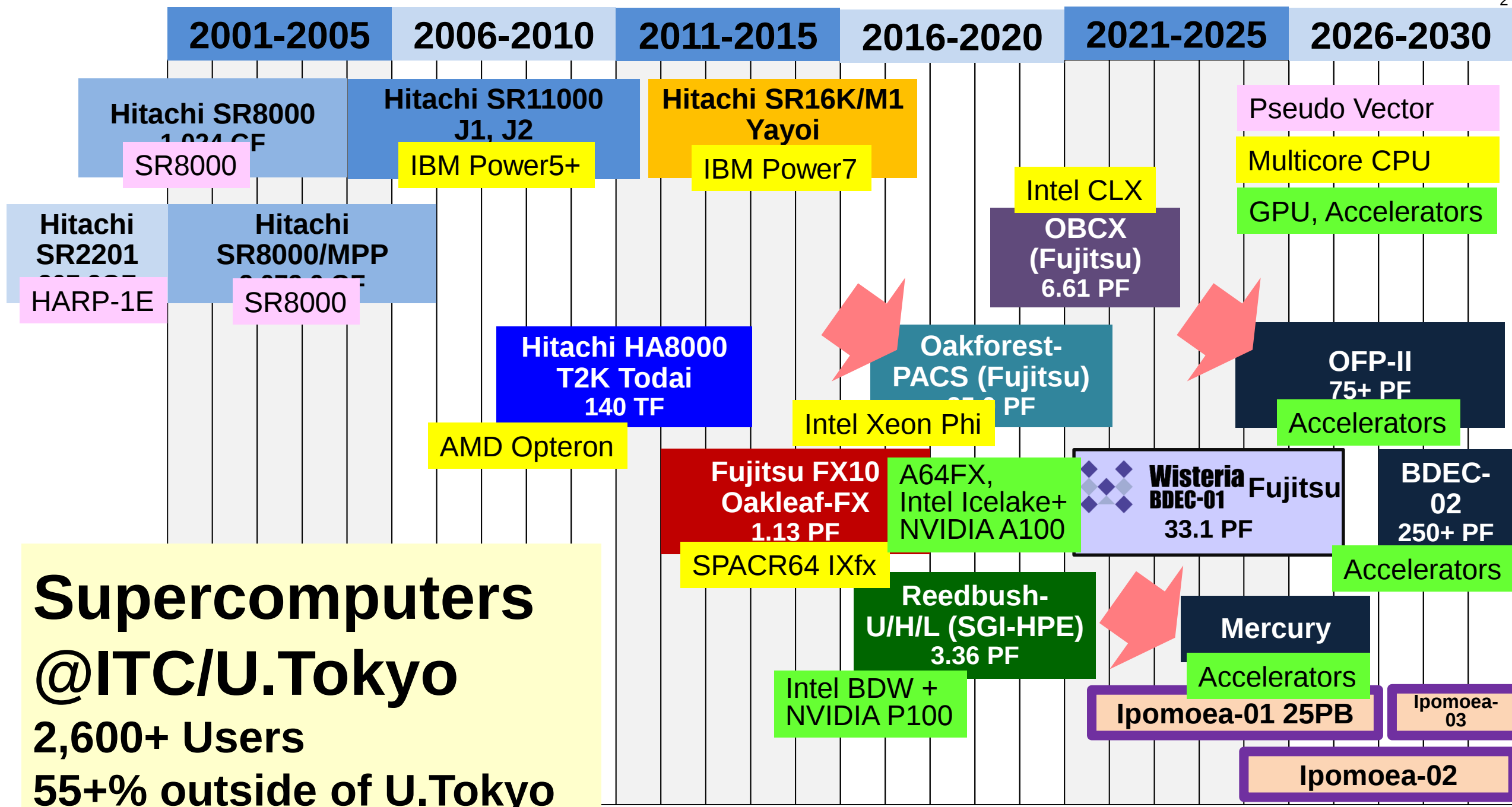


東京大学
THE UNIVERSITY OF TOKYO



- Joint Center for Advanced High Performance Computing, since 2013
 - University of Tsukuba & University of Tokyo
 - Budgets of 2 Centers are combined
 - Promotion on Computational Science, Design/Procurement/Operation of Large-scale Systems
- Oakforest-PACS (OFP), 1st System of JCAHPC
 - 8,208 Intel Xeon Phi, 25PF, Fujitsu
 - Top500 (#6 (Nov.2016), #1 in Japan)
 - Retired in the end of March 2022 (#39 (Nov.2021))
- National Flagship System (in fact) in FY.2019/2020
 - Between K and Fugaku
- We are introducing OFP-II

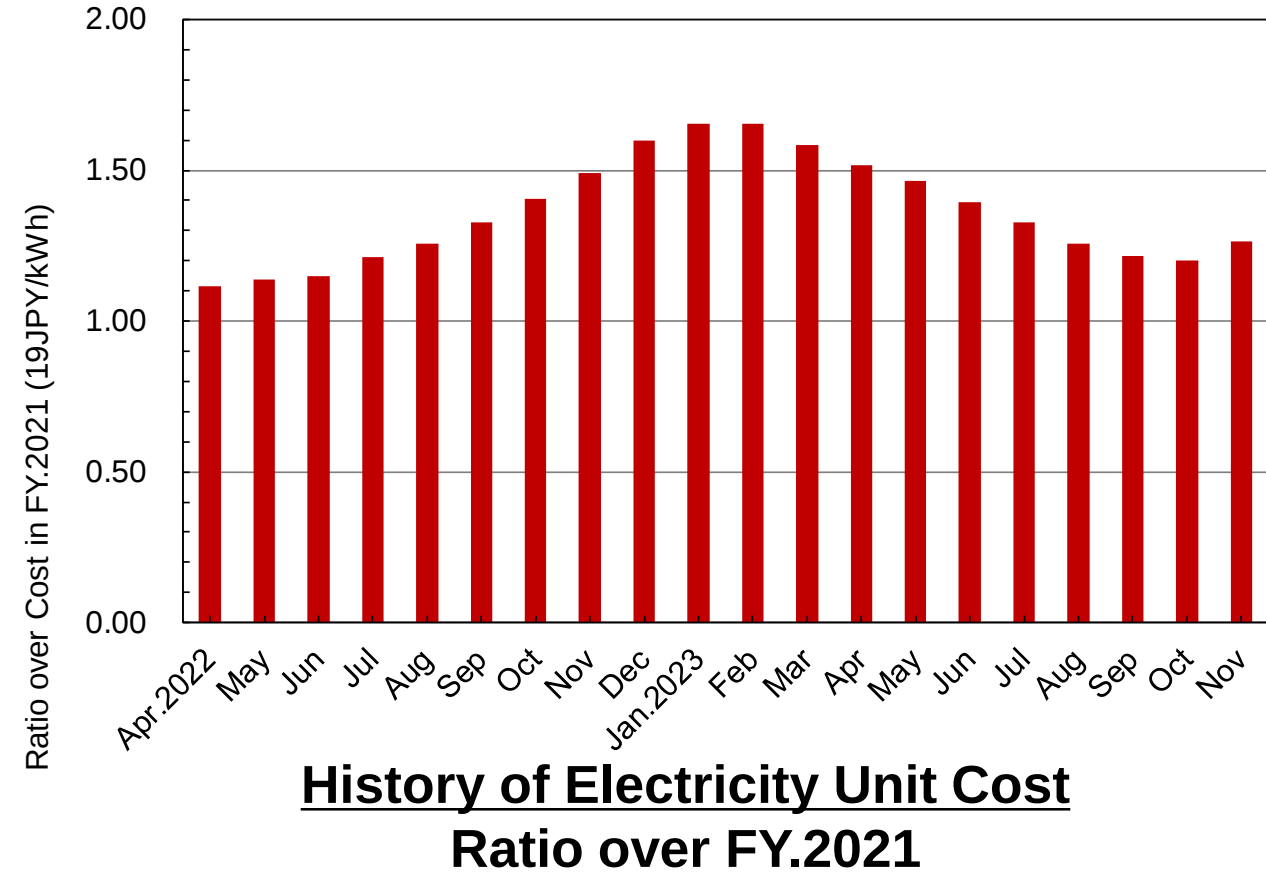




OFP-II (Background)

- U.Tokyo/JCAHPC is shifting to GPUs/Accelerators in next 10 years
 - Maximum performance under constraint of electric power consumption
 - Expensive Electricity: 1.5x-2.0x compared to that of FY.2021

System (Top/Green 500)	HW	GF/W
Henri (405,1)	NVIDIA H100	65.1
Frontier (1,6)	AMD MI250X	52.2
Leonardo (4,14)	NVIDIA A100	31.1
Fugaku (2, 43)	A64FX	15.4



OFP-II (1/2)

Bid opened on November 9th

- **Group-A: CPU Only: Intel Xeon Max 9480 (SPR)**

- Node: Intel Xeon Max 9480 (1.9GHz, 56c) x 2
 - 6.8 TF, 128 GiB, 3,200 GB/sec (HBM2e only)

- **Total**

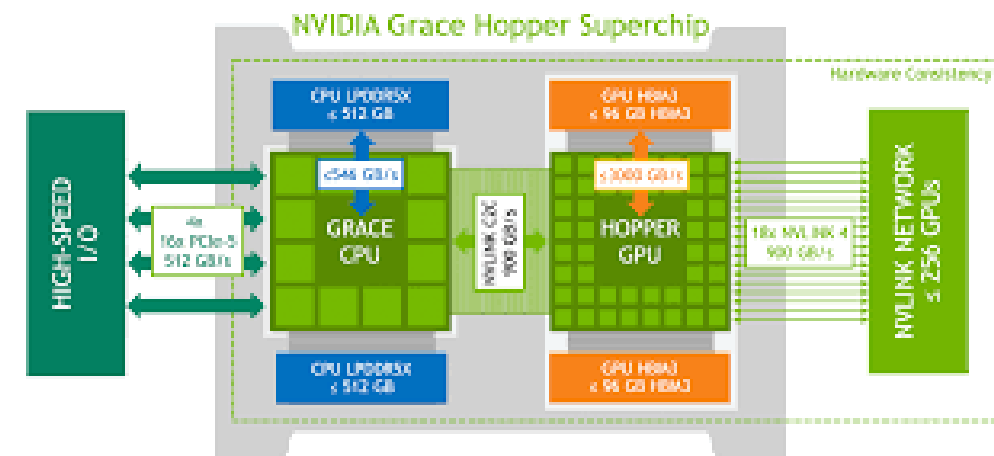
- 190 nodes, 1.3 PF, IB-NDR 200
- 372 TB/sec for STREAM Triad (Peak: 608 TB/sec)

- **Group-B: CPU+GPU: NVIDIA GH200**

- Node: NVIDIA GH200 Grace-Hopper Superchip
 - Grace: 72c, 2.9 TF, 111.7 GiB, 512 GB/sec (LPDDR5X)
 - H100: 66.9 TF DP-Tensor Core, 89.4 GiB, 4,022 GB/sec (HBM3)
 - NVMe SSD for each GPU: 1.9TB, 8.0GB/sec

- **Total (Aggregated Performance: CPU+GPU)**

- 1,120 nodes, 78.2 PF, 5.07 PB/sec, IB-NDR 200



OFP-II (2/2)

Bid opened on November 9th

- **File System: DDN EXA Scaler**
 - 10.3 PB (NVMe SSD), 1.0TB/sec
 - “Ipomoea-01” with 26 PB is also available
- **All compute nodes in Group-A/B are connected with Full Bisection Bandwidth**
 - $(400\text{Gbps}/8) \times (32 \times 20 + 16 \times 1) = 32.8 \text{ TB/sec}$

IB-NDR(400Gbps)		
IB-NDR200(200)		IB-HDR(200)
Group-A Intel Xeon Max (HBM2e) 2 x 190 1.3 PF, 608 TB/sec	Group-B NVIDIA GH200 1,120 78.2 PF, 5.07 PB/sec	File System DDN EXA Scaler 10.3 PB, 1.0TB/sec

Ipomoea-01
Common Shared Storage
26 PB

