

1 Outline

1.1 Supercomputer System

In SY 2013, the ISSP supercomputer center provided users with three supercomputing systems: NEC-SX9 (System A), SGI Altix ICE 8400EX (System B), and FUJITSU PRIMEHPC FX10 (System C) (Fig. 1). Systems A and B began service on July 1, 2010. In addition, FUJITSU PRIMEHPC FX10 (System C) entered service at the beginning of SY 2013. The three systems are all installed in the main building of ISSP.

System A - NEC SX9 is a vector computer with 4 nodes (64 CPUs). Vectorization and parallelization between CPUs can automatically be done by the C/Fortran compilers. One node contains 1 TB of shared memory, and the total system achieves 6.5 TFlops theoretical peak performance. All the nodes are connected to a 13 TB storage system with high throughput.

System B - SGI Altix ICE 8400EX is a massively-parallel supercomputer with 1,920 nodes (3,840 CPUs / 15,360 cores) achieving 180.0 TFlops theoretical peak performance. Each node has 24 GB of memory (46 TB in total) and two Intel Xeon X5570 CPUs running at 2.93 GHz connected by dual QPI links (2×25.6 GB/sec). Up to 128 nodes are connected by enhanced hypercube $4 \times$ QDR InfiniBand networks with 40 GB/s bisection bandwidth. A 110 TB Lustre file system is connected to the entire system also with InfiniBand, realizing I/O throughput on the order of GB/sec.

System C - FUJITSU PRIMEHPC FX10 is highly compatible with K computer, the largest supercomputer in Japan. System C consists of 384 nodes, and each node has 1 SPARC64TM IXfx CPU (16 cores) and 32 GB of memory. The total system achieves 90.8 TFlops theoretical peak performance.

For further details, please contact ISSP Supercomputer Center (SCC-ISSP).

[Correspondence: center@issp.u-tokyo.ac.jp]

1.2 Project Proposals

The ISSP supercomputer system provides computation resources for scientists working on condensed matter sciences in Japan. All scientific staff members (including post-docs) at universities or public research institutes in Japan can submit proposals for projects related to research activities on materials and condensed matter sciences. These proposals are peer-reviewed by the Advisory Committee members (see Sec. 1.3), and then the computation resources are allocated based on the review reports. The leader of an approved project can set up user accounts for collaborators. Other types of scientists, including graduate students, may also be added. Proposal submissions, peer-review processes, and user registration are all managed via a web system.

The computation resources are distributed in a unit called “point”, determined as a function of available CPU utilization time and consumed disk resources. There

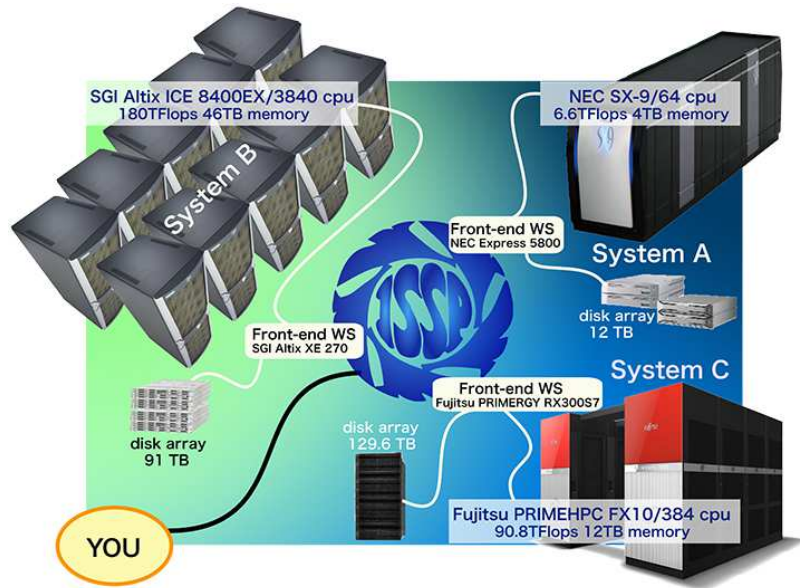


Figure 1: Supercomputer System at the SCC-ISSP

were six classes of research projects in SY 2013. The number of projects and the total number of points that were applied for and approved in this school year are listed in Table 1.

In addition, from SY 2010, ISSP Supercomputer is providing 20% of its computational resources for Computational Materials Science Initiative (CMSI), which aims at advancing parallel computations in condensed matter, molecular, and materials sciences on the 10-PFlops K Computer. The points for projects run by CMSI are distributed in accord with this policy. Computer time has also been allotted to Computational Materials Design (CMD) workshops run by CMSI.

- Proposals for projects in Classes B (small), C (mid-size), E (large-scale), and S (exceptional) can be submitted twice a year. Approved projects in Classes A, B, C, E, and S continue to the end of the school year.
- In Class D, projects can be proposed on rapidly-developing studies that need to perform urgent and relatively large calculations. An approved project continues for 6 months from its approval.
- Class S is for projects that are considered extremely important for the field of condensed matter physics and requires extremely large-scale computation. The project may be carried out either by one research group or cooperatively by several investigators at different institutions. A project of this class should be applied with at least 10,000 points; there is no maximum. We require group leaders applying for Class S to give a presentation on the proposal to the Steering Committee of the SCC-ISSP.
- Project leaders can apply for points so that the points for each system do not exceed the maximum point shown in this table.

Table 1: Classes of research projects in SY 2013

Class	Max. Point			Application
	Sys-A	Sys-B	Sys-C	
A	100	100	100	any time
B	2k	1k	500	twice a year
C	20k	10k	2.5k	twice a year
D	20k	10k	2.5k	any time
E	-	30k	2.5k	twice a year
S	(Sys-A+B)>10k		-	twice a year

Class	# of Proj.	Total points					
		Applied			Approved		
		Sys-A	Sys-B	Sys-C	Sys-A	Sys-B	Sys-C
A	10	350	850	500	350	850	500
B	56	40.7k	45.0k	6.6k	28.7k	29.8k	5.8k
C	130	793.5k	1043.0k	146.9k	486.5k	391.0k	98.6k
D	3	0	22.0k	0	0	19.0k	0
E	24	-	653.0k	43.8k	-	283.5k	36.6k
S	0	0	0	0	0	0	0
CMSI	22	-	-	-	-	-	92.5k

1.3 Committees

In order to fairly manage the projects and to smoothly determine the system operation policies, the Materials Design and Characterization Laboratory (MDCL) of the ISSP has organized the Steering Committee of the MDCL and the Steering Committee of the SCC-ISSP, under which the Supercomputer Project Advisory Committee (SPAC) is formed to review proposals. The members of the committees in SY 2013 were as follows:

Steering Committee of the MDCL

HIROI, Zenji	ISSP (Chair person)
KATO, Takeo	ISSP
KAWASHIMA, Naoki	ISSP
NOGUCHI, Hiroshi	ISSP
SUGINO, Osamu	ISSP
SUEMOTO, Toru	ISSP
TSUNEYUKI, Shinji	Univ. of Tokyo
MIYASHITA, Seiji	Univ. of Tokyo
KIMURA, Kaoru	Univ. of Tokyo
KAWAKATSU, Toshihiro	Tohoku Univ.
SAWA, Hiroshi	Nagoya Univ.

KAGEYAMA, Hiroshi	Kyoto Univ.
OGUCHI, Tamio	Osaka Univ.
NOHARA, Minoru	Okayama Univ.

Steering Committee of the SCC-ISSP

NOGUCHI, Hiroshi	ISSP (Chair person)
KAWASHIMA, Naoki	ISSP
SUGINO, Osamu	ISSP
TAKADA, Yasutami	ISSP
TOKUNAGA, Masashi	ISSP
TSUNETSUGU, Hirokazu	ISSP
SHIBA, Hayato	ISSP
WATANABE, Hiroshi	ISSP
KASAMATSU, Shusuke	ISSP
HATANO, Naomichi	Univ. of Tokyo
IMADA, Masatoshi	Univ. of Tokyo
MIYASHITA, Seiji	Univ. of Tokyo
NAKAJIMA, Kengo	Univ. of Tokyo
TSUNEYUKI, Shinji	Univ. of Tokyo
KAWAKATSU, Toshihiro	Tohoku Univ.
OTSUKI, Tomi	Sophia Univ.
SHIRAISHI, Kenji	Nagoya Univ.
OGUCHI, Tamio	Osaka Univ.
SUZUKI, Takafumi	Univ. of Hyogo
YOSHIMOTO, Yoshihide	Tottori Univ.
YATA, Hiroyuki	ISSP
FUKUDA, Takaki	ISSP

Supercomputer Project Advisory Committee

NOGUCHI, Hiroshi	ISSP (Chair person)
KAWASHIMA, Naoki	ISSP
SUGINO, Osamu	ISSP
TAKADA, Yasutami	ISSP
TOKUNAGA, Masashi	ISSP
TSUNETSUGU, Hirokazu	ISSP
SHIBA, Hayato	ISSP
WATANABE, Hiroshi	ISSP
KASAMATSU, Shusuke	ISSP
AOKI, Hideo	Univ. of Tokyo
ARITA, Ryotaro	Univ. of Tokyo
HATANO, Naomichi	Univ. of Tokyo
HUKUSHIMA, Koji	Univ. of Tokyo
IKUHARA, Yuichi	Univ. of Tokyo

IMADA, Masatoshi	Univ. of Tokyo
IWATA, Jun-Ichi	Univ. of Tokyo
MIYASHITA, Seiji	Univ. of Tokyo
MOTOME, Yukitoshi	Univ. of Tokyo
NAKAJIMA, Kengo	Univ. of Tokyo
OGATA, Masao	Univ. of Tokyo
OSHIYAMA, Atsushi	Univ. of Tokyo
TSUNEYUKI, Shinji	Univ. of Tokyo
WATANABE, Satoshi	Univ. of Tokyo
NEMOTO, Koji	Hokkaido Univ.
YAKUBO, Kosuke	Hokkaido Univ.
AKAGI, Kazuto	Tohoku Univ.
KAWAKATSU, Toshihiro	Tohoku Univ.
KURAMOTO, Yoshio	Tohoku Univ.
SHIBATA, Naokazu	Tohoku Univ.
YANASE, Yoichi	Niigata Univ.
ISHIBASHI, Shoji	AIST
MIYAMOTO, Yoshiyuki	AIST
OTANI, Minoru	AIST
KOBAYASHI, Kazuaki	NIMS
TATEYAMA, Yoshitaka	NIMS
HATSUGAI, Yasuhiro	Univ. of Tsukuba
KOBAYASHI, Nobuhiko	Univ. of Tsukuba
OKADA, Susumu	Univ. of Tsukuba
YABANA, Kazuhiro	Univ. of Tsukuba
HIDA, Kazuo	Saitama Univ.
NAKAYAMA, Takashi	Chiba Univ.
FURUKAWA, Nobuo	Aoyama Gakuin Univ.
MATSUKAWA, Hiroshi	Aoyama Gakuin Univ.
TAKANO, Hiroshi	Keio Univ.
YAMAUCHI, Jun	Keio Univ.
YASUOKA, Kenji	Keio Univ.
OTSUKI, Tomi	Sophia Univ.
OBATA, Shuji	Tokyo Denki Univ.
ANDO, Tsuneya	Tokyo Inst. Technology
TADA, Tomofumi	Tokyo Inst. Technology
HOTTA, Takashi	Tokyo Metropolitan Univ.
OKABE, Yutaka	Tokyo Metropolitan Univ.
WATANABE, Kazuyuki	Tokyo Univ. of Sci.
HAGITA, Katsumi	National Defense Academy
INOUE, Junichiro	Nagoya Univ.
KONTANI, Hiroshi	Nagoya Univ.
OKAMOTO, Yuko	Nagoya Univ.
SHIRAISHI, Kenji	Nagoya Univ.
TANAKA, Yukio	Nagoya Univ.

ODA, Tatsuki	Kanazawa Univ.
SAITO, Mineo	Kanazawa Univ.
ARAKI, Takeaki	Kyoto Univ.
KAWAKAMI, Norio	Kyoto Univ.
MASUBUCHI, Yuichi	Kyoto Univ.
TOHYAMA, Takami	Kyoto Univ.
YAMAMOTO, Ryoichi	Kyoto Univ.
KASAI, Hideaki	Osaka Univ.
KAWAMURA, Hikaru	Osaka Univ.
KUROKI, Kazuhiko	Osaka Univ.
KUSAKABE, Koichi	Osaka Univ.
MORIKAWA, Yoshitada	Osaka Univ.
OGUCHI, Tamio	Osaka Univ.
SHIRAI, Koun	Osaka Univ.
YOSHIDA, Hiroshi	Osaka Univ.
YUKAWA, Satoshi	Osaka Univ.
HARIMA, Hisatomo	Kobe Univ.
SUGA, Seiichiro	Univ. of Hyogo
SUZUKI, Takafumi	Univ. of Hyogo
TATENO, Masaru	Univ. of Hyogo
SAKAI, Toru	Japan Atomic Energy Agency
HOSHINO, Kozo	Hiroshima Univ.
HOSHI, Takeo	Tottori Univ.
YOSHIMOTO, Yoshihide	Tottori Univ.
YASUDA, Chitoshi	Univ. of the Ryukyus
KATO, Takeo	ISSP
TODO, Synge	ISSP

1.4 Staff

The following staff members of the SCC-ISSP usually administrate the ISSP Supercomputer.

NOGUCHI, Hiroshi	Associate Professor (Chair person)
KAWASHIMA, Naoki	Professor
SUGINO, Osamu	Associate Professor
WATANABE, Hiroshi	Research Associate
KASAMATSU, Shusuke	Research Associate
NOGUCHI, Yoshifumi	Research Associate
SHIBA, Hayato	Research Associate
MORITA, Satoshi	Research Associate
YATA, Hiroyuki	Technical Associate
FUKUDA, Takaki	Technical Associate
ARAKI, Shigeyuki	Technical Associate