

**Joint Usage/Research Center for Interdisciplinary Large-scale Information Infrastructures
(JHPCN)**

Call for Proposal of Joint Research Projects in Fiscal Year 2024

Revision History

- Version 2.0: 2023/12/05 Maximum resource capacity per one project of Kyoto University's Camphor 3 has been updated in Appendix 1(1)
- Version 1.0: 2023/11/15 Initial version

Table of Contents

Outline	3
1. Theme Areas	4
2. Available Computer Resources	4
3. Types of Joint Research Projects	5
4. Application Requirements	5
5. Joint Research Period	6
6. Facility and Resource Use Fees	6
7. Points to Note for Writing Application Forms and Available Resources	7
8. Application Process	11
9. Important Dates	14
10. Other Important Notices After Your Proposal Gets Accepted	15
11. Contact information	17
12. Additional Explanation on How to Get Confirmation of Institutional Heads	18

Appendix 1(1): List of the HPCI Resources (The resources provided as “HPCI-JHPCN system”)

Appendix 1(2): List of the Non-HPCI Resources

Appendix 2: Outline of mdx and Examples of “Research Projects Using Both Large-Scale Data and Large Capacity Networks”

Outline

The Joint Usage/Research Center for Interdisciplinary Large-scale Information Infrastructures (hereafter as JHPCN) is the network-type joint usage and research center, certified by the Ministry of Education, Culture, Sports, Science and Technology, on the basis of the Ordinance for Enforcement of the School Education Act. The joint usage and research center aims to make the most use of the potential that universities have for the research to produce a system which offers chances of joint research for researchers. It is made up of institutions with large-scale computing system (hereafter called member institutions) affiliated with Hokkaido University, Tohoku University, University of Tokyo, Tokyo Institute of Technology, Nagoya University, Kyoto University, Osaka University, and Kyushu University, and the center promotes joint usage by providing the computer resources of the member institutions and joint research by introducing researchers of each member institution to help the development of researches in many fields. .

JHPCN calls for joint research projects for fiscal year 2024. The joint research has to have two or more research members and be managed by a researcher of organizations in Japan. You have to use at least one of the computer resources of the member institutions or have a researcher of the member institutions in the research group. Projects are welcome from any research area.

The researchers of accepted projects will be able to use the computer resources of the member institutions and the “mdx” for free in the scope of the rule. (See Appendixes for the details of available resources) The “mdx” is an information infrastructure created mainly to accumulate, utilize and apply knowledge related to data science, which is comanaged by nine universities and 2 research institutions, within which the member institutions are included. There are cases where the expenses for publishing research results are supported, for example, the travel expenses to join conferences in abroad, the expenses to publish books on research results and to hold symposiums related to the research. Accepted research projects will also be a chance to make networks or develop your research/invention by joining or doing presentations in JHPCN symposiums.

Since the member institutions have enrolled leading researchers, acceleration of joint research projects is possible through collaboration with these researchers. You can get introductions to the researchers of the member institutions, if you hope to, please contact the JHPCN office in advance. If you have in mind a researcher with whom you want to conduct joint research, you can ask the member institution of the researcher in question.

These joint research projects for the fiscal year 2024 will be implemented from April 2024 to March 2025. The web application deadline is 10 AM (JST), 9 January, 2024. We expect and appreciate as many applications as possible.

1. Theme Areas

This Joint Research Project calls for joint research projects in the two theme areas: (1) Large-scale computational science area and (2) Data science/data usage area. We are expecting groups of researchers in different fields will propose interdisciplinary research. Applicants are required to choose an appropriate area from the two in accordance with the research theme they propose. Applicants can use any computer resource regardless of the theme they choose. The titles or reports of the projects in the previous calls can be found on the website of the JHPCN. Please note that if the proposed project and the proposed theme area are apparently unrelated, the theme area can be changed, and in that case the project will be judged based on the standards of the new area.

Theme Area (1): Large-scale computational science area

What this area expects is research on computing science. Large-scale research by interdisciplinary research teams of leading researchers in diverse fields is welcome. Please apply projects which aim at developing models of computing scientific simulation, with using real data to this area. (The projects for Data science/data usage area continued from FY 2023 are included in this area.)

Theme Area (2): Data science/data usage area

What this area expects is diverse research on data science/data usage and its application. Research themes on a wide range of areas from the fundamentals to their application and with different methods are welcome, such as development of leading methods in data science, collection and analysis of data of humanity and social science, biological science, science and engineering, data sharing or development of platforms in research communities. Note that those projects which aim at developing models of computing scientific simulation, with using real data must be applied to Theme Area (1).

2. Available Computer Resources

Some of the computer resources of the JHPCN member institutions constitute the computing

environment of the Innovative High Performance Computing Infrastructure (HPCI: <https://www.hpci-office.jp/>), which is a shared computing environment infrastructure. JHPCN, in cooperation with HPCI, provides a portion of these computer resources for JHPCN joint research. These are called HPCI resources.

On the other hand, the computer resources that are not provided through HPCI and are operated independently by each member institution are called non-HPCI resources (including mdx: Platform for the Data-Driven Future).

The list of available resources is shown in Appendixes 1.

Please note that the application procedure differs depending on whether you are applying to use HPCI resources or not.

3. Types of Joint Research Projects

Please choose one of the three types below in accordance with the organization and type of your project when you apply. A research proposal submitted as (2) International Joint Research Project or (3) Industrial Joint Research Project can be selected as (1) General Joint Research Project in some cases.

(1) General Joint Research Projects (approximately 80% of the total number of accepted projects will be of this type)

(2) International Joint Research Projects (approximately 10% of the total number of accepted projects will be of this type)

International joint research projects are interdisciplinary joint research conducted in conjunction with researchers outside Japan to address challenging issues that may not be possible to resolve or clarify only with the help of researchers within Japan. For such research projects, there will be subsidy paid to cover travel expenses necessary for holding meetings with foreign joint researchers and so on. For details of the subsidy, please contact our office after your research project has been accepted. For application requirements, see section 4.

(3) Industrial Joint Research Project (approximately 10% of the total number of accepted projects will be of this category)

Industrial joint research projects are projects focused on industrial applications. For application requirements see section 4.

4. Application Requirements

A research group must meet the following conditions.

(1) The research group must have one Project Representative and one or more Deputy

Representatives, and any joint researchers can be included.

- (2) The Project Representative must belong to an institution in Japan (university, national laboratory, private enterprise, and so on.)
- (3) Students can participate in the project as joint researchers if they belong to the higher education institutions certificated by National Institution for Academic Degrees and Quality Enhancement of Higher Education as their educational standards being equivalent to the graduate schools, universities, junior colleges or technical colleges. However, graduate students cannot participate as Project Representative or Deputy Representative.
- (4) If a non-resident member or a resident of "specific category", defined by the Foreign Exchange and Foreign Trade Act (See page 5 or later of "Clarification of deemed export control" by METI), intends to use computers, a researcher of the member institutions where the computer is operated (any member institution is acceptable for the use of mdx) must participate in the research group as a joint researcher.

International joint research projects must, in addition to the above-mentioned (1) – (4), fulfill the following conditions ((5) and (6)).

- (5) At least one researcher belonging to a research institution outside Japan must be in charge of Deputy Representative. Furthermore, an application must be made using the English application form.
- (6) A researcher of the member institutions must participate in the research group as a joint researcher.

Industrial joint research projects must, in addition to the above-mentioned (1) – (4), fulfill the following conditions ((7) and (8)).

- (7) The Project Representative must belong to a private enterprise.
- (8) At least one researcher of the member institutions must be in charge of a Deputy Project Representative.

5. Joint Research Period

April 1, 2024 to March 31, 2025.

Depending on conditions for preparing computer accounts, the commencement of computer use may be delayed.

6. Facility and Resource Use Fees

The research resources and other facilities can be used within the scope of use permitted at the screening free of charge. (They can only be used for the joint research project)

7. Points to Note for Writing Application Forms, Points of Evaluation and Available Resources

7.1 Points to note for writing application forms

Screening of the submitted proposals will be conducted by the Joint Research Project Screening Committee, which comprises faculty members belonging to JHPCN member institutions as well as external members. Proposals that make use of HPCI resources will also be screened by the HPCI Project Screening Committee, which comprises experts in industry, academic, and government. Research project proposals will be reviewed comprehensively, taking into consideration scientific and technological relevance, feasibility of usage and development, necessity of their facility/equipment requirements, consistency with the research topics and themes presented in 1, and their interdisciplinary nature. In addition, relevance of use of resources at the member institutions which conduct the projects together and cooperation and collaboration with the institutions are considered. Moreover, for projects continuing from the previous fiscal year and projects determined to have continuity in their essence, the previous year's interim report and the previous usage of computer resources may be considered during the screening process.

When you make the application form, please note the points below.

- The format of the application form has been changed from the one used in the last call, thus please make sure to use the latest version.
- Please explain in the way that is easy to understand for those Screening Committee members who may be unfamiliar with your research topic.

7.2 Research Projects to be appreciated

We will appreciate research projects that have the following features. Please clearly show in the application forms if the project has any of the features.

- (1) Points that are emphasized regardless of theme areas

Interdisciplinary organization:

JHPCN promotes interdisciplinary joint research projects on many kinds of themes that are done by researchers who specialize in the area of informatics, which include computer science and data science, and of its application. For this purpose, those projects are valued highly which have an interdisciplinary research team.

Promotion of usage of the software and data:

We appreciate highly those projects that aim to make the software developed or the database constructed as a result of the projects more accessible for as many people as possible. The

research teams are required not just to open those software and databases to public, but also to make them recognizable to be actively used.

Development of IT infrastructure technology:

We appreciate highly those projects that lead to infrastructural studies of IT, such as architecture, system software, and security. The projects can also be implemented in collaboration with researchers of the member institutions specializing in IT infrastructure technology.

Research projects in close cooperation with multiple JHPCN member institutions:

We appreciate highly those projects that use research resources and/or employ researchers from multiple member institutions. For example, research topics include, but are not limited to, large-scale and geographically distributed information systems and implementations of multi-platform for applications using research resources provided by multiple member institutions.

Research projects using both large-scale data and large-capacity networks:

We appreciate highly those projects that have massive data transfer, using a very wide-bandwidth network, between the researcher's research site and the resources provided by the member institution, or between the researcher's site and the member institutions. Available research resources include those that can be directly connected to a very wide-bandwidth network provided by SINET5, including L2VPN, in cooperation with the National Institute of Informatics. Therefore, research that depends upon a very wide-bandwidth network can be conducted. What is specifically intended here is shown in Appendix 2.

- (2) Points that are emphasized in Theme Area (1) "Large-scale computational science area"

Proposals which mainly aim to perform research activities are accepted. In other words, proposals that just attempt to use the provided computer resources, so called "product run projects", are not acceptable.
- (3) Points that are emphasized in Theme Area (2) "Data science/data usage area", the following points are emphasized and valued.

Impacts on the real world:

Proposals that will lead to solution of significant but hard to solve problems in the real world are valued highly, including realization of Society 5.0 or accomplishment of the SDGs, by applying data.

Promotion of data usage:

Proposals which attempt to promote data usage in research areas where data have not been widespread and sufficiently used yet are valued highly, as well as proposals that make use of different research data, including books and articles, to integrating them and give it sophisticated analysis in order to bring about new discoveries.

Security and personal data protection:

Those proposals are valued highly which create brand new worth making use of socially significant data, such as those on medical and health matters, education, and economy, or which promote development and popularization of techniques on secure use of those data, like techniques on personal data protection. Please consult with the member institutions which provide the resources you plan to use and confirm if the resources meet the requirements of your project. If you are going to use medical information, whether or not your project follows the Act on the Protection of Personal Information and/or the three guidelines set by Ministry of Health, Labour and Welfare, Ministry of Public Management, Home Affairs, and Ministry of Economy, Trade and Industry has to be made sure of in addition to the function and capacity of the available hardware and software.

7.3 The maximum amount of resources

The maximum amount of resources is defined as below. The amount of resources applied for must be reasonable in light of the research plan.

We provide a wide range of computer resources, including computers and others, so we define the maximum amount that can be applied for based on fee. Please estimate the amount of resources you apply for by calculating their fees. The maximum amounts that can be applied for are as follows. "mdx" is regarded as a single institution.

- When applying to use only the resources provided by one institution: Up to 3 MJPY
- When applying to use resources provided by multiple institutions: Up to 3.6 MJPY

When filling in application form 2, the amount of the fees will be automatically calculated based on conversion formulas of resources into fees (see Appendix 1). Please note that the usage fee rates used in the formulas may differ from the rates for general use, etc. of the resources at each institution.

The amount of resources that can actually be used after the proposal is accepted may be adjusted or reduced in consideration of the overall budget, screening results, and resource usage. In addition, for proposals that have been continued from the previous fiscal year or proposals that have been determined to have substantial continuity, if the resources from the previous fiscal year are underutilized or unutilized, the research resources may be reduced after adjustments are made.

7.4 High priority resource setting (Please set when necessary)

As mentioned above, even when the project is accepted, the total amount of the available resources can be reduced from the proposed amount at some rate. In this case, as for the projects which use some computer resources, the amount of all of the HPCI resources and mdx, fees of which are separately calculated, will be reduced at equal rate in principle. However, in case that the project cannot be carried out because of the reduction in the amount of some resource, the resource can be given priority (“High Priority Resource”). When there are resources given priority, the reduction will be applied to resources which are not put priority first. The total amount of reduction (the specific amount is decided based on the fee) is same whether there are resources with priority or not, which means when the reduction from the amount of resources without priority doesn’t reach the specified amount, the amount of resources with priority will also be reduced.

Priority can be given to only when the resource is indispensable. To give priority or not doesn’t affect the total amount of distribution (or that of reduction).

Projects which use only one resources cannot give priority to the resources.

In principle, the amount of resources that can be given priority to is less than 50 % of the total amount of proposed resources. Priority can be given to more than 50 % of the total amount of proposed resources, but it will receive caution on the application form, and there is more possibility of extremely unbalanced distribution of resources.

Additional screening is required to change the distribution of resources after the proposal gets accepted, regardless of whether to have been given priority or not.

Priority can be given only to HPCI resources and mdx, fees of which are separately calculated.

There are no options to decide detailed conditions for the reduction of the amount of resources, except for to give priority to each resource.

7.5 Screening of necessary amounts of resources

“The calculation basis of resources and purpose of the usage” section required at application

form 1 has to be written clearly, because it is an important evaluation point in screening of all the proposed projects of theme area (1): Large-scale computational science area, and of the HPCI resources and mdx, fees of which are separately calculated, of theme area (2): Data science/data usage area. If description of this point is not enough, the whole evaluation of the project can be lower.

For following cases, description of the calculation basis of resources is not needed: (1)A new project which requires total resource fee less than 1M JPY (for both theme area project). (2)A project of theme area (2) which requires mdx with shared-wallet system (in case HPCI resource will be required along with the mdx, describe the calculation basis of resources for HPCI resource). Please note that the purpose of the usage should be described in case the project is not required the description of the calculation basis of resources.

7.6 Selection of the Desired review section

When filling in the application form 2, “desired review section” is required to be selected, which will be referred to when distributing Screening Committee members who screens proposed projects.

When filling in the application form, please be careful to give lucid explanation, for the screening is carried out from points of view of informatics and research areas where informatics is applied. The category is selected using Kakenhi review section and keyword. Keywords can be selected up to 5 from Informatics (Medium-sized Section 60, 61) and up to 2 from applied areas of basic sections. It is necessary to select at least 1 keyword from Informatics.

8. Application Process

8.1 Outline and matters to be attended

Please note that you have to take one of the two kinds of application procedures depending on whether your proposal uses HPCI resources or not.

Category A projects:

Projects that only use HPCI resources, or that use both HPCI and non-HPCI resources.

Category B projects:

Projects that only use non-HPCI resources, or that do not use computational resources.

*Application must be done in either Category A or B. To apply for both categories is not allowed.

For application of international joint research projects, the English application forms must be used.

8.2 Application procedure

Category A: Application procedure of “Research projects with the use of HPCI resources”, including those projects that also make use of non-HPCI resources.

*For the detailed procedure, please see the Beginner’s Guide on the JHPCN website (<https://jhpcn-kyoten.itc.u-tokyo.ac.jp/en/cfp>).

What to prepare:

JHPCN application form1 and JHPCN application form 2 (After download, fill them out. They are downloadable on JHPCN website, <https://jhpcn-kyoten.itc.u-tokyo.ac.jp/en/cfp>.)

HPCI application form (Fill it out on the HPCI website, <https://www.hpci-office.jp/entry/>)

Where to submit: The HPCI website.

- (1) Download the application forms 1 and 2 on the JHPCN website and fill them out.
- (2) The following researchers must get their HPCI-IDs, unless they already have one.
 - Research Project Representative
 - At least 1 Deputy Representative (All the Deputy Representatives who will submit the proposal or be in charge of the face-to-face identity vetting have to get IDs)
 - Deputy Representatives and joint researchers who will use the HPCI resources
- (3) Visit the JHPCN website. When you choose “use HPCI resources” on the application page, you automatically jump to the application system of HPCI. Complete the HPCI application from on the website and upload the JHPCN application forms you complete at step (1).

Because an e-mail is sent to your institutional head to ask to confirm the information submitted at the application system of HPCI on step (4), an available email address for the confirmation is necessary. By institutional head are meant heads of department, such as Deans or Directors of institutions, for applicants who belong to universities, and their equivalents for applicants who belongs to National institutes or private companies. The address you propose has to be the one provided to the post in principle, but in case an administrative office has to be in charge of the contact, an email address of the office is also permitted. If any address is not provided to the post of your institutional head, submit an address of an administrative officer or a secretary in addition to a personal address of the institutional head. Concrete procedure is provided in section 12.

In case the project will use HPCI resource, please select relating research field(s) from following options.

- (1) Very large-scale numerical computation
- (2) Very large-scale data processing

- (3) Very large-capacity network technology
- (4) Very large-scale information technology research systems

- (4) Because an e-mail is sent to your institutional head to ask to confirm the information submitted at step (3) after the deadline, get the permission of the institutional head on the project in advance.

When the proposal is accepted, follow the guideline for procedures after acceptance set by HPCI. In particular, the Project Representative or the Deputy Representative has to take responsibility to complete the HPCI face-to-face identity vetting. In this process, there could be a case where the copies of ID cards with photo of all the joint researchers who use the resources are required. If the HPCI face-to-face identity vetting is necessary, please consult with HPCI after making sure if the center you are going to go is in charge of it.

You can check a list of the member institutions on the HPCI website (<https://www.hpci-office.jp/pages/nearcenter>).

Category B: Application procedure of “Research projects with the use of non-HPCI resources”

*For procedure of those with the use of HPCI resources, see Category A.

What to prepare:

JHPCN application form 1 and JHPCN application form 2 (After download, fill them out. They are downloadable on the JHPCN website, <https://jhpcn-kyoten.itc.u-tokyo.ac.jp/en/cfp>.)

Where to submit: The JHPCN website.

- (1) Download the application forms 1 and 2 on the JHPCN website and fill them out.
- (2) First go to the application page of the JHPCN website. From there you can go to the application page for Research projects with the use of non-HPCI resources. Enter the required information and upload the PDF files of the application forms you prepared at step (1). An acceptance notice will be sent to the email address you submitted on the application webpage.

*Please note that you do not use the application system of HPCI when applying for the “Research projects with the use of non-HPCI resources”. The HPCI ID is also not necessary in this case.

8.3 Points to remember when filling out the research project proposal application forms

- (1) Research resources must be only used for the purpose of the accepted research project.

- (2) The proposal must be for peaceful purposes.
- (3) Human rights and profit must be protected. Please consult with the member institutions which provide the resources you plan to use and confirm if the resources meet the requirements of your project. If you are going to use medical information, whether or not your project follows the Act on the Protection of Personal Information and/or the three guidelines set by Ministry of Health, Labour and Welfare, Ministry of Public Management, Home Affairs, and Ministry of Economy, Trade and Industry has to be made sure of in addition to the function and capacity of the available hardware and software.
- (4) If ethical guidelines are prepared in the research fields of the proposal, please follow it. In particular, the proposals that need a research ethics review must get ethical approval for conducting them at reviews of the organizations to which the researchers belong.
- (5) Projects seemingly identical with other proposed projects does not get accepted, for example, projects, the organizations or themes of which are substantially same, and projects that just the research objects are different.

9. Important Dates

1) Application

- Online briefing session for Research Project Representatives on how to apply: 1:30PM(JST), 1 December 2023
- Starting date of application: 7 December 2023
- Deadline: 10AM (JST), 9 January 2024
- Confirmation by the institutional head (necessary only in applications for “Research projects with the use of HPCI resources”): After the deadline, we ask applicants’ institutional heads to confirm applicants’ proposal. Applicants need to explain their projects to their institutional head and make sure that they check our email.
- Screening result announcement: The JHPCN is planning to announce the result until mid-March 2024.

2) Research-related events

- Joint research commencement: 1 April 2024
- 16th JHPCN symposium (Introduction of research): Early July 2024
- Progress report deadline: Mid-October 2024
- End of the research period: 31 March 2025
- Final report deadline: Mid-May 2025
- 17th JHPCN symposium (Report of research results): Early July 2025

10. Other Important Notices After Your Proposal Gets Accepted

(1) Submission of a written oath

Research groups whose research projects are accepted will be expected to submit a written oath pledging adherence to the contents of the above-mentioned “Points to remember when filling out the Research Project Proposal Application Form” of Section 8 “Application Process”. The specific process of submission will be provided if your project gets accepted. A sample of the process is provided on the website so please check it out in advance.

(2) Regulations for use of the facilities

While using the facilities, you are expected to follow the regulations for use pertaining to the research resources stipulated by the JHPCN member institutions with which you will work.

(3) Submission of reports and presentation at the JHPCN symposiums

A) Reports:

Both progress and final reports must be submitted in the middle and after the end of the research period, respectively. The final report will be published on the JHPCN website in principle. If these reports will not be submitted, then the Project Representative may be prohibited from applying to and participating in new projects. The report of international projects must be written in English.

B) Symposiums:

The JHPCN holds JHPCN symposiums in July every year, so that we can create research communities which aim at development of interdisciplinary research on computational science, data science, and computer science. We ask each research team of this Joint Research Project to give presentations about their research projects carried out in the previous year of each symposium and those in progress. The presentations have to be given by the Project Representatives or the Deputy Representatives in principle, but in case either of them cannot join the symposium, one of the joint researchers can instead. The presentations on the research projects in the previous year can be used when evaluating the projects. The travel expense will be borne by the JHPCN office. All the pdf files of poster presentations are required to submit before the symposium and are published on the JHPCN website.

The symposiums can be held online or in a hybrid way of online and onsite participation. It will be decided taking into account the situation of COVID-19. The

symposium were held hybrid in 2023.

(4) Disclaimer

Each JHPCN member institution assumes no responsibility for any inconveniences that affect applicants as consequence of joint research projects.

(5) Handling of intellectual property rights

In principle, every intellectual property that arises as results of a research project will belong to the research groups involved. However, it is presumed that recognition will be provided to the inventors in accordance with each institution's policy concerning intellectual property rights. Please contact each JHPCN member institution for details and handling of other exceptional matters.

(6) RCR training

Every joint researcher, including the Project Representative and the Deputy Representatives of an accepted project (excluding students), must be confirmed to have completed a program pertaining to RCR or its equivalent (for example, eligibility for the Japanese Grant-in-Aid for Scientific Research that is accepted by the Ministry of Education, Culture, Sports, Science and Technology, or the Japan Society for the Promotion of Science or proof of acquisition of a research fund which qualifies only those who have finished PCR training.

Those who have not completed such program need to take an e-Learning or a workshop which their institutes carry out, including the e-Learning program of The Association for the Promotion of Research Integrity. Those who have acquired a research fund which qualifies only those who have finished PCR training will be considered as qualified by presenting the proof. In case there are not any workshop taking place at your institution, please consult with the JHPCN office.

If the confirmation is not possible within three months of the start of the joint research period, the joint researchers must be deleted from the list.

(7) Abuse of research ethics

If the institute of participating research member(s) admits that the member(s) have violated research ethics in any research activity, including projects other than that of JHPCN, , the JHPCN may take the following actions: removal of the member from the project, ending of the offending project, and disqualification for application of new projects.

(8) Acknowledgements in presentations and publications

Upon publication of results of an accepted project, the author(s) should indicate in the Acknowledgements that the project was supported by JHPCN (see the JHPCN website for an example sentence).

(9) Others

- A) Personal information provided in the proposal shall only be used for screening research projects and providing system access.
- B) After the acceptance of a research project, however, the project name and the name and affiliation of the Project Representative will be disclosed.
- C) After the acceptance of a research project, changes cannot be made to the JHPCN member institutions you desire to work with or the computers you will use.
- D) If you wish to discuss your application, please contact us at the e-mail address listed in Section 11. (Please note in advance that we are not able to respond to telephone-based inquiries.)

11. Contact information (for inquiries about application, etc.)

- For inquiries about application

Joint Usage/Research Center for Interdisciplinary Large-scale Information Infrastructures Office

E-mail address: jhpcn.adm@gs.mail.u-tokyo.ac.jp

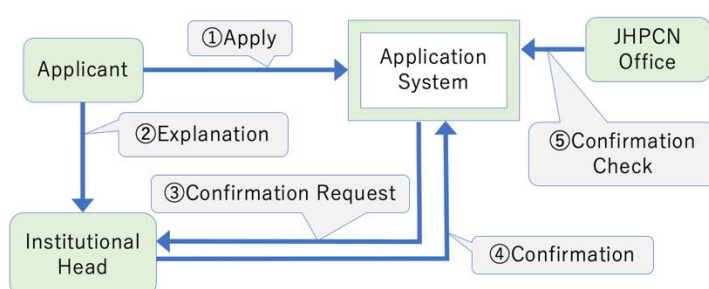
- For available resources, how to use resources, details of eligibility, faculty members who can participate in joint research projects, and the handling of intellectual property of each institution, please feel free to directly contact the following.

JHPCN member institutions	e-mail address
Information Initiative Center, Hokkaido University	kyodo@oicte.hokudai.ac.jp
Cyberscience Center, Tohoku University	joint_research@cc.tohoku.ac.jp
Information Technology Center, The University of Tokyo	jhpcn.adm@gs.mail.u-tokyo.ac.jp
Global Scientific Information and Computing Center, Tokyo Institute of Technology	jhpcn-kyoten@gsic.titech.ac.jp
Information Technology Center, Nagoya University	kyodo@itc.nagoya-u.ac.jp
Academic Center for Computing and Media Studies, Kyoto University	kyoten-8gm@media.kyoto-u.ac.jp
Cybermedia Center, Osaka University	system@cmc.osaka-u.ac.jp

Research Institute for Information Technology, Kyushu University mdx (Comanagement in which all the member institutions participate)	zenkoku-kyodo@iii.kyushu-u.ac.jp mdx-help@mdx.jp
---	--

12. Additional Explanation on How to Get Confirmation of Institutional Heads

2. New flow



- ①Applicant applies on the application system.
- ②Applicant explains his/her project to his/her institutional head and ask him/her to respond to a confirmation request described in ③ after the application is done.
- ③The request to confirm the project proposed is sent to each institutional head by email, and a notice of the request to the Project Representative, the Deputy Representative and the researcher in charge of administrative procedure.
- ④The institutional head confirms the projects. When confirmation is done, a notice is sent to the Project Representative, the Deputy Representative and the researcher in charge of administrative procedure.
- ⑤The JHPCN office makes sure that the projects have got confirmed.

Appendix 1: List of the research resources available at the JHPCN member institutions for the Joint Research Project

- The research resources that can be directly connected via SINET5 L2VPN provided by National Institute of Informatics are annotated as “L2VPN ready.”
- In filling in the section for the plan of resource usage of application forms, please consult the JHPCN about whether the quantity of resources you desire to use is acceptable and confirm it if needed.

Appendix 1(1): List of the HPCI resources available at the JHPCN member institutions for the Joint Research Project

(The resources provided as “HPCI-JHPCN system”)

JHPCN Institution	Computational Resources, Type of Use (<u>The underline parts are resource names</u>)
Information Initiative Center, Hokkaido University	<p>[Basic service charge according to the number of users] General: 12,960 JPY Students: 2,160 JPY</p> <p><u>1. Supercomputer Grand Chariot (Subsystem A) (Until February 2025)</u></p> <p>[Hardware resources] (Max 8 node years per 1 project, Storage: Max 30TB, 3TB unit (common to system A and B)) 1,004 nodes, 40,160 physical cores, Total main memory capacity 386TB, 3.1 PFLOPS, Acceptable Job: up to 256 nodes (Shared with general user)</p> <p>[Resource usage fee calculation formula] For details, please see Application Form 1.</p> <p>[Software resources] Compilers: Intel Compiler (Fortran/C/C++), GNU Compiler, Java, Python Libraries: ARPACK, EigenExa, FFTW, HDF5, Intel MKL, Intel MPI, NetCDF, OpenCV, PETSc, PLASMA, SALS, SLEPc, SuperLU, PARPACK, Trilinos, z-Pares Application software : ABINIT-MP, BLAST, Chainer, FrontFlow/blue, FrontFlow/red, FrontISTR, GAMESS, Gaussian, GENESIS, Gfarm, Ghostscript, GIMP, Globus Toolkit, Gnuplot, GROMACS, HΦ, Intel Vtune</p>

	<p>Amplifier, Meep, MODYLAS, NAMD, NTChem, OpenFOAM, OpenMX, ParaView, PHASE, PHASE/0, R, SALMON, SMASH, TensorFlow, VisIT, WRF, Xcrypt, Arm DDT, V-FaSTAR, MyPresto, Caffe, Intel DAAL</p> <p><u>2. Supercomputer Polaire (Subsystem B) (Until February 2025)</u></p> <p>[Hardware resources] (Max. 9 node years per 1 project, Storage: Max 30TB, 3TB unit (common to system A and B)) About 288 nodes, 19,584 physical cores, Total main memory capacity 28TB, 877TFLOPS, Acceptable Job: up to 128 nodes (Shared with general user)</p> <p>[Resource usage fee calculation formula] For details, please see Application Form 1.</p> <p>[Software resources] Compilers: Intel Compiler (Fortran/C/C++, optimization options for KNL are not available due to the version), GNU Compiler, Java, Python Libraries: ARPACK, EigenExa, FFTW, HDF5, Intel MKL, Intel MPI, NetCDF, OpenCV, PETSc, PLASMA, SALS, SLEPc, SuperLU, PARPACK, Trilinos, z-Pares Application software: @ABINIT-MP, BLAST, Chainer, FrontFlow/red, GAMESS, Gfarm, Ghostscript, GIMP, Globus Toolkit, Gnuplot, GROMACS, Intel Vtune Amplifier, Meep, NAMD, OpenFOAM, ParaView, PHASE, R, TensorFlow, VisIT, WRF, Xcrypt, Arm DDT, MyPresto, Caffe, Intel DAAL</p> <p><u>3. Inter Cloud System (Until February 2025)</u></p> <p>[Hardware resources]</p> <ol style="list-style-type: none"> 1) Physical server 5 nodes (Core:20x2, Memory:256GB, DISK:2TB) Additional storage (per 1TB possible to add) 2) Intercloud package 1 set (Physical servers each of which is installed at Hokkaido University, University of Tokyo, Osaka University, and Kyushu University, connected via SINET VPN) 3) Virtual server 8 nodes (Core:10 Memory:60GB, DISK:500GB) Additional storage (per 1TB possible to add)
--	---

	<p>[Resource usage fee calculation formula] For details, please see Application Form 1.</p> <p>[Usage] L2VPN Ready (negotiable)</p>
Cyberscience Center, Tohoku University	<p>[Remarks] Storage : 20TB / project (per 1TB possible to add), common to Subsystem AOBA-A, AOBA-B(Maximum storage capacity : negotiable), AOBA-S are separate</p> <p>1. <u>Supercomputer AOBA Subsystem AOBA-S(504nodes)</u></p> <p>[Hardware resources] About 21.05PFLOPS(DP), Main memory 504TB, Maximum number of nodes 256, Shared use</p> <p>[Resource usage fee] CPU:1NH = 100 JPY Strage:1TB · year = 3,000 JPY</p> <p>[Software resources] Compilers : Fortran Compiler, C/C++ Compiler Libraries : NEC MPI, NEC Numeric Library Collection(including BLAS, FFTW, LAPACK, ScaLAPACK) , Ftrace Viewer, PROGINF/FTRACE Application software : Quantum ESPRESSO, FPSEID²¹ Container virtualization: Singularity(Docker image supported)</p> <p>2. <u>Supercomputer AOBA Subsystem AOBA-A(72nodes)</u></p> <p>[Hardware resources] About 1.48PFLOPS(DP), Main memory 45TB, Maximum number of nodes 32, Shared use</p> <p>[Resource usage fee calculation formula] CPU:1NH = 75 JPY Strage:1TB · year = 3,000 JPY</p> <p>[Software resources] Compilers : Fortran Compiler, C/C++ Compiler Libraries : NEC MPI, NEC Numeric Library Collection(including BLAS, FFTW, LAPACK, ScaLAPACK) , Ftrace Viewer, PROGINF/FTRACE Application software : Quantum ESPRESSO, ABINIT-MP, PHASE/0, HΦ, FrontFlow/blue, FrontISTR</p> <p>3. <u>Supercomputer AOBA Subsystem AOBA-B(68nodes)</u></p> <p>[Hardware resources] About 278.5TFLOPS(DP), Main memory 17TB, Maximum number of nodes 16, Shared use</p> <p>[Resource usage fee] CPU:1NH = 22 JPY Strage:1TB · year = 3,000 JPY</p> <p>[Software resources] Compilers : AOCC (AMD Optimizing C/C++ Compiler), GNU Compiler Collection(Fortran, C/C++), Intel Compiler(Fortran, C, C++) Libraries : AMD uProf, AMD Optimizing CPU Libraries, Open MPI Application software : Gaussian16, GRRM17, MATLAB, Quantum ESPRESSO, OpenFOAM, GROMACS, LAMMPS, ABINIT-MP, PHASE/0, GENESIS, MODYLAS, NTChem, SALMON, HΦ, OpenMX, SMASH, mVMC, ALAMODE, Phonopy, AkaiKKR, FrontFlow/blue, FrontISTR, FFX, FFVHC-ACE Container virtualization: Singularity(Docker image supported)</p>

<p>Information Technology Center, the University of Tokyo</p>	<p>1. <u>Wisteria/BDEC-01(Odyssey): Supercomputer System for Integration of “Simulation+Data+Learning”, Simulation Nodes, 7,680 nodes of Fujitsu A64FX</u> [Hardware resources] Maximum tokens for each project: 276,480 Node-Hour’s, Storage 64TB (2TB/(8,640 Node-Hour’s)), Additional Storage Space on “Ipomoea-01” (0.300TB/(8,640 Node-Hour’s)), Acceptable Job: up to 2,304 nodes</p> <p>[Conversion formulas of resources into fees] 1 Node-Hour = 10.41 JPY</p> <p>[Software resources] Compilers: Fortran, C, C++ Libraries: MPI, BLAS, LAPACK/ScaLAPACK, FFTW, PETSc, METIS/ParMETIS Application software: OpenFOAM, ABINIT-MP, PHASE, FrontFlow/Blue, FrontISTR, REVOCAP, ppOpen-HPC Container: singularity (docker image possible)</p> <p>2. <u>Wisteria/BDEC-01(Aquarius: Shared Use): Supercomputer System for Integration of “Simulation+Data+Learning”, Data/Learning Nodes, 45 nodes of (Intel Xeon Platinum 8360Y + NVIDIA A100) (8 GPU’s/node, Total 360 GPU’s)</u> [Hardware resources] Maximum tokens for each project: 95,040 GPU-Hour’s, Storage 66TB (6TB/(8,640 GPU-Hour’s)), Additional Storage Space on “Ipomoea-01” (0.900TB/(8,640 GPU-Hour’s)), Acceptable Job: up to 8 nodes (64 GPU’s)</p> <p>[Conversion formulas of resources into fees] 1GPU-Hour = 31.25 JPY</p> <p>[Software resources] Compilers: Fortran, C, C++ Libraries: MPI, BLAS, LAPACK/ScaLAPACK, FFTW, PETSc, METIS/ParMETIS Application software: OpenFOAM, ABINIT-MP, PHASE, FrontFlow/Blue, FrontISTR, REVOCAP, ppOpen-HPC (Some of them don’t work on GPU), MATLAB (*) (*) Available for academic users only Container: singularity (docker image possible)</p> <p>3. <u>Wisteria/BDEC-01(Aquarius: Occupied Use): Supercomputer System for Integration of “Simulation+Data+Learning”, Data/Learning Nodes, 45 nodes of (Intel Xeon Platinum 8360Y + NVIDIA A100) (8 GPU’s/node, Total 360 GPU’s)</u> [Hardware resources] Maximum tokens for each project: 69.120 GPU-Hour’s, Storage 48 TB (6TB/(8,640 GPU-Hour’s)), Additional Storage Space on “Ipomoea-01” (0.900TB/(8,640 GPU-Hour’s)), Options for occupying “1, 2, 4 or 8” GPU’s are available Please specify</p>
---	---

	<p><u>number of GPU's which you want to "occupy" in the application. Moreover, please make sure the total GPU-Hour's to be 1x, 2x, 4x or 8x of 8,640. If occupation for 8 GPU's is accepted, you can bring customized login node. Please contact uketsuke@cc.u-tokyo.ac.jp if you plan to apply to "Aquarius: Occupied Use".</u></p> <p>[Conversion formulas of resources into fees] 1GPU-Hour = 42.19 JPY</p> <p>[Software resources] Compilers: Fortran, C, C++ Libraries: MPI, BLAS, LAPACK/ScaLAPACK, FFTW, PETSc, METIS/ParMETIS Application software: OpenFOAM, ABINIT-MP, PHASE, FrontFlow/Blue, FrontISTR, REVOCAP, ppOpen-HPC (Some of them don't work on GPU), MATLAB (*) (*) Available for academic users only Container: singularity (docker image possible)</p> <p><u>Attention!! If you want to use both of "Odyssey" and "Aquarius", please apply for 1 and 2 or 3. You can apply for all of 1, 2 and 3. Please feel free to contact uketsuke@cc.u-tokyo.ac.jp if you have any questions.</u></p>
Global Scientific Information and Computing Center, Tokyo Institute of Technology	<p>1. <u>TSUBAME4.0</u> [Hardware resources] TSUBAME4.0 system includes 240 compute nodes, which provides 66.84PF performance (CPU 46,080 cores + GPU 960 slots) in total. (Shared use)</p> <p>[Conversion formulas of resources into fees] <Since the resource usage fee is currently undetermined, an updated version of the file will be released as soon as it is determined.> Please apply <i>quarterly</i> for computing resources. For storage, also please apply for each capacity of HDD (in units of 1TB) and SSD (in units of 100GB) at the beginning of fiscal year. Computing resources and storage are rounded up after totaling in Unit. The rounded up portion is provided as additional computing resources. "Unit" is a unit for resource management at TSUBAME4.0.</p> <p>Computing resources: 400NH = 1 Unit * Maximum computing resources per 1 project in 4th quarter: 1,600NH Storage: HDD 1 TB-year = 6 NH = 0.015 Unit SSD 100 GB-year = 2.4 NH = 0.006 Unit * Maximum storage per 1 project: HDD 500TB (= 7.5 Unit) SSD 3 TB (= 0.18 Unit)</p> <p>[Software resources] OS: Red Hat Enterprise Linux Language Compiler: Intel oneAPI, NVIDIA HPC SDK, Arm Forge, CUDA, GNU compiler Collection, g++, Python, ruby, perl, PHP Libraries: Gaussian, Gauss View, AMBER (only for academic user), VASP (only for academic user), GAMESS, QUANTUM ESPRESSO, Tinker, GROMACS, LAMMPS, NAMD, CP2K, OpenFOAM, Alphafold, PyTorch, TensorFlow, POV-Ray, ParaView, VisIt, vmd, VESTA, Hadoop, gimp, gnuplot, R Linux container: Apptainer</p>

<p>Information Technology Center, Nagoya University</p>	<p>1. <u>Supercomputer "Flow" Type I subsystem FX1000</u> [Hardware resources] 7.782 PFLOPS (2,304 nodes, 110,592 cores (+4,800 assistant cores), 72TiB memory)</p> <p>[Conversion formulas of resources into fees] CPU: 1NH = 31 JPY Hot Storage: TB x year= 4,900 JPY</p> <p>[Software resources] OS: Red Hat Enterprise Linux 8 Development Environment: Fujitsu Technical Computing Suite Libraries: BLAS, LAPACK, ScaLAPACK, FFTW, SuperLU, SuperLU M, SuperLU DIST, METIS, MT-METIS, ParMETIS, Scotch, PT-Scotch, PETSc, MUMPUS, Xabclib, ppOpen-APPL, ppOpen-AT, ppOpen-MATH, LINSYS_V, DHPMM_F Application software: NetCDF, Parallel netCDF, HDF5, JHPCN-DF, OpenCV, Geant4, Caffe, Chainer, Keras, PyTorch, TensorFlow, Theano, Mxnet, ONNX, conda, Numpy, Scipy, scikit-image, pillow, matplotlib, jupyterlab, OpenFOAM, FrontISTR, AMBER, Gaussian, Gromacs, LAMMPS, NAMD, Modylas</p> <p>2. <u>Supercomputer "Flow" Type II subsystem CX2570</u> [Hardware resources] 7.489 PFLOPS (221 nodes, 8,840 CPU cores+2,263,040 FP64 GPU cores)</p> <p>[Conversion formulas of resources into fees] CPU: 1NH = 154 JPY Hot Storage: TB x year= 4,900 JPY</p> <p>[Software resources] OS: CentOS 7.7 Development Environment, Libraries: Intel Compiler, PGI Compiler, Arm Forge Professional, NVIDIA CUDA SDK, Singularity, FFTW, SuperLU, SuperLU MT, SuperLU DIST, METIS, MT-METIS, ParMETIS, Scotch, PT-Scotch, PETSc, MUMPUS, Xabclib, ppOpen-APPL, ppOpen-AT, ppOpen-MATH, LINSYS_V, DHPMM_F Application software: NetCDF, Parallel netCDF, HDF5, JHPCN-DF, OpenCV, Geant4, Caffe, Chainer, Keras, PyTorch, TensorFlow, Alphafold, Theano, Mxnet, ONNX, Conda, Numpy, Scipy, scikit-image, pillow, matplotlib, jupyterlab, OpenFOAM, LS-Dyna, FrontISTR, AMBER, Gaussian, Gamess, Gromacs, LAMMPS, NAMD, Modylas, HyperWorks</p> <ul style="list-style-type: none"> ● Maximum resource allocation amount per issue <ul style="list-style-type: none"> ➤ Type I : 96,000 NH ➤ Type II: 19,400 NH ➤ Hot Storage: 600 TB x year ➤ Login node Occupied: 1 unit x year ➤ Visualization System: 1 set x year <p>All resources are shared with general users.</p>
<p>Academic Center for Computing and Media Studies, Kyoto University</p>	<p>1. <u>Camphor3 (Intel Xeon)</u> [Hardware resources] Red: Updated in version 2. ① Year-round use 96 nodes, 10,752 cores, 652.8 TFLOPS x 12 months (From 1st, April, 2024 to the end of March 2025. The maximum NH is approximately 16.7 nodes per project x 12 months. (144,230 NH)) ② Intensive use 96 nodes, 10,752 cores, 652.8 TFLOPS x 8 weeks (The maximum NH is</p>

	<p>approximately 83.4 nodes per project x 4 weeks (56,074 NH))</p> <p>③ Storage Provides a minimum of 10 TB per one project. Storage capacity is increased according to the node hours used for the full term (approximately 1 TB per 720 node hours). Only storage capacity can be added in 10TB increments (maximum storage capacity is negotiable).</p> <p>[Conversion formulas of resources into fees]</p> <p>1 1NH = 20.8 JPY 2 1NH = 53.5 JPY 3 10 TB = 10,000 JPY</p> <p>[Software resources] OS: Red Hat Enterprise Linux 8 Compilers: Intel oneAPI (Fortran, C/C++, OpenMP) Libraries: Intel oneAPI MKL (BLAS, LAPACK, ScaLAPACK) Application Software: Gaussian16, GaussView</p>
Cybermedia Center, Osaka University	<p><u>SQUID</u></p> <p>[Hardware resources]</p> <ul style="list-style-type: none"> - Resource per project: <ul style="list-style-type: none"> General purpose CPU nodes: up to 11.07 node years (Shared Use) up to 1.97 node years (Dedicated Use) GPU nodes: up to 1.71 node years Vector nodes: up to 2.85 node years Storages: up to HDD 500 TB, SSD 10TB - Computational node: <ul style="list-style-type: none"> General purpose CPU nodes: 1,520 nodes (380 TB memory) will be provided up to 304 node years in shared use and dedicated use. GPU nodes: 42 nodes (21 TB memory, 8 NVIDIA A100 per 1 node) will be provided up to 6 node years in shared use. Vector nodes: 36 nodes (4.5 TB memory, 8 SX-Aurora TSUBASA Type 20A per 1 node) will be provided up to 5 node years in shared use. Storages: Lustre 20.0 PB (HDD) + 1.2 PB (NVMe). In the case of SSD, specify it in the application form. <p>[Conversion formulas of resources into fees]</p> <p>General purpose CPU nodes [Shared Use]: 1 node hour = 32.9 JPY</p> <p>General purpose CPU nodes [Dedicated Use]: 1 node month = 126,500 JPY</p> <p>GPU nodes [Shared Use]: 1 node hour= 201.8 JPY Vector nodes [Shared Use]: 1 node hour= 124.4 JPY HDD: If up to 5 TB, 0 JPY. If over 5TB, 1 TB/year= 2,200 JPY SSD: 1 TB/year = 5,500 JPY</p> <p>[Software resources]</p> <p>[Development environment] Intel Compiler(FORTRAN, C, C++), NEC SDK for VE(FORTRAN, C, C++),GNU Compiler(FORTRAN, C, C++), NVIDIA HPC SDK, OpenJDK, Intel OneAPI, NEC Parallel Debugger, Arm Forge, Python, R, Julia, Octave, CUDA, XscalableMP, Jupyter notebook</p> <p>[MPI Library] Intel MPI, OpenMPI, NEC MPI</p> <p>[Library] NEC Numeric Library Collection(BLAS, LAPACK, ScaLAPACK, FFT, etc),Intel Math</p>

	<p>Kernel Library, GNU Scientific Library, NetCDF, Parallel netcdf, HDF5, FFTW [Application software] TensorFlow, Keras, PyTorch, pbdR, Gaussian, MATLAB, VASP, IDL, Paraview, Gnuplot, ImageMagick, NcView, AVS/Express, GROMACS, OpenFOAM, LAMMPS, GAMESS, ABINIT-MP, Relion, ADIOS, Anaconda, VisIt, HΦ, MODYLAS, NTChem, OpenMX, SALMON, SMASH</p>
<p>Research Institute for Information Technology, Kyushu University</p>	<p>1. <u>NodeGroup A</u> [From October 2024] [Hardware Resources] 1.1 (Fixed-node) The maximum resources allocated for 1 project are 16 nodes for 6 months. Most of resources are dedicated to the project. 1.2 (Shared-use) 14,976 node-hours (approx. value). It is shared with general users. 1.3 Node Info Processor : Intel Xeon (Platinum 8490H) (1.9GHz · 60core) x 2 Memory : 512GB Arithmetic performance : 7,296GFLOPS [Conversion formulas of resources into fees] 1.1 16 nodes month = 288,000 JPY 1.2 14,976 node-hours = 449,280 JPY</p> <p>[Software Resources] Compilers: Intel oneAPI</p> <p>2. <u>NodeGroup B</u> [From October 2024] [Hardware Resources] (Fixed-node) The maximum resources allocated for 1 project are 4 nodes for 6 months. [Node Info] CPU : Xeon Platinum 8490H 1.9 GHz / 60C x2 GPU : NVIDIA H100(SXM5) x4 MEM : 1,024GB GPU mem : 94GB/GPU 7,296 GFLOPS/node [Conversion formulas of resources into fees] 4 nodes month = 312,000 JPY</p> <p>[Software Resources] Compilers: Intel oneAPI, NVIDIA CUDA SDK, NVIDIA HPC SDK</p> <p>Storages per project: 10 TB, (possible to add Max 100TB) [Conversion formulas of resources into fees] 10 TB month = 1,300 JPY</p> <p>If you intend to use multiple resource, please contact us before applying, because the resource limit of one project may be reached <u>If you wish to use multiple resources, please use a common usage period.</u> <u>"Shared-use" and "Fixed-node" cannot apply together.</u></p> <p>If you require more storage capacity than the maximum, please contact us.</p>

**Appendix 1(2): List of the non-HPCI resources available
at the JHPCN member institutions for the Joint Research Project**

mdx is managed by multiple institutions including the member institutions, and it is treated here as an independent institution.

JHPCN Institution	Computational Resources, Type of Use (<u>The underline parts are resource names</u>)	Estimated number of Projects accepted
mdx	<p><u>Hardware resources as a whole of the mdx system</u></p> <ul style="list-style-type: none"> ● General-purpose (CPU) node: PRIMERGY CX2550 M6 : Intel Xeon Platinum 8368 (IceLake 38 cores, 2.4GHz x 2 sockets) x 368 nodes ● GPU node: PRIMERGY GX2570 M6 : (Intel Xeon Platinum 8368 (IceLake 38 cores, 2.4GHz × 2 sockets) + NVIDIA A100 GPU × 8) × 40 nodes ● Storage for virtual disk: Approx. 444 GB ● High-speed internal storage: Approx. 9.3 PB, Lustre file system ● High-capacity storage: approx. 15.6 PB: Approx. 15.6 PB, Lustre file system ● AWS S3 compatible object storage: Approx. 9.4 PB ● External connection: 400 Gb/s (SINET6 connection), L2VPN available (on request) ● Internal network: Overlay network with Virtual eXtensible LAN (VXLAN), project-specific VLANs assigned (multiple assignments possible) ● Please check out https://mdx.jp/ for more information on mdx, including an overview of mdx, the virtual machine services available through mdx, the concept of resource allocation, and usage fees <p><u>How to use mdx resources</u></p> <p>Choose one of the two resource allocation plans, either the 'shared wallet' or the 'private wallet.' You cannot select both. When using mdx, purchase mdx points (1 point = 1 yen) from these wallets to apply for resources such as VMs. The validity period for points granted by JHPCN is until March 31. Additionally, it is</p>	

	<p>possible to purchase additional points with self-funding in case of insufficient points from JHPCN (in such cases, the validity period for mdx points is either six months from the date of grant or until the end of the fiscal year, whichever is earlier).</p> <ul style="list-style-type: none"> ● If you choose the shared wallet plan: <ul style="list-style-type: none"> ➤ Select 'Use mdx (Shared Wallet)' on Form 2 of the application. ➤ On the application form, the budget will be the lower of '1 million yen' and '3.6 million yen - the estimated amount at other locations,' it does not require a detailed estimate. ➤ The total of the above budgets for all projects using mdx becomes the shared wallet (to be precise, the amount excluding the 100,000 yen mentioned below becomes the shared wallet), which is available for shared use in all projects. ➤ Even if the shared wallet is depleted, each project can use 100,000 yen. ● If you choose the private wallet plan: <ul style="list-style-type: none"> ➤ Select 'Use mdx (Shared wallet)' on Form 2 of the application. ➤ Estimate the usage amount of resources such as CPU, GPU, storage, etc., using the resource utilization request sheet on Form 2. ➤ As with HPCI resources, the resources specified here can be used exclusively within your own project (not shared). <p>We strongly recommend choosing the shared wallet plan to achieve a flexible resource allocation unless the researcher needs computational resources of more than one million yen and can accurately estimate the amount of resources.</p> <p><u>Resource Allocation Application</u></p> <ul style="list-style-type: none"> ● The range of resources available in the entire mdx. ● Project users apply for the amount of resources they need within the range of available resources in the entire mdx, and when they are no longer needed, they are released. ● However, the application may be rejected after taking into account the amount of available resources for the entire mdx and the shared budget, and the amount of resources allocated to each project may be reduced during use if the overall amount of resources is tight. In this case, users will be notified in advance by e-mail or other means. ● The reserved VM should be requested through the user portal. 	
--	--	--

	<ul style="list-style-type: none"> • The spot VM needs no request (the project member specifies it when using spot VM). • In JHPCN projects, the reserved VM for the GPU pack is not recommended. However, if it is necessary for the project's execution, please describe the reason in Form 1. <p><u>Allocatable resources for each project</u></p> <p>The following computing resources are applied for each project and allocated to the activated VMs.</p> <ul style="list-style-type: none"> • General-purpose (CPU) node: 1 CPU pack (1 core (vCPU). Approximately 1.5 GB per core) • Compute-accelerated (GPU) node: 1 GPU pack (1 GPU + 18 cores (vCPU), approx. 57 GB memory) • Storage for virtual disk, high-speed internal storage, mass storage, object storage: Apply in 1 GB increments • Global IP address: Apply in units of 1 IP <p><u>Software resources</u></p> <ul style="list-style-type: none"> • Virtual machines will run on virtualization software: VMware vSphere (vCenter, ESXi). The software (including OS) necessary for the project will be installed on the virtual machine by each project. In addition, a template of a virtual machine with OS and software packages pre-installed will be provided. • Users can allocate and use the necessary computing resources and networks from the resources allocated to the project to the VMs through the portal. • If you need to consider linking with resources other than mdx, such as L2VPN, please contact the support desk (mdx-help@mdx.jp) in advance. 	
Information Initiative Center, Hokkaido University	<p><u>1. Large-format printer</u> [Hardware resources] Large-format printer [Software resources]</p>	12
Cyberscience Center, Tohoku University	<p><u>1. Large-format printer</u> [Hardware resources] Large-format printer [Software resources] [Usage]</p>	10

Information Technology Center, The University of Tokyo	N/A	
Global Scientific Information and Computing Center, Tokyo Institute of Technology	N/A	
Information Technology Center, Nagoya University	<p>1. <u>Login node</u> [Hardware Resources] A login node dedicated to Type I subsystems or Type II subsystems. It can be connected from off-campus via L2VPN and can be used exclusively. Individual connection and settings are required for use, so please contact us in advance. https://icts.nagoya-u.ac.jp/ja/sc/overview.html#login</p> <p>[Usage] L2VPN Ready</p> <p>[Conversion formulas of resources into fees] Login node Occupied: unit x year= 570,000 JPY</p> <p>2. <u>Visualization system</u> [Hardware Resources] 185-inch 8K tiled display, 180-inch 3D visualization system, Domed display system, Image Processing client and Onsite client of Supercomputer "Flow" (Remote visualization using NICE DCV is available.) https://www.icts.nagoya-u.ac.jp/en/sc/</p> <p>[Usage] L2VPN Ready</p> <p>[Conversion formulas of resources into fees] Visualization System: set x year= 20,000 JPY</p>	
Academic Center for Computing and Media Studies, Kyoto University	<p>1. <u>Virtual Server Hosting</u> [Hardware resources] Standard configuration: CPU 2 cores, memory 4GB, disk 100GB Resource increase: CPU is up to 8 cores in 2 cores units. Memory is up to 64GB in 4GB units. Disks is up to 1TB in 100GB units. Total resources provided: CPU 32 cores, memory 256GB, disk 8TB</p> <p>[Conversion formulas of resources into fees] Standard configuration: 1VM = 38,400 JPY Resource increase:</p> <p>① CPU 2 cores = 3,600 JPY ② Memory 4GB = 3,600 JPY ③ Disk 100GB = 7,200 JPY</p> <p>[Software resources] Hypervisor: VMware OS: AlmaLinux8</p> <p>[Usage] SINET L2VPN is available</p>	

Cybermedia Center, Osaka University	<p>1. <u>ONION (object storage)</u> <u>Object storage that can be linked with large-scale computer systems, cloud storage, etc. via S3 API.</u></p> <p>[Hardware resources] <u>Cloudian HyperStore</u> <u>up to HDD 80TB per project</u></p> <p>[Conversion formulas of resources into fees] 1 TB/year = 13,200 JPY</p>	
Research Institute for Information Technology, Kyushu University	<p>1. <u>Tiled Display Wall system</u></p> <p>[Hardware resources]</p> <ul style="list-style-type: none"> • Tiled Display Walls system consists of 4K Monitor x 12 displays (4 x 3) • Panel Driver PC x 4 • Server PC x 1 <p>[Software resources] The ChOWDER System* for Tiled Display Walls system * https://github.com/SIPupstreamDesign/ChOWDER</p> <p>[Usage] L2VPN Ready</p>	

Appendix 2: Outline of mdx and possible examples of “Research projects using both large-scale data and large capacity networks”

mdx:

Applying virtualization methods, mdx provides multiple projects with information processing environments (tenants) that consist of separate networks, computers, and storages. It makes use of SINET to assign tenants covering a variety of areas, which are composed of wide networks, computers, storages, and other resources, to projects within a short time. Each project can use mdx as if its infrastructure is arranged exclusively for the purpose of the project. The tenants can be rapidly constructed without hardware changing its composition, which makes it possible to conduct a quick PoC (Proof of Concept) on high performance infrastructure in diverse data uses.

Available resources

[Hardware resource]

mdx

[Software resources]

Refer to Appendix 1(2)

How to use

Users require necessary computational resources, storage resources, and construction of network by the portal when they use mdx.

Email address for inquiring about resource usage and joint research

mdx-help@mdx.jp

Details of the service

<https://mdx.jp/>

Information Initiative Center, Hokkaido University

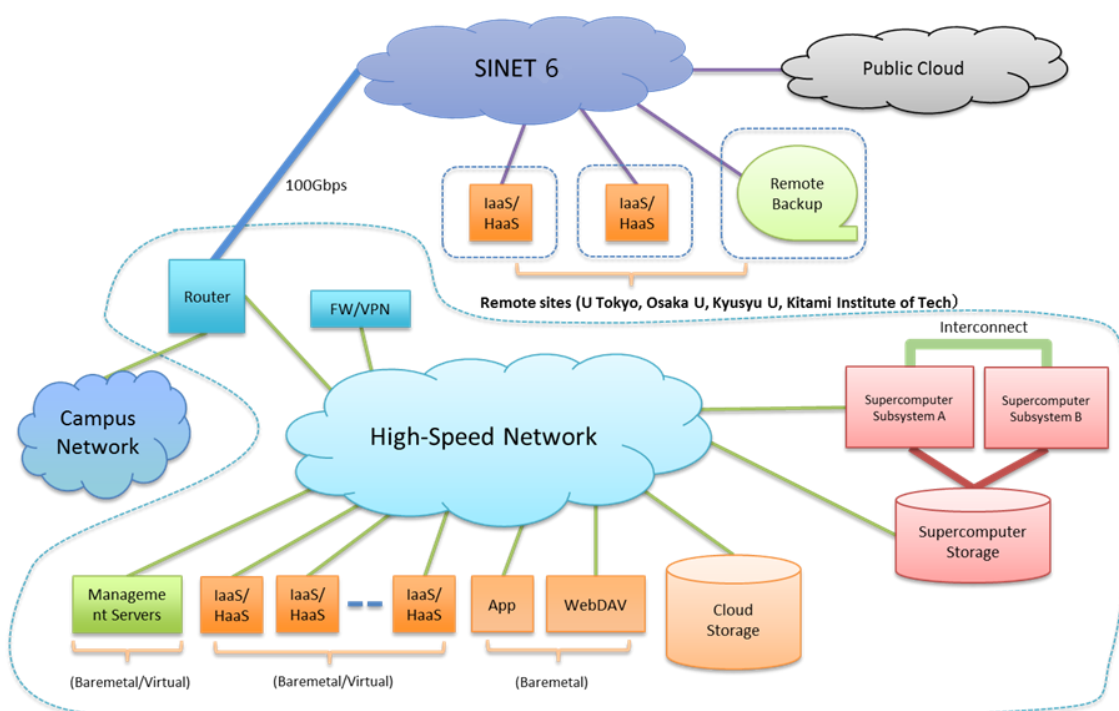
High performance virtual private cloud systems (isolated system for research project) can be deployed using physical and virtual machines in the intercloud system. Also, nation-wide scale distributed systems can be easily deployed by using the intercloud packages.

Available resources

Supercomputer system, Intercloud system (c.f. Attachment 1.)

How to use

Dedicated systems can be developed for the collaborative research projects employing physical and virtual machines as dedicated virtual private clouds. Distributed systems can also be developed by using intercloud packages consisting of physical servers in Hokkaido University, University of Tokyo, Osaka University and Kyushu University connected by SINET L2VPN. The users can access the systems not only via ssh/scp but also with virtual console, which is provided by Cloud Middleware, through web browsers and with RESTful web service APIs.



Overview of "Hokkaido University High-performance Intercloud"

Email address for inquiring about resource usage and joint research

kyodo@oicte.hokudai.ac.jp

Details of anticipated projects

- Experiment data analysis platform in the intercloud environment: constructing a data store, analysis, and sharing infrastructure employing virtual/real machines and storages of the intercloud system of Hokkaido University connected to computational resources of the other universities via SINET L2VPN.
- Building nation-wide large-scale distributed systems over the SINET6 ultra high speed network: their performance evaluations using real intercloud environment. We are planning to collaborate with mobile networks using SINET wide-area data collection environment.
- Development of a large-scale pre/post-processing environment federating supercomputers and intercloud systems: developing a large-scale distributed processing environment such as performing analysis of big data generated by supercomputers using Hadoop clusters to visualize at the other universities' remote systems.

- An always-on platform to support network-oriented research projects: development of a nation-wide distributed high-speed networking platform employing the cloud system / data science cloud system of Hokkaido University and private clouds of the other universities connected via SINET6 L2VPN.

ng/migrating required software to our system. (Please contact us in advance.)

How to use

Supercomputers (AOBA-A, AOBA-B, AOBA-C, AOBA-S(temporary name))

log in to the compute nodes using ssh

transfer files to the node using the scp / sftp

Network

Possible to build L2VPN on SINET6

Storage

Possible to use remote mount by NFS through L2VPN

Email address for inquiring about resource usage and joint research

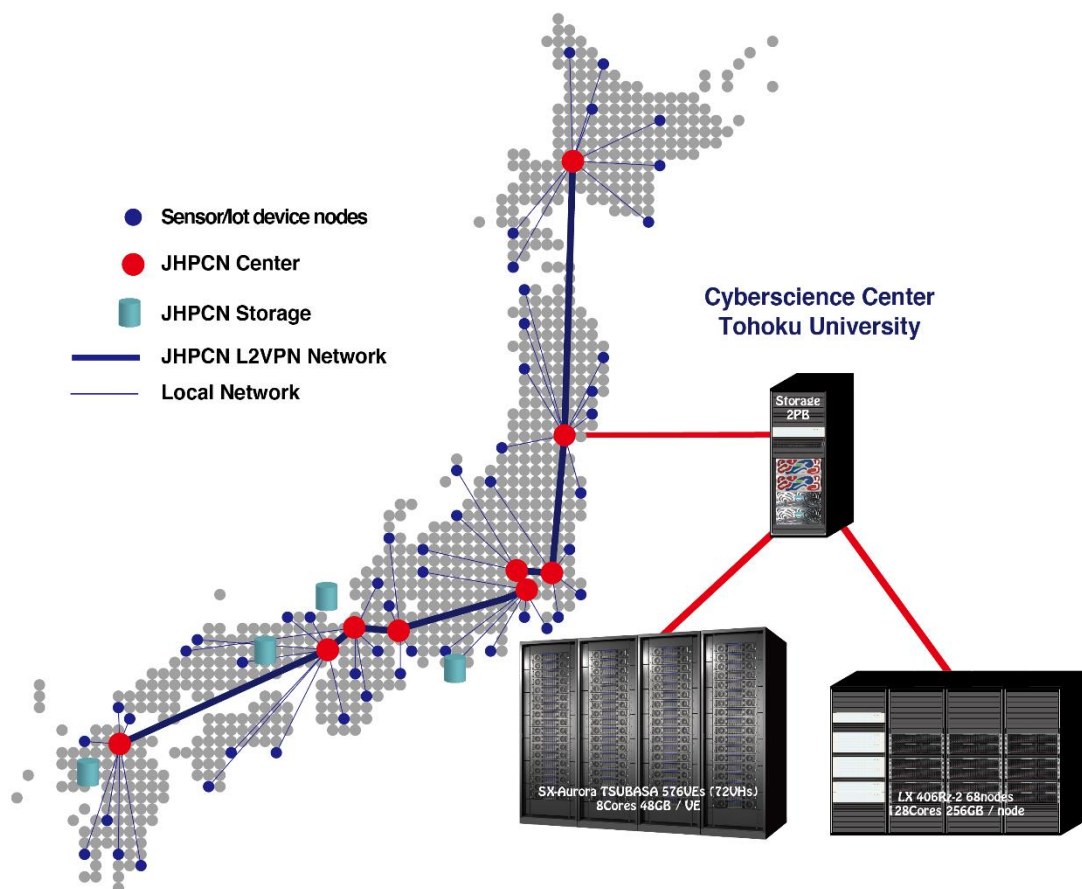
joint_research@cc.tohoku.ac.jp

Details of anticipated projects (in Japanese)

http://www.ss.cc.tohoku.ac.jp/jhpcn_network/

Cyberscience Center, Tohoku University

Cyberscience Center provides vector parallel and scalar parallel supercomputers, a distributed data sharing environment through on-demand L2VPN. These environments allow users to share and analyze vast amounts of observed data obtained by sensors or IoT devices. We strongly invite proposals that try to exploit the potential of these environments. For example, joint research regarding the real-time analytics using supercomputers, and storage/network architectures for a large-scale distributed data sharing.



Available resources

[Hardware resources]

Storage (100TB / project)

Supercomputer AOBA

On-demand L2VPN

[Software resources]

OS : Rocky Linux, RedHat Linux

Programming languages :

AOBA-S, AOBA-A : Fortran, C, C++

AOBA-B : Fortran, C, C++, Ruby, Python, java, etc.

Application software :

Basic applications provided by Cyberscience Center and original codes developed by users. We also support installing/migrating required software to our system.

(Please contact us in advance.)

How to use

Supercomputers (AOBA-S, AOBA-A, AOBA-B)

log in to the compute nodes using ssh

transfer files to the node using the scp / sftp

Network

Possible to build L2VPN on SINET6

Storage

Possible to use remote mount by NFS through L2VPN

Email address for inquiring about resource usage and joint research

joint_research@cc.tohoku.ac.jp

Details of anticipated projects (in Japanese)

http://www.ss.cc.tohoku.ac.jp/jhpcn_network/

Information Technology Center, the University of Tokyo (ITC/U.Tokyo)

(1) Wisteria/BDEC-01

Wisteria/BDEC-01 consist of “Odyssey (Simulation Nodes)” and “Aquarius (Data/Learning Nodes)”, and it is available for big-data analyses using the fast-file system. Each node of Aquarius can access the external resources, such as storage, servers, database, and sensor networks. Workloads for integration of “Simulation+Data+Learning” is possible by using both of Odyssey and Aquarius. Software for integration of Odyssey and Aquarius (h3-Open-BDEC) is also available in FY.2023. If you want to use both of Odyssey and Aquarius, please apply for each of these. SINET6 L2VPN is available at login-nodes and Aquarius (Please feel free to contact uketsuke@cc.u-tokyo.ac.jp for the use of external nodes, detailed configuration of L2VPN, and integration of Odyssey and Aquarius).

Available Resources

[Hardware resources]

Wisteria/BDEC-01

[Software resources]

Refer to description of Wisteria/BDEC-01 in Attachment 1.

How to use

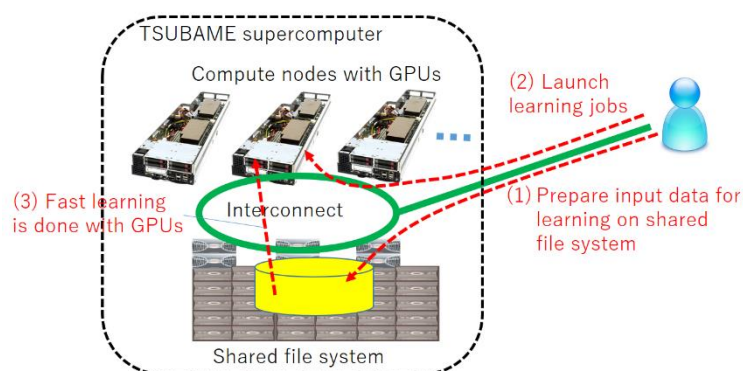
- You can directly login to the nodes via remote network with SSH.
- You can transfer data via remote network with SCP / SFTP.
- You can directly access external resources in real time at Aquarius (negotiable)
- You can directly access to login node and Aquarius via SINET6 L2VPN (negotiable).
- You can conduct workloads for integration of “Simulation+Data+Learning” by using both of Odyssey and Aquarius using h3-Open-BDEC (negotiable).

(2) Ipomoea-01

“Ipomoea-01” is a "Large-scale Common Storage system" that can be accessed from each of the supercomputer systems operated by ITC/UTokyo. Users with UIDs on Wisteria/BDEC-01 may use up to 5 TB of space per user free of charge. Moreover, each project also gets 15% of the total allocated disk space for free. For example, if 20TB for Wisteria/BDEC-01 (Odyssey), 10TB for Wisteria/BDEC-01 (Aquarius: General Use), and 10TB for Wisteria/BDEC-01 (Aquarius: Occupied Use) are allocated to the project, $(20+10+10(=40))*0.15=6.00\text{TB}$ can be used for free on Ipomoea-01.

GSIC, Tokyo Institute of Technology

Machine learning jobs, especially in deep learning which recently attracts great attention, require both storage resources for storing large scale I/O data and high performance computation resources. For these jobs, we provide environment for large-scale high-performance machine learning by using lots of GPUs (960 in the whole system) and large storage (up to 500TB per user group) equipped by the TSUBAME4.0 supercomputer. By using pre-installed frameworks that harnesses GPUs, acceleration of research projects of large scale machine learning is expected.



Available Resources

[Hardware resources]

Refer to description of TSUBAME4.0 in Appendix 1. Especially, 4 NVIDIA H100 GPUs per node are available.

[Software resources]

Refer to description of TSUBAME4.0 in Appendix 1. The followings are highly related items to this page:

- OS: Red Hat Enterprise Linux
 - Programming Languages: Python, R
- Application software: PyTorch, TensorFlow

How to use

TSUBAME4.0

Same as regular usage.

Email address for inquiring about resource usage and joint research

jhpcn-kyoten@gsic.titech.ac.jp

Details of anticipated projects

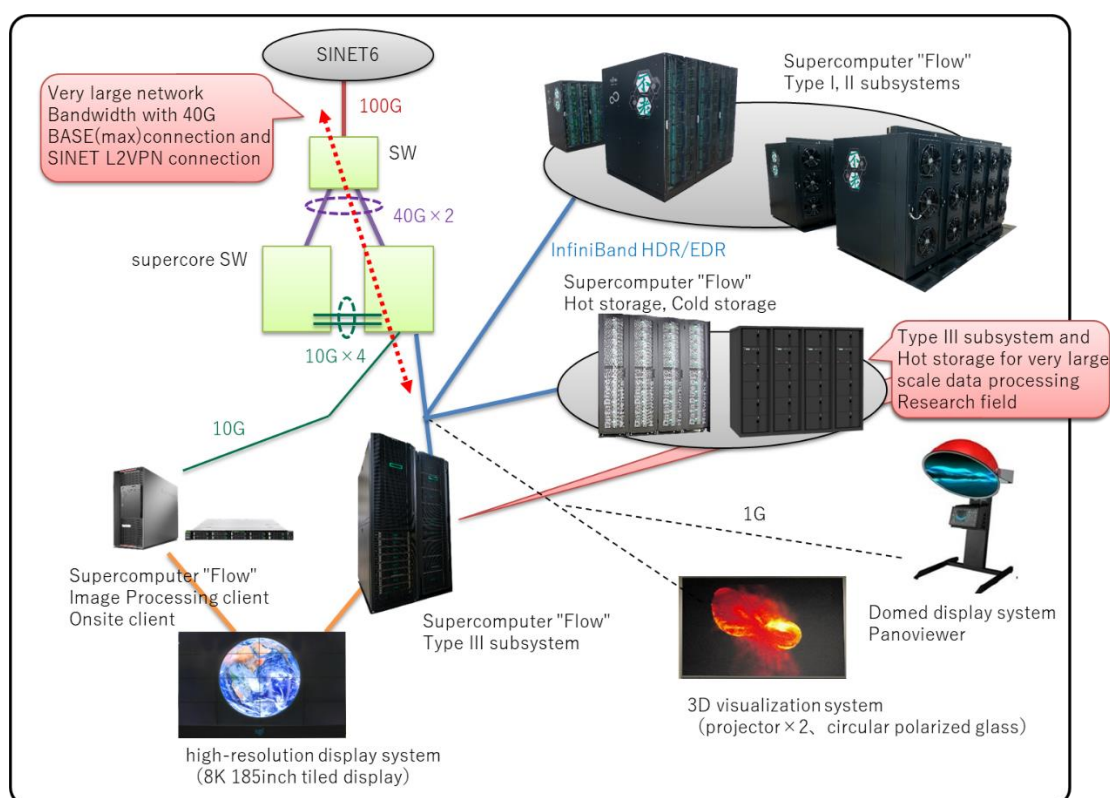
<http://www.gsic.titech.ac.jp/en/jhpcn/dl-en>

Information Technology Center, Nagoya University

We provide Hot storage system and visualization system of Supercomputer "Flow" for very large-scale data processing research field. Type III subsystem of "Flow" is available for visual processing. Type III subsystem consists of interactive (visualization) node connected to visualization system and batch node. Each node has 24 TB large scale shared memory and

connected to Hot storage system like as other subsystems. Additionally, interactive node equips 100TB NVMe SSD. Type III subsystem is also suitable for visualization of the calculation result of Type I and Type II subsystems. It is not assumed to calculate large scale computation on Type III subsystem.

We provide up to 40GBASE network connection for very large bandwidth network technology research field. You can use login node of Supercomputer "Flow" and create very large bandwidth network experiment environment by creating L2 flat network via SINET L2VPN for external university and internal university VLAN.



Available Resources

《Hardware resources》

1. Supercomputer "Flow" Type III subsystem: HPE Superdome Flex (Intel Xeon Platinum 8280M 28 cores x 16 sockets, 24TiB shared memory, NVIDIA Quadro RTX6000x4, 500TB external local storage) x 2 nodes, Interactive node equips 104TB NVMe SSD
2. Visualization subsystem: high-resolution display system (185inch 8K tiled display), 180inch 3D visualization system, Domed display system, Image Processing client and Onsite client of Supercomputer "Flow"

3. Network connection up to 40GBASE (with internal university VLAN and SINET L2VPN configuration)

《Software resources》

1. Supercomputer "Flow" Type III subsystem
 - 【OS】 Red Hat Enterprise Linux 7.7
 - 【Development Environment】 Intel Parallel Studio XE 2019, CUDA 10.2, etc.
 - 【Application software】 OpenFOAM, FrontFlow blue/red, FrontISTR, Pointwise, NICE DCV, FieldView, AVS/Express, Paraview, POV-Ray, VMD, 3D AVS Player, ffmpeg, ffplay, IDL, ENVI , etc.
2. Visualization system
 - 【Visualization software】 NICE DCV, FieldView, AVS/Express, Paraview, POV-Ray, VMD, 3D AVS Player, ffmpeg, ffplay, IDL, ENVI, etc.

How to use

- Remote login with ssh through login node.
- File transfer with scp / sftp through login node.

Email address for inquiring about resource usage and joint research

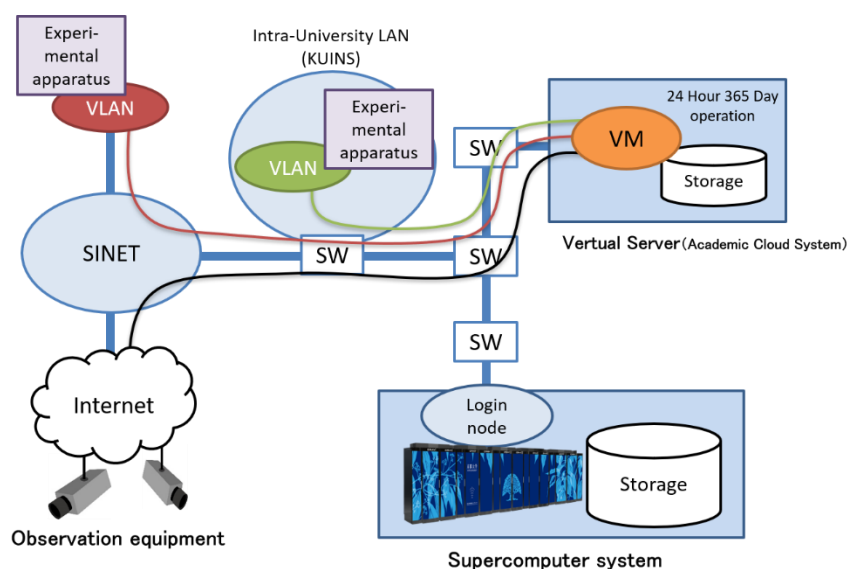
kyodo@itc.nagoya-u.ac.jp

- **Details of anticipated projects**

<https://www.icts.nagoya-u.ac.jp/en/center/jhpcn/suppl/>

Academic Center for Computing and Media Studies, Kyoto University

We will provide the infrastructure for collecting large scale data from laboratory equipment and observation equipment possessed by researchers via large capacity network or internet such as Kyoto University internal LAN (KUINS) or SINET5 L2VPN for 24 hours a day, 365 days and analyzing them with a supercomputer system in real time or periodically then offering information of the results on the Web.



Available resources

[Hardware resources]

- Supercomputer system

Camphor3 (Intel Xeon). Maximum 32 nodes per project x 12 months

Storage. Provides a minimum of 10 TB per one project. Storage capacity is increased according to the node hours used for the full term (approximately 1 TB per 720 node hours). Only storage capacity can be added in 10TB increments (maximum storage capacity is negotiable).

- Academic Cloud System Virtual Server Hosting

Virtualized environment: VMware

Standard configuration: CPU 2 cores, memory 4GB, disk 100GB

Resource increase: CPU is up to 8 cores in 2 cores units.

Memory is up to 64GB in 4GB units.

Disks is up to 1TB in 100GB units.

Total resources provided: CPU 32 cores, memory 256GB, disk 8TB

[Software resources]

- Supercomputer system

OS: Red Hat Enterprise Linux 8

Compilers: Intel oneAPI (Fortran, C/C++, OpenMP)

Libraries: Intel oneAPI MKL (BLAS, LAPACK, ScaLAPACK)

Application software: Gaussian16, GaussView

- Academic Research Cloud System Virtual Server Hosting

Standard OS: AlmaLinux8

How to use

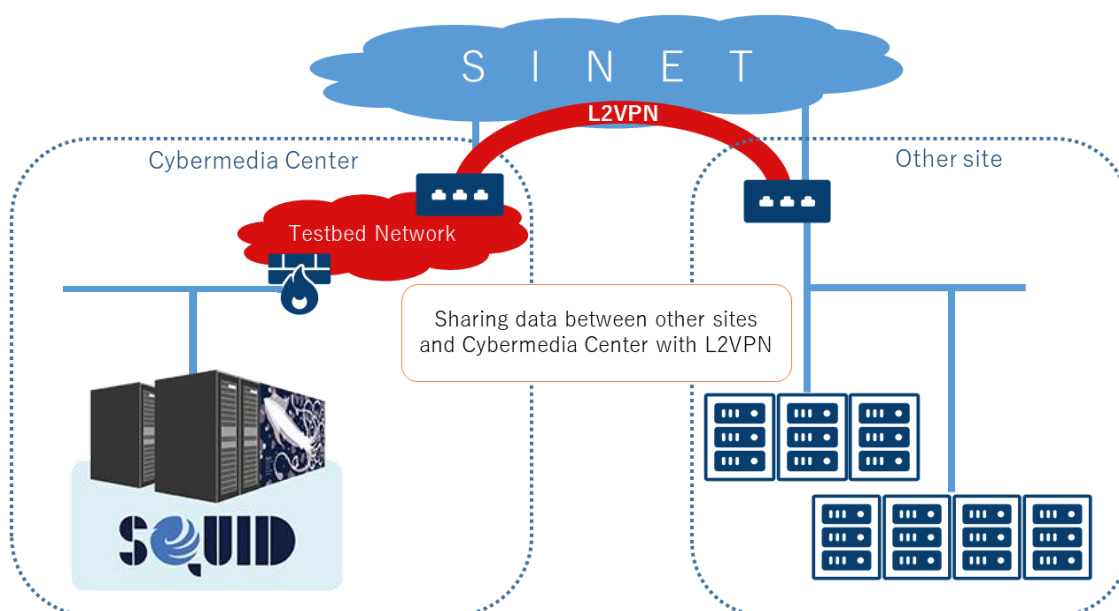
- Supercomputer system
 - Login with SSH (Key authentication)
- Academic Research Cloud System Virtual Server Hosting
 - Login with SSH (Granting Root authority)
 - Access by various service port such as HTTP (80/TCP) or HTTPS (443/TCP)
 - Multiple virtual domains are available
 - SINET5 L2VPN can be housed directly in VM

Email address for inquiring about resource usage and joint research

kyoten-8gm@media.kyoto-u.ac.jp

Cybermedia Center, Osaka University

Our center provides L2VPN connection service between other site and Osaka University testbed network through SINET. It aims to construct an environment of sharing data with our systems, devices and storages. Please contact us for detail of our service, usage of our resources or research collaboration.



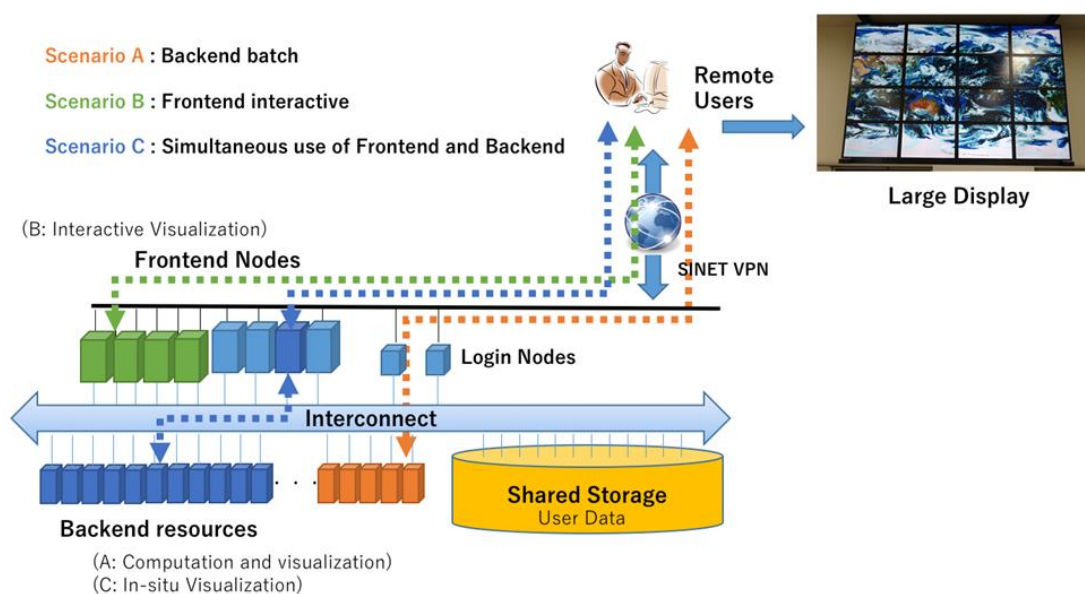
Email address for inquiring about resource usage and joint research

system@cmc.osaka-u.ac.jp

Details of anticipated projectshttp://www.hpc.cmc.osaka-u.ac.jp/en/for_jhpcn/**Research Institute for Information Technology, Kyushu University**

We provide a remote visualization and data analytic infrastructure that researchers can use from remote sites. The provided system allows us to process generated large-scale data without moving, thus efficient processing is possible. Besides, if available, L2VPN enables the combined usage of resources between end users and bases. The provided resources are assumed to be used for research subjects that visualize and analyze large-scale parallel simulation and/or observation data. Available user scenarios are batch mode (use the back-end nodes), interactive mode (use the front-end nodes), and in-situ mode (use both the front-end and the back-end nodes simultaneously).

If the data you generated does not correspond to the data format of the provided software or the supplied system does not have the analysis function you want, consultation is available.



Available resources

Hardware resources

NodeGroup A, NodeGroup B (c.f. Appendix 1.)

Software resources

OS: Linux

Programming languages: Python, R, etc.

Application software: PyTorch, TensorFlow, MLflow, Jupyter Notebook, R, OpenFOAM, etc.

How to use

Batch environment

- Direct login is possible to the node using ssh via the network.
- File transfer is possible to/from the node using scp/sftp via the network.
- Conventional batch usage.

Interactive environment

- Login is possible to the front-end(Part of the back-end can be used as a login node) node using ssh.
- Real-time parallel visualization and data analysis are performed using visualization application that runs on the front-end. In the situation where a job is running on the back-end node, it provides an interactive visualization environment through the file information between the back-end and the front-end. The interactive rate is assumed to be on the order of several to 0.1 fps depending on the communication bandwidth and the amount of transferred data.

Email address for inquiring about resource usage and joint research

zenkoku-kyodo@iii.kyushu-u.ac.jp

Details of anticipated projects

<https://www.cc.kyushu-u.ac.jp/scp/service/jhpcn/jhpcn.html> (in Japanese)