RIKEN Supercomputer System Summary of Operations

Article 1 Objective

This document sets forth matters related to the system configuration, project categories, project reviews and the like for the supercomputer system ("System" hereafter) maintained and operated by the RIKEN Advanced Center for Computing and Communication (ACCC), based on Article 4 of the Supercomputer System Usage Policy ("Policy" hereafter)

Article 2 System configuration

The computing resources comprising the System are given below.

1. Massively Parallel Supercomputer (34,560 cores)
   - 1080 nodes
     - ✓ CPU: SPARC64 XIfx 1.975GHz, 32cores/node, 32GB/node
2. Application Computing Servers (840 cores)
   - GPU Servers (30nodes)
     - ✓ CPU: Xeon E5-2670v3 2.3GHz 24 cores/node, 64GB/node,4GPU(Tesla K20X)/node(tentative)
   - Large Memory Servers (2nodes)
     - ✓ CPU: Xeon E7-4880v2 2.5GHz 60cores/node, 1TB/node
     - ✓
3. Embarrassingly parallel jobs and data analysis system (4,904 cores)
   - M servers: 486nodes(8cores/node, 12GB/node)
   - U servers: 100nodes(8cores/node, 24GB/node)
   - S servers: 18nodes(12cores/node, 96GB/node)

Article 3

The storage resources comprising the System are given below.

1. Online storage system (2.1PB)
2. Tape archive system (7.9PB:uncompresive, 4TB/tape)

Article 4 Validity of Project ID

The validity of a project ID is limited to one (1) year or less and only for the fiscal year of issue.

Article 5 Project categories

1. The project categories, based on Article 4 of the Policy, are defined as follows. In follows, "computational resource" is calculated by [the number of all cores]x[time that the System can provide in a fiscal year]. "CPU core computation time" is calculated by the total of [the number of used cores] x [elapsed time] for all jobs($\sum_{i=1}^{all\ jobs}(the\ number\ of\ used\ cores \times elapsed\ time)$). In use of large memory space, memory space will be converted into CPU core computing time. For example, though a user's job use one (1) core and 1TB memory in the large memory server, the number of used cores will be converted one(1) core into 60

cores in a job accounting system.

- *Exclusive use*

Use permission is given by the proposal review by the supercomputing review committee. Approved users will be permitted to use a part of the System exclusively for maximum one year ending at fiscal year end. It is project manager's duty of *Exclusive use* to keep CPU utilization rate high.
If a decrease in CPU utilization rate is expected, it is a users' (or project managers' if application is made by a group) duty to inform this fact to the ACCC in advance. If the CPU utilization rate does not reach the predetermined rate, we may decrease permitted computational resources.

- *General use*

Use permission is given by the proposal review by the supercomputing review committee. Approved users will be permitted to use CPU core computing time of 1% or more of computational resources.

- *Quick use*

Use permission is given by the proposal review by the ACCC director. Approved user will be permitted to use CPU core computing time of 1% or less, and all *Quick use* users will be permitted to use CPU core computation time of about 10% of computational resources. If a user has used up the computational resources of 1%, ACCC will not accept the same user’s new proposal to *Quick use* in fiscal year.

2. “CPU core computing time” in project is a total computing time using all computational resources in Article 2(1 2 and 3). Usage rate of each computational resource will be decided by proposal of project.
3. “computational resources” of 1% in *Quick use* is a maximum CPU core computing time in a fiscal year. A maximum computing time will be calculated by the day if project will be start from the middle of a fiscal year.
4. GPU computing time will be converted into CPU core computing time.

Article 6 Applications for projects

1. When applying, users must select one of the three project categories described in Article 5, and include a statement demonstrating the need for using the System in the project in simple language and figures.
2. Two or more users may participate in a project. When participants include users other than those of categories (1) and (2) as defined in Article 3 of the Supercomputer System Usage Policy, clearly describe the division of research duties between those users and the duties of RIKEN.
3. First-time applicants must apply for the category *Quick use* project, in principle.

Article 7 Job operation and project priority control

1. A system of priority control will be employed in order to allocate the computing resources fairly among the job operations of projects.
2. Priority allocation between *General use* and *Quick use* projects will be conducted in an appropriate manner by the ACCC administration team based on job operation needs.
3. Every project must be managed so that computing resources are allocated as fairly as possible within the project.

4. Project priority may be set among the *Quick use* projects based on the results of project reviews.
5. When job operation requires exclusive use of the System, the ACCC operations team will take necessary measures based on discussion between the users and ACCC.
6. Priority control may be adjusted by the operations team, taking into consideration the job operation status of the entire System, when a special request is made to the ACCC administration team by a project representative stating that computing resources are required urgently.

Article 8 Project review

1. Applications for use of computing resources will be accepted at any time. Screening of *General use* projects will be conducted once every quarter (March, June, September and December), in principle. There will be no set screening schedule for *Quick use* projects.
2. When it is expected that the CPU core computing time for *Quick use* projects will be used up and that there will be a time lapse before applications for *General use* projects are screened, the ACCC Director may screen applications on a provisional basis and provisionally approve the CPU core computing time limited to one *Quick use* project application after confirming the current use status of *Quick use* projects.
3. Results of the provisional screening must be deliberated at the next meeting of the Supercomputer Project Review Committee. CPU core computing time formally approved by the committee for the project will include the CPU core computing time that had been provisionally approved.

Article 9 Term of validity for projects and extension of general use projects and CPU core computing time

1. The term of validity for *Quick use* projects will expire at the end of the fiscal year.
2. The validity of *General use* projects is also limited to the current fiscal year. However, extension of term and additional CPU core computing time applications are accepted for *General use* projects.

Article 10 Use of online storage

1. As stipulated in Article 3, users may use 4TB of online storage.
2. When additional online storage is needed, it may be requested on a project basis. In principle, additional storage may be granted in 4TB increments up to 52TB.
3. For the tape archive system, additional storage may be requested on a project basis, as with online storage described in the preceding paragraph. In principle, additional capacity may be granted in 8TB increments up to 104TB. As units are based on the capacity of tape cartridges, the units are equal to 4TB × 2. Duplex tapes will not be provided initially. Users may request duplex tapes, but their storage allocation will be halved.
4. Maximum allocations given in paragraphs 2 and 3 above are for reference only. They may be adjusted depending on the requirements of other projects.
5. Applications for increased capacity will be accepted at any time.

6. Usage of storage will be calculated on the final days of April, August and December. Users of projects using less than the amount for which they applied will be asked about their usage plans, and unneeded capacity will be appropriated. However, users whose allocations have been appropriated may reapply to have their storage capacity increased, if needed.
7. Any data belonging to users whose project numbers have expired will be deleted from the System six months after the expiration of the project number.
8. When there is a need to transfer the data belonging to the user (for reconfiguring the System, for instance), ACCC will make a request to users and their project representatives to delete, compress or consolidate their data. However, if the user and the project representative do not reply to repeated requests by email, ACCC will delete and reprocess the data on its own accord.

Article 11 Registration of users

1. Registered users will be limited to those individuals that will actually log on to the System to operate programs or perform jobs.
2. All applicants who are subject to Security Export Control Policies of the Japanese foreign exchange law have to be screened before user registration.
3. Individuals who will serve only in a capacity to monitor the progress of the project may be registered as observers. Additionally, any registered users who are not operating programs or performing jobs on the System may apply to change their registration status from user to observer.

Article 12 Handling of inactive users

1. In principle, when users have not logged in for a period of six months, or they have not actually used the system, their user IDs will be locked four months after they were registered as users, and they will be asked whether they actually intend to use the System.
2. Those users who reply to the query described in the preceding paragraph stating that they intend to use the System will have their user IDs reactivated for an observation period of two months. If they do not use the system during the observation period, their user registration and user data will be erased.
3. The erasure of user registration and data referred to in the preceding paragraph will not be permanent. Re-registration is possible if the individual actually intends to use the system.
4. When the System will be undergoing renovation, all users will be contacted. Users neglecting to respond will have their user IDs and user data deleted, even if they are active users who have logged on within the last six months.

Article 13 Usage reports

1. The project representative must submit a usage report, as stipulated in Article 15 of the Supercomputer System Usage Policy. The report is due at the end of the fiscal year or at the end of the project. The usage report must contain the content of the calculations/research, a summary of the knowledge gained, comments and the like, with attachments including a *research output list* and *reprints and other material*.
2. Papers and any research outputs related to results of computation by the system

must contain mentions of affiliation to RIKEN or usage of the system.

3. The *research output list* is to consist of the authors, paper titles, journal titles, publication dates, etc. of publications and oral presentations involving the research carried out using the System.
4. *Reprints and other material* are to consist of reprints of the publications, presentation materials, conference proceeding and the like for those items given in the research output list.

Article 14 Additional provisions

In addition to these guidelines, other materials necessary for the operation of the system will be provided separately by the ACCC Director.

Other notes

1. These guidelines will go into effect on April 1, 2015.