D　大容量共有ファイルシステムは、２ＰＢ以上の実効容量を持つこと。オープンソースで高速かつ高信頼な並列ファイルシステムを有すること。

E　大容量バックアップシステムはユーザの／home領域を数世代にわたりバックアップするのに十分な速度及び容量を持つこと。実現方式については資料招請段階では規定しない。

F　多人数が同時に接続し、ジョブの投入やファイル操作を行うログインノードを用意すること。

G　現有システムに保有されているデータ・機構の円滑な移行を行うこと。また、システムの導入、移行、保守、障害や稼働状態の調査、各種設定の変更、講習会やプログラム相談などの利用者支援、に関して全面的な支援・協力を行うこと。

H　冷却システムは設置予定の水冷システムを利用すること。冷却水の温度は摂氏20度以上とする。水温は摂氏25度以上以上が望ましい。

I　ハードウェア及びソフトウェアの信頼性が高く、24時間365日の連続したサービスが安定的に行えること。

J　ハードウェア故障時の交換、ＯＳ、コンパイラ、ライブラリ等の問題修正を含むソフトウェア等のバージョンアップに速やかに対応できる保守体制をとること。

K　設置面積・耐床面荷重等の設置要件を十分に考慮に入れたシステムを提案すること。

L　導入システム全体の消費電力は、1.0MVA以下であること。運用時は800kVA以下であることが望ましい。ＣＰＵ、メモリおよびディスク装置が連続的に稼働し続けた際にも十分な廃熱が行えるよう、電源容量、空調、設置方式を考慮すること。

M　ファイヤウォール装置を介して外部ネットワークに接続すること。メールサーバやＤＮＳサーバなど、運用に必要なサーバ類を全て用意すること。

2　資料及びコメントの提供方法　上記１⑵の物品に関する一般的な参考資料及び同⑹の要求要件等に関するコメント並びに提供可能なライブラリーに関する資料等の提供を招請する。

⑴　資料等の提供期限　平成31年４月３日17時00分（郵送の場合は必着のこと。）

⑵　提出先　〒277―8581　千葉県柏市柏の葉５－１－５　東京大学柏地区共通事務センター契約係　王子　卓信　電話04―7136―3211

3　説明書の交付　本公表に基づき応募する供給者に対して導入説明書を交付する。

⑴　交付期間　平成31年２月21日から平成31年４月３日まで。

⑵　交付場所　上記２⑵に同じ。

4　説明会の開催　本公表に基づく導入説明会を開催する。

⑴　開催日時　平成31年２月28日15時00分

⑵　開催場所　東京大学物性研究所６階第１会議室

5　その他　この導入計画の詳細は導入説明書による。なお、本公表内容は予定であり、変更することがあり得る。

6　Summary

⑴　Classification of the products to be procured : 14

⑵　Nature and quantity of the products to be rent : ISSP Supercomputer System 1 set

⑶　Type of the procurement : Rent

⑷　Basic requirements of the procurement :

A　The system to be procured includes compute nodes that comprise a distributed-memory parallel computer, a large-scale shared file system, and a large-scale backup file system, as well as network hardware／software that connect these parts and a login node for users to interact with the system.

B　The compute nodes must satisfy the following hardware requirements :

a　The total maximal achieved performance (double-precision floating point arithmetic) must be twice as large as the “System B” currently installed at the Institute for Solid State Physics, University of Tokyo. Actual performance will be measured through benchmarks.

b　The compute nodes must be comprised of general-purpose CPUs with high power efficiency. Accelerators other than general-purpose CPUs are not to be included.

c　The capability of the network between compute nodes as well as the network topology of the entire system must be sufficient for delivering good actual performance for computations utilizing the entire system.

d　It should be possible to uniformly access from all compute nodes with high speed the shared file system described below.

e　Most of the heat generated in compute nodes must be cooled by a water cooling system.

C　The system to be procured must provide the following software environment :

a　Processing systems for Fortran90, C, and C++ programming languages capable of handling the OpenMP API must be provided. It is preferable to provide automatic intra-node parallelization capabilities.

b　An MPI 2.0 communication library (MPI 2.1 is preferable) must be provided.

c　Highly-parallelized and optimized numerical libraries, as well as programming environments that include tools for performance tuning must be provided.

d　A UNIX-like operating system, preferably Linux, must be provided. The software stack should be compatible with the software stack of the system in current use so that it will be possible to migrate smoothly to the new system.

e　A job queueing system suitable for nation-wide joint use must be provided.

D　The large-scale shared file system must have total useable storage capacity of over 2 PB or more. The system should be operated by an open source, fast, and reliable parallel file system.

E　The large-scale backup system should have sufficient speed and storage capacity to provide several generations of backup of users’ ／home data. We will not specify the method at this point.

F　A login node must be provided where many users will log in to at the same time to submit jobs and perform file manipulation.

G　Smooth migration of the data and specific features that have been constructed in the existing system must be provided. Support for installation, migration, maintenance, and modification of the system configuration must be provided. Assistance must be provided for investigation of software／hardware failures in the system as well as statistics of system utilization. User support such as training sessions and consultation for programming must be provided.

H　The system must use the water cooling system that will be installed before procurement of this system. The temperature of the cooling water must be kept at 20 degrees Celsius or higher. A water temperature of 25 degrees Celsius or higher is preferable.

I　The hardware and software must be reliable so as to make possible stable and continuous operation of the system 24 hours a day, 365 days a year.

J　A support framework must be in place for prompt hardware replacements in case of hardware failure, as well as updates to the software stack that include fixes to problems found on the operating system, compilers, libraries, etc.

K　The footprint, weight and other properties of the system must be calculated carefully so as not to exceed the capacity of the center.

L　Overall maximum power consumption must be 1.0 MVA or less. The actual usage of 800 kVA or less is desirable during operation. The power capacity, air flow, and system assembly must be carefully designed so that the system is kept cool even if CPU, memory, and disks are fully and continuously operated.