C　その他

C－１　スーパーコンピュータシステム及びクラウドシステムの利用・運用管理を円滑に行える利用・運用管理支援システムを有すること。

C－２　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。

C－３　導入システムで利用できるトランスは計算機用として0.75MVAが２台、0.5MVAが１台の計２MVA、冷却設備用として0.75MVAが１台である。省電力、省スペース、管理自動化、運用支援など、システム全体としての運用コストを最小化するシステム基盤、サポート体制を有すること。

C－４　ハードウェア及びソフトウェアの保守支援体制を有し、システムの障害対策及びセキュリティ対応がなされていること。

C－５　現有システム上の利用者データ及びファイル資産、ソフトウェア資産、サーバ環境やネットワークなどの設定情報を含む運用システムを、本システムへと移行すること。

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に関する資料等の提供を招請する。

⑴　資料等の提供期限　令和４年９月12日17時00分（郵送の場合は必着のこと。）

⑵　提供先　〒060―0808 札幌市北区北８条西５丁目　北海道大学財務部調達課係長（物品契約担当）　上岡　潤次　電話011―706―4552

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　令和４年８月１日から令和４年９月12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　令和４年８月８日13時30分

⑵　開催場所　北海道大学情報基盤センター北館　４階　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 purchased : Interdisciplinary Large-Scale Computing System 1 unit

⑶　Type of the procurement : Rent

⑷　Schedule time of introduction : On or after April 2024

⑸　Basic requirements of the procurement :

A　Supercomputer system

The system to be procured consists of a computing subsystem, a storage system, and other hardware and software components for the stable and efficient operation of the total system.

①　Computing subsystem

A―1　The computing subsystem must be a cluster type parallel computer composed of multiple computer nodes. Hereafter, the computer node, or the node in short, is defined as a computer system composed of multiple CPU cores and a main memory shared by them. Some of the nodes must be equipped with GPU (Graphics Processing Unit). The node having GPUs is called a GPU node, and the node which is not equipped with GPUs is called a CPU node.

A―2　Each node must have multiple multi-core processors and a main memory of 512 GiByte or larger. The theoretical peak performance on double-precision floating point in a CPU node must be 5 TFLOPS or higher, and that in a GPU node must be 240 TFLOPS or higher.

A―3　The aggregate theoretical peak bandwidth of the main memory access in each node must be 600 GByte／sec or higher.

A―4　Each node must be equipped with SSDs, or secondary storages that have the same capabilities, of 300 GiByte or larger in total.

A―5　The total sum of the theoretical peak performance on double-precision floating point in all nodes of the computing subsystem must be 30 PFLOPS or higher, and the total main memory size must be 375 TiByte or larger.

A―6　The theoretical peak injection bandwidth of each node to inter-node interconnect must be 50 GByte／sec or higher in a CPU node and 100 GByte／sec or higher in a GPU node. The inter-node interconnection among all CPU nodes must have full bi-section bandwidth, and that among all GPU nodes must have full bi-section bandwidth. The bi-section bandwidth when partitioning the nodes into CPU nodes and GPU nodes must be 4 TByte／sec or higher.

A―7　Each node must have hardware management mechanisms and software that monitors the operational state.

A―8　The computing subsystem must operate with peak load consuming 1.2 MW electric power or less.

A―9　The computing subsystem must have the software stack shown in Item ②.

②　Software stack

A―10　Automatic parallelizing compilers for Fortran, C, and C++ must be provided. These compilers must support OpenMP version 5.0 or later.

A―11　Java and Python platform must be provided.

A―12　High-performance parallel numerical libraries, program development environment and debuggers must be provided.

A―13　Parallel programming library that supports MPI version 3.1 or later must be provided.

A―14　UNIX operating system must be provided.

A―15　System software for both interactive and batch processing modes must be provided.

A―16　The same operations as in the current system, namely the following two types of operations, must be provided : (i) the conventional metered operation, (ii) the group occupation operation in which a specific user group is allowed to occupy a certain amount of computational resources.

③　Storage system

A―17　The total capacity of disk arrays must be 32 PByte or larger.

A―18　The aggregate data transfer bandwidth between the storage system and the computing subsystem must be 500 GByte／sec or higher.

A―19　The storage system must operate with peak load consuming 120 kW electric power or less.

④　Common requirements

A―20　Porting and tuning supports for main application programs running on the current system must be provided.

A―21　A wide spectrum of application software and various free software must be installed.

A―22　User management functions for accounting, collecting usage statistics, and authentications must be provided.

A―23　The supercomputer system must be connected to the campus network of Hokkaido university.

B　Cloud system

The cloud system consists of the server system and the storage system both installed on campus and the remotely installed archive system.

B―1　As the server system installed on campus, it must have 5,000 or a higher number of cores in total, which operates at 2 GHz or higher rated frequency, and 15 TByte or larger aggregated