SC23 Network Research Exhibition: Demonstration Preliminary Abstract

[Performance Evaluation of DTNs Towards Research-EnhanceD ONION (RED ONION)]

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Abstract

The Cybermedia Center (CMC) is a supercomputing center in Osaka University, Japan. The CMC is in charge of providing a high-performance computing environment for Japanese researchers in both academia and industries. From the perspectives of the rising demand on high performance data analysis characterized AI (artificial intelligence), ML (machine learning) and DL (deep learning) and the necessity of research reproducibility, the CMC has been working on data aggregation infrastructure named ONION (Osaka university Next-generation Infrastructure for Open research and open innovatioN) in campus, so that researchers can perform HPC and HPDA immediately after obtaining scientific data from scientific measurement devices and research data including computation results are managed in a proper way. In the future vision, we are exploring the development of RED ONION, which allows research institutions and departments in campus to transfer large amount of research data through the use of Data Transfer Nodes on high-speed campus networks. For the purpose, we are planning to use this SC2023 demonstration opportunity to learn the performance characteristics of candidate DTN technologies over a wide-area network between US and Japan for our RED ONION concept.

Goals

Currently, we have been intensively investigating several DTN technologies, which we choose for our RED ONION plan, in terms of whether their technologies can satisfy the performance requirement or not. Therefore, the goal of this demonstration is simple and as follows.

1. To obtain the measurement results of throughput performance of data transfer between Osaka University in Japan and NICT booth in SC2023 venue Denver, USA.

Resources

For demonstration in SC2023, we need a set of DTN servers, each of which is located in Osaka University in Japan or in NICT booth in Denver.

Also, we need 100Gbps network between Osaka University and NICT booth in SC2023. We would like to have a L2 connection between them. Also, it would be greatly helpful if we can use the network even in a time-shared manner. This is because we plan to have direct connection from the CMC to each department or research institute on Campus on the basis of 100G ethernet. Also, we would like to verify the performance of DTNs on a wide-area network because we personally would like to apply this data transfer solution to the network with our partner universities.

Involved Parties

[List of other institutions, researchers and entities involved in the planning and execution of this demonstration. This should include names and contact information]

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