Cybermedia Center

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Osaka University

Osaka University, Japan

SC23 BOOTH 857

High-speed Data Transmission / Information Infrastructure integration

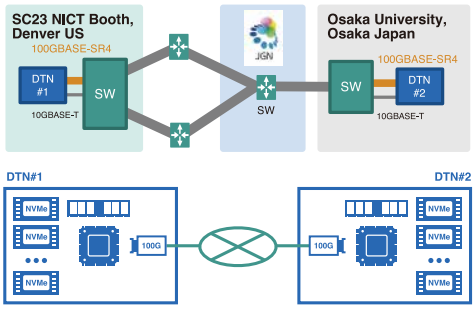
Performance Evaluation of Data Transfer Nodes for sharing large data

Overview

- We have been working on data aggregation infrastructure named ONION (Osaka university Next-generation Infrastructure for Open research and open innovatioN) in campus.
- We are exploring the development of RED ONION, which allows research institutions and departments in campus to transfer large amount of research data with Data Transfer Nodes (DTNs) on high-speed closed network.
- Our design goal for DTN is to achieve 100Gbps data transfer for following two cases:
  - Multi file data transfer
  - Singe file data transfer

Test system configuration

We evaluate throughput performances for data transfer between SC23 NICT Booth, Denver, USA and Osaka University, Osaka, Japan.



DTN technology candidates

We have been investigating several DTN technologies, whether their technologies can satisfy the performance requirement or not.

Data Transfer Tools:

- ☑ GridFTP
- ☑ XRootD
- ☑ Archaea
- ☑ S3(http)

File System for NVMes:

- ☑ Single xfs with Software RAID0
- ☑ Distributed File System (GlusterFS, Luster)
- ☑ S3 (MinIO)

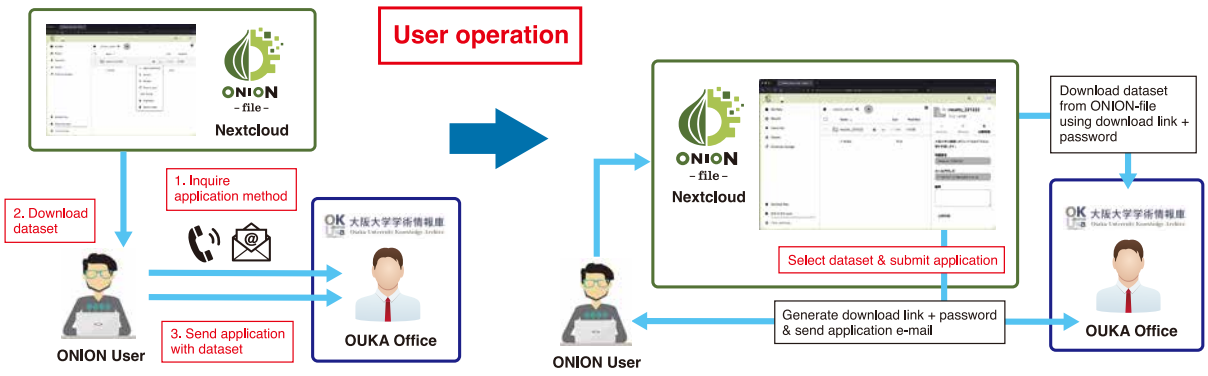
Application Module for the Publication of Research Data

Overview

This research was supported by MEXT as “Developing a Research Data Ecosystem for the od Data-Driven Science”.

- Researchers are increasingly expected to publish evidence data of scientific articles as part of the trend towards promoting Open Science.
- When publishing research data, researchers are responsible for conducting all procedures related to submitting the dataset for publication to the institutional repository of Osaka University, OUKA.
- ONION, which aggregates data from inside and outside of the campus, enables ONION users to share the research data through Nextcloud (ONION-file).
- We have developed a prototype of an application module developed with Nextcloud plug-in to publish research data directly from ONION to OUKA, which reduces the burden on researchers.
- ONION users can submit applications through a familiar interface that is aligned with their familiar Nextcloud operations using the module.
- A verification test conducted on the university campus confirms the effectiveness of reducing the burden of researchers in submitting applications for publishing datasets from ONION to OUKA.

Prototype



This work was carried out in Joint Research Laboratory for Integrated Infrastructure of High Performance Computing and Data Analysis https://www.nri.cmc.osaka-u.ac.jp/