Introduction of Open OnDemand to Supercomputer Fugaku

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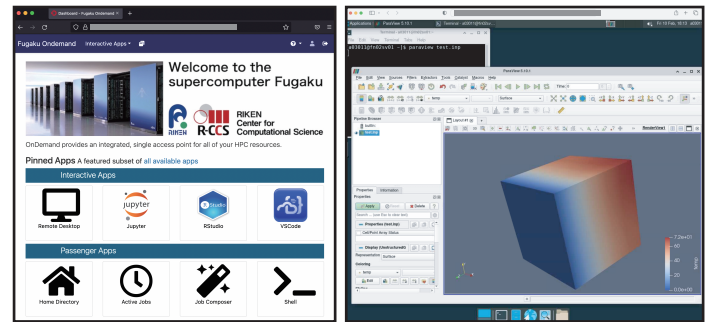
▪️ Background

Nodes : 158,976
CPU : Fujitsu A64FX
Memory : 32GB

- RIKEN Center for Computational Science operates the flagship supercomputer Fugaku in Japan

- Users login to the login node using SSH, and then submit a job to the compute node using the job scheduler, named Fujitsu TCS

- Learning cost is high for beginners since the use of HPC clusters requires knowledge of command lines, SSH key pairs, and the job scheduler
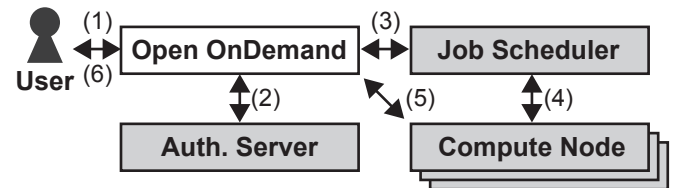
▪️ Open OnDemand *https://openondemand.org*

- Open OnDemand is an open source software, which is based on the web portal of Ohio Supercomputing Center

- Users can access HPC resources from a web browser instead of SSH

- Interactive Apps (Remote Desktop, JupyterLab, RStudio, VSCode) are GUI applications with interactive operations that work on compute nodes
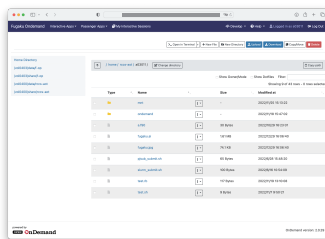
  (1) Login to the Open OnDemand server using a web brower

  (2) Authenticate a user for login

  (3) Click the icon to submit a job to a compute node

  (4) Wait until job runs

  (5) Get information of the compute node and set up a reverse proxy

  (6) Connect to the compute node from a web browser

- Passenger Apps work on the Open OnDemand server

Also see the poster #121 "Towards an Easy-to-Use Visualization Environment on the Fugaku" for an example of using Open OnDemand on Fugaku
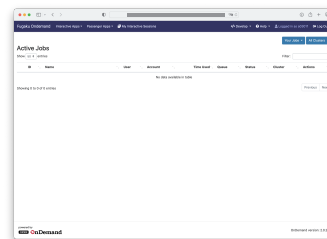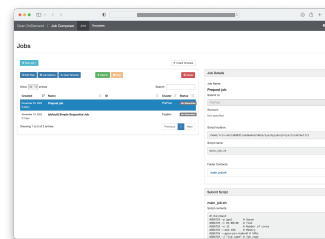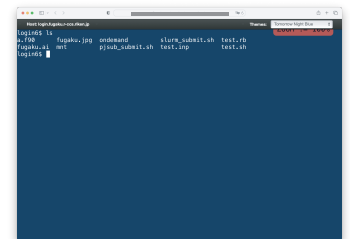

| Transfer and edit files | Monitor jobs | Create and submit jobs | Command in a web terminal |

▪️ Implementation

- Open OnDemand provides an adapter interface to support various job schedulers

- The right code shows a part of our implementation for a delete method

- We develop all methods for Fujitsu TCS defined in the parent class for the adapter

```
1  module Adapters
2    class Fujitsu_TCS < Adapter
3      class Batch
4        def delete_job(id)
5          call("pjdel", id.to_s)
6        end
7
8      def delete(id)
9        @fujitsu_tcs.delete_job(id.to_s)
10     end
```

In summary, we developed the adapter for Fujitsu TCS to introduce Open OnDemand to Fugaku. We believe that the introduction has improved user convenience. We would like to promote Open OnDemand by disclosing our experience, and develop new extensions.