

From laptop to LUMI - CSC services for researchers

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CSC – Finnish expertise in ICT for research, education and public administration

Outline

- What is CSC
- CSC computing services
- CSC data services
- Other services
- How to get access?

CSC - IT center for science

- CSC is non-profit company producing IT services for research and higher education
- Owned by ministry of education and culture (OKM) and higher education institutions
- Most CSC services are free of charge for end users

FUNET

by CSC



by CSC



When I might need CSC?

- My calculation takes very long, but could be run in parallel
- My calculation needs a lot of memory
- I need lots of storage space
- Scientific application is available at CSC
 - expensive commercial application
 - open source applications without need to install myself
- I want to share data
- I want to publish data and make it available

How CSC supercomputers differ from university cluster?

- Main difference is in scale
- Parallel calculations up to 25 000 cores (Mahti) or hundreds of GPUs (LUMI)
- Larger storage space available (1 TiB default in Puhti)
- Similar command line based terminal access
 - As a new service CSC provides also access via web browser
- Similar module system and batch queue system
- CSC resources consume "billing units"

CSC computing services

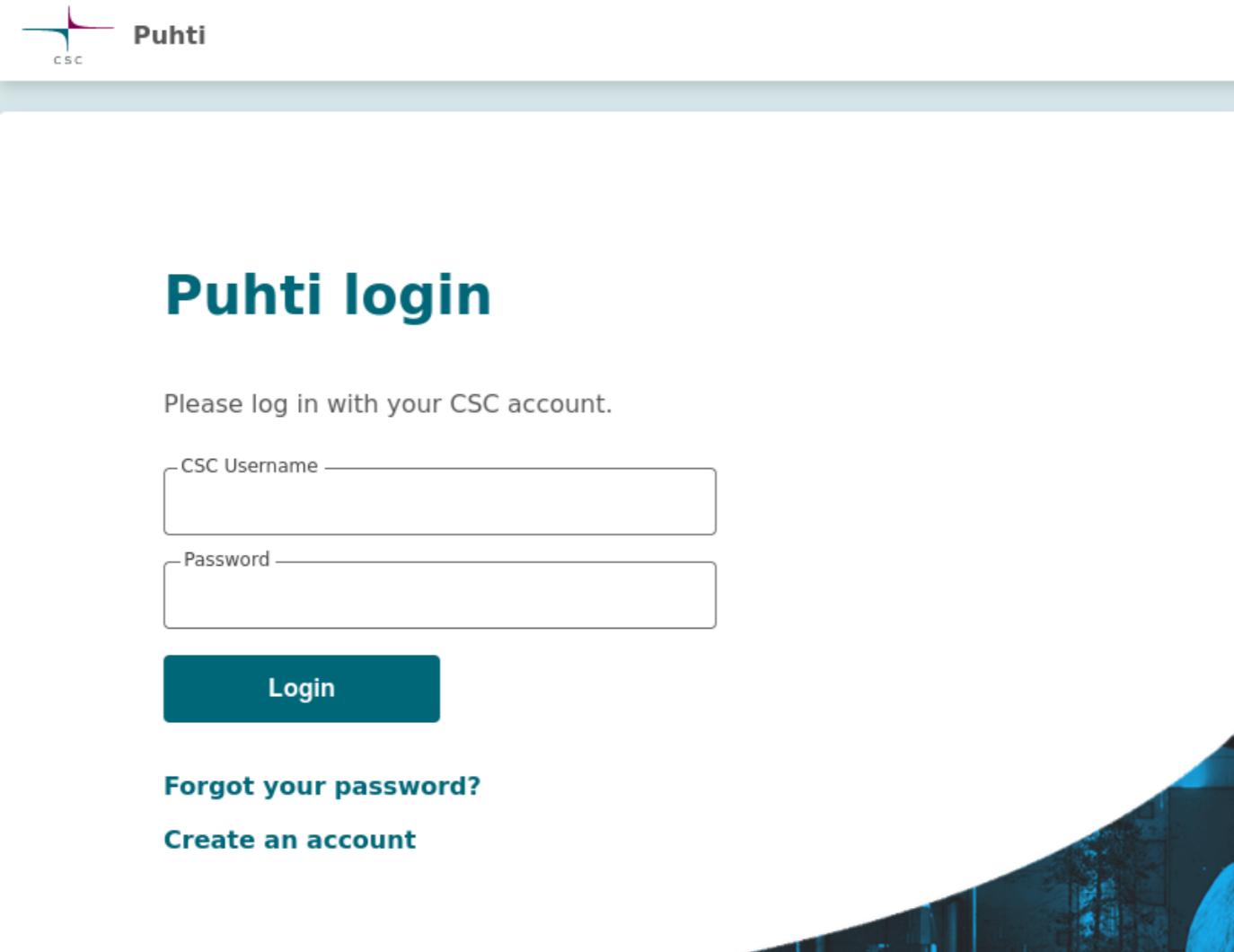
- Puhti
 - use cases from interactive single core data processing to medium scale parallel simulations
 - some large memory nodes
 - new web interface for accessing Puhti
 - Intel CPUs, 40 cores per node
- Mahti
 - geared towards medium and large scale parallel simulations
 - AMD CPUs, 128 cores per node

Should I use Puhti or Mahti?

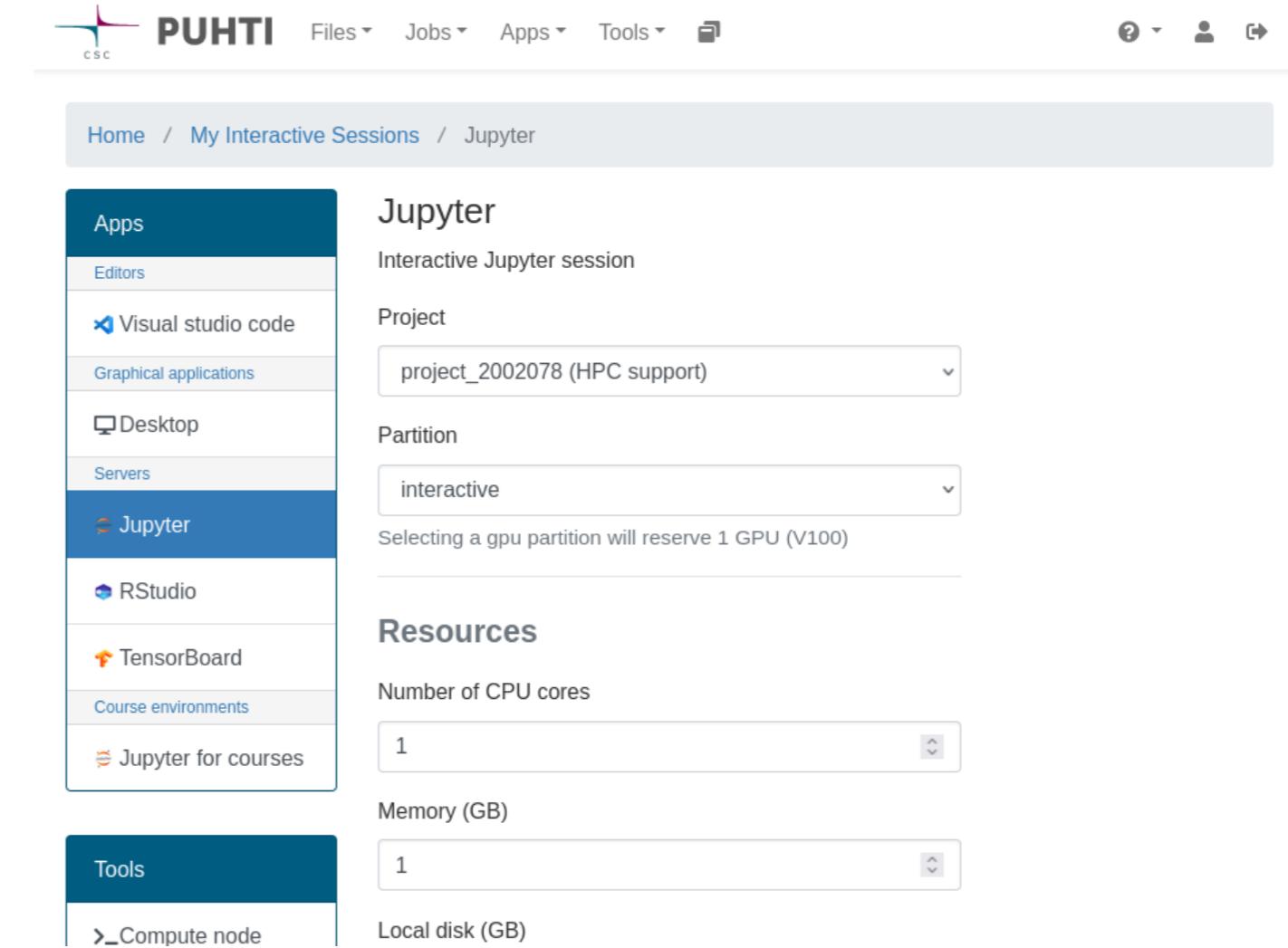
- Puhti
 - more software available
 - up to few hundreds of CPU cores
 - CPU nodes with fast local disk
 - Jupyter notebooks, RStudio, ...
- Mahti
 - minimum of 128 CPU cores
 - Often shorter queues (in CPU partitions)
 - Very large scale simulations
 - Scalability tests needed for over 20 nodes (2560 cores)



Web interface: puhti.csc.fi



The Puhti login page features a header with the CSC logo and the word "Puhti". Below it is a teal banner with the text "Puhti login". A message says "Please log in with your CSC account." There are two input fields: "CSC Username" and "Password", followed by a "Login" button. Below the buttons are links for "Forgot your password?" and "Create an account". The background has a blue and white abstract graphic.



The Jupyter session configuration page shows the "PUHTI" header with navigation links for Files, Jobs, Apps, Tools, and a search bar. The breadcrumb navigation shows Home / My Interactive Sessions / Jupyter. On the left, a sidebar titled "Apps" lists "Editors" (Visual studio code), "Graphical applications", "Desktop", "Servers" (Jupyter selected), "RStudio", "TensorBoard", "Course environments", and "Jupyter for courses". The main area is titled "Jupyter" and "Interactive Jupyter session". It includes dropdown menus for "Project" (set to "project_2002078 (HPC support)") and "Partition" (set to "interactive"). A note says "Selecting a gpu partition will reserve 1 GPU (V100)". On the right, sections for "Resources" show dropdowns for "Number of CPU cores" (1) and "Memory (GB)" (1). At the bottom, there's a "Tools" section with a "Compute node" link.

CSC cloud computing services

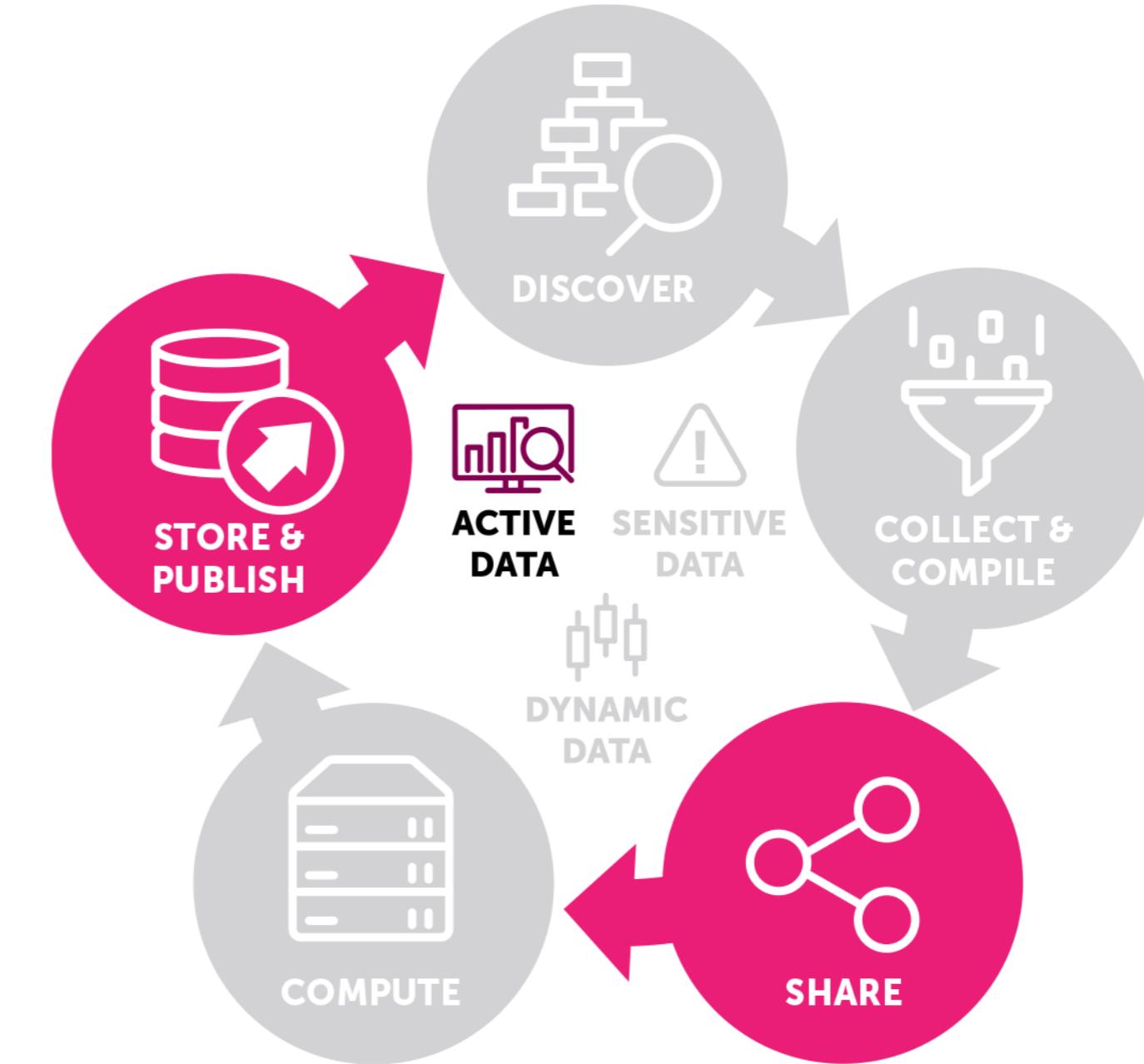
- Sometimes one needs more flexibility than available in supercomputers
 - different operating system and system libraries
 - usage without batch job system
- CSC provides variety of cloud computing services
 - cPouta: general computing cloud
 - ePouta: computing cloud for sensitive data
 - Rahti: container cloud e.g. for running web services

LUMI

- LUMI is pan-European supercomputer hosted by CSC
- For Finnish users access is via CSC
- Over 10 000 GPUs
- available in summer 2022
- "small" (about the size of Mahti) CPU partition
- auxiliary partition for data-analytics with lots of memory (32 TB)

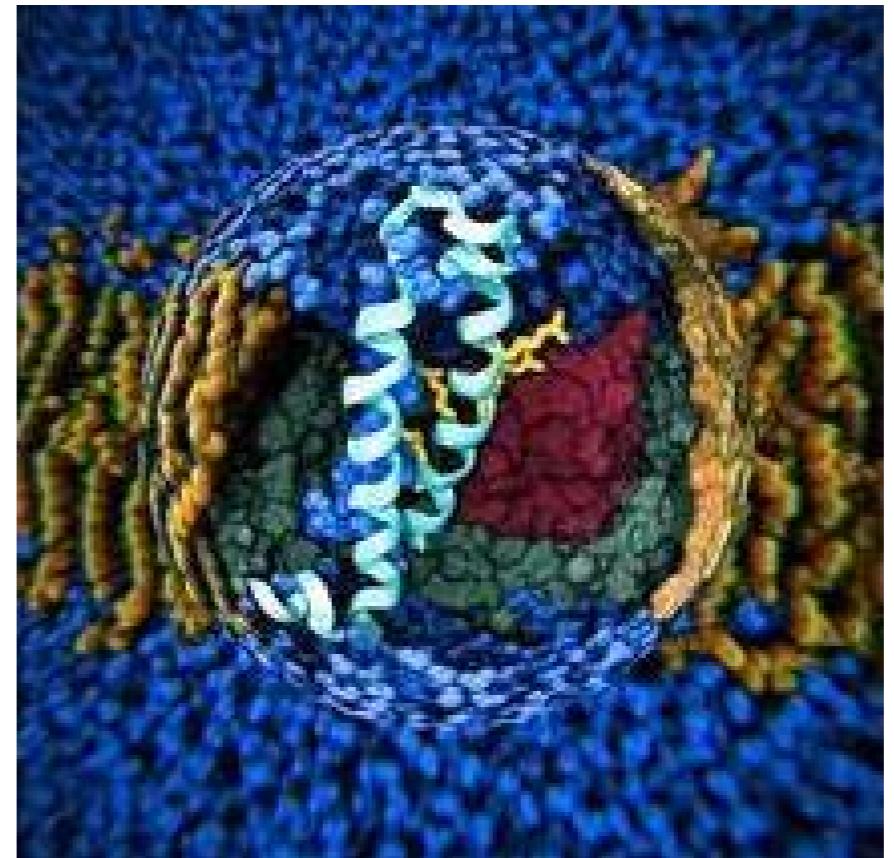
CSC data management and storage services

- Allas object storage
 - Data can be accessed anywhere from internet
 - Data can be shared with different levels of access control
- FAIR data services
(Findable, Accessible, Interoperable, Reusable)
 - Publishing datasets together with metadata
 - Searching public datasets



Other services

- Training
 - Large number of training courses in various aspects of scientific computing
- Visualization
- Expert services
 - Help in using scientific software
 - Help in optimizing application performance



Topical trainings

- Elements of supercomputing
<https://edukamu.fi/elements-of-supercomputing>
- Using CSC environment efficiently
23.-25.3.
<https://ssl.eventilla.com/enveff2022>
- CSC Summer school in high-performance computing?

Online: Using CSC HPC environment efficiently

⌚ 23.3.2022 09:00 +02:00 EET - 25.3.2022 12:00 +02:00 EET ⌂ Online

23.-25.3.2022 9:00-12:00 online

This is what everyone should know about our HPC environment when launching jobs!

Are you planning on using CSCs services (Puhti, Mahti, Allas...) in near future? Have you been using these services already, but would like to make sure you are getting the most out of them? This intensive course is intended for you! (Please check the course prerequisites before registering -this is not Linux101 course)

This online course consisting of 3 half-day sessions focuses on using the CSC HPC environment, which has been tailored for researchers to be easy and efficient for scientific use. The CSC services (Puhti, Allas...) discussed in this course are free-of-charge for academic research, education and training purposes in Finnish higher education institutions and in state research institutes (subsidized by the Ministry of Education and Culture, Finland). **The course price is 40€ (+VAT).**

Prerequisites

Before the course you need (see below in more detail):

⌚ Event time

Starts:

23.3.2022 09:00
+02:00 EET

Ends:

25.3.2022 12:00
+02:00 EET

📍 Event location

Online

Getting access to CSC supercomputers and services

- User needs to create a CSC account at my.csc.fi
 - With HAKA authentication only couple of mouse clicks
- For computational and storage resources CSC project is needed
 - project manager needs to be an experienced researcher (post doc or higher)
 - project manager applies for billing units
 - project manager can add users to project

Questions ?

- CSC user guide: <https://docs.csc.fi>
- FAIR data services: <https://fairdata.fi>
- Services for researchers: <https://research.csc.fi>
- CSC Training: <https://csc.fi/training>