Service name	Mahti
Service summary	Mahti is CSC's flagship supercomputer with a peak performance of 9,5 Petaflops. Mahti has 1404 CPU nodes and is meant for larger jobs (minimum 128 CPU-cores). Mahti-AI includes 24 GPU nodes based on Nvidia Ampere A100 GPUs.
Detailed description	Mahti has a total of 1404 CPU nodes and 24 GPU nodes. The theoretical peak performance is 7,5 petaflops for the CPU nodes and 2,0 petaflops for the GPU nodes, in total 9,5 petaflops. Both CPU and GPU nodes have two AMD Rome 7H12 CPUs with 64 cores each, making the total core count about 180 000. The CPUs are based on AMD Zen 2 architecture, supporting the AVX2 vector instruction set, and run at 2.6 GHz base frequency (max boost up to 3.3 GHz). The CPUs support simultaneous multithreading (SMT) where each core can run two hardware threads. When SMT is enabled, the total thread count per node is 256 threads. The CPU nodes are equipped with 256 GB of memory, and no local disks. The GPU nodes are equipped with 512 GB of memory and a local 3,8 TB Nvme drive. They also have four Nvidia Ampere A100 GPUs. Jobs are submitted to Mahti through a batch queueing system. Mahti can be accessed through Unix shell and X forwarding, and via NoMachine virtual desktop. Users can ● develop their own codes (Fortran, C/C++, python, ...), ● install Linux compatible applications via compiling them or by running (singularity) containers ● or utilize CSC's large scientific software collection. For code parallelization MPI and OpenMP can be used.

	CUDA and OpenACC can be used with GPUs. Additionally, mathematical subroutine libraries are available. The Mahti environment includes tools for debugging and performance analysis. More details about the service are available at: https://research.csc.fi/-/Mahti
Target audience	Academic, public and private sector.
How to obtain the Service	In order to access and use the service the customer must have a CSC user account and a project, which can be applied for either on an academic or commercial basis. The Mahti service also has to be activated in My CSC. Academic sector customers: ● The CSC user account, project and service profile can be requested through My CSC (https://my.csc.fi) Customers with special requirements, please contact servicedesk@csc.fi
Service level & availability	The Mahti service SLA is specified in accordance with JHS212 recommendations (see http://docs.jhs-suositukset.fi/jhs-suositukset/JHS212/JHS1212.html). The availability target and details regarding the SLA are detailed in a separate document linked to from the following page: https://research.csc.fi/-/Mahti
Service hours and user support	Support to the service is provided through CSC Service Desk channels and under CSC Service Desk policies: ● CSC Service Desk Operating hours (Excluding Finnish public holidays): https://www.csc.fi/en/contact-info

	• Phone +358 (0) 94 57 2821 • E-Mail servicedesk@csc.fi • Documentation: https://docs.csc.fi • Webpage and contact form https://research.csc.fi/support Response time target: within three working days. Resolution time target: within ten working days.
Pricing	https://research.csc.fi/pricing
Certifications	• ISO27001
Data protection (GDPR)	The service is not designed to process personal data. A user must not transfer personal data to the service.
Client's responsibilities	Clients of Mahti are responsible for their data and computing • Backups • Information security • Installations (if not utilizing CSC's software) • Capacity requests
Service producer's responsibilities	As a service producer CSC is responsible for: • Producing and developing the Mahti service.
Adjacent services	cPouta, Allas, Mahti
Additional services	
Service producer	CSC – IT Center for Science Ltd