

Service name	Puhti
Service summary	The Puhti service allows customers to run serial and small parallel jobs through a batch queueing system. Puhti includes CPU based nodes with a range of memory, and nodes with Nvidia Volta GPUs (Puhti-AI) for HPC and AI workloads.
Detailed description	<p>Puhti is an Atos Bullsequana X400 supercomputing platform based on Intel Cascade Lake generation processors and Nvidia Volta GPUs. The interconnect is based on Infiniband HDR.</p> <p>The detailed configuration is</p> <ul style="list-style-type: none"> • In total 682 CPU nodes, with a theoretical peak performance of 1.8 Petaflops • Each node is equipped with two latest generation Intel Xeon processors, code name Cascade Lake, with 20 cores each running at 2.1 GHz (Xeon Gold 6230) • Compute nodes have a mix of memory sizes: <ul style="list-style-type: none"> ○ 192 GB on 564 nodes ○ 384 GB on 100 nodes, with 40 also sporting a 3.2 TB NVMe disk for fast local storage ○ 768 GB on 12 nodes ○ 1.5 TB on 6 nodes • Interconnect network HDR InfiniBand by Mellanox, nodes connected with 100Gbps HDR100 links • 4.8 PiB Lustre parallel storage system by DDN <p>Jobs are submitted to Puhti through a batch queueing system..</p> <p>Puhti can be accessed through Unix shell and X forwarding, and via NoMachine virtual desktop.</p> <p>Users can</p> <ul style="list-style-type: none"> • 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. <p>For code parallelization MPI and OpenMP can be used. CUDA and OpenACC can be used with GPUs. Additionally, mathematical subroutine libraries are available.</p> <p>The Puhti environment includes tools for debugging and performance analysis.</p> <p>More details about the service are available at: https://research.csc.fi/csc-s-servers</p>
Target audience	Academic, public and private sector.
How to obtain the Service	<p>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 Puhti service also has to be activated in My CSC.</p> <p>Academic sector customers:</p>

	<ul style="list-style-type: none"> The CSC user account, project and service profile can be requested through My CSC (https://my.csc.fi) <p>Customers with special requirements, please contact servicedesk@csc.fi</p>
Service level & availability	<p>The Puhti 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: https://research.csc.fi/csc-servers/puhti</p>
Service hours and user support	<p>Support to the service is provided through CSC Service Desk channels and under CSC Service Desk policies:</p> <ul style="list-style-type: none"> CSC Service Desk Operating hours (Excluding Finnish public holidays) (https://www.csc.fi/en/web/guest/customer-service) Phone +358 (0) 94 57 2821 E-Mail servicedesk@csc.fi Webpage and contact form https://research.csc.fi/support <p>Response time target: within three working days. Resolution time target: within ten working days.</p>
Pricing	https://research.csc.fi/billing-and-monitoring
Certifications	<ul style="list-style-type: none"> ISO27001
Client's responsibilities	<p>Clients of Taito are responsible for their data and computing</p> <ul style="list-style-type: none"> Backups Information security Installations (if not utilizing CSC's software) Capacity requests
Service producer's responsibilities	<p>As a service producer CSC is responsible for:</p> <ul style="list-style-type: none"> Producing and developing the Puhti service.
Adjacent services	cPouta, Allas, Mahti (starting in 2020)
Additional services	
Service producer	CSC – IT Center for Science Ltd