LUMI Service Description

Service name	LUMI Supercomputer
Service summary	LUMI Supercomputer service allows customers to run parallel scientific workflows through a batch queueing system. LUMI comprises of a large number of powerful GPU nodes and CPU nodes with varying amounts of memory.

Detailed description	The acquisition and operation of the EuroHPC LUMI supercomputer is funded jointly by the EuroHPC Joint Undertaking, through the European Union's Connecting Europe Facility and the Horizon 2020 research and innovation programme, as well as by the Participating LUMI Consortium States.
	
	LUMI is an HPE Cray EX supercomputing platform based on AMD MI250X GPUs and AMD Milan CPUs. The interconnect is based on HPE Cray Slingshot technology.
	
	The detailed configuration is
	● LUMI-G: 2560 GPU nodes with 4 AMD MI250 GPUs (128 GiB GPU memory) and 1 AMD Trento host-CPU (512 GiB host memory).
	● LUMI-C: 1536 CPU nodes with 2 x 64-core 2.45 GHz AMD Milan processors each, with a theoretical peak performance of 8 Petaflops
	● CPU nodes have a mix of memory sizes:
	  ○ 256 GB on 1344 nodes
	  ○ 512 GB on 128 nodes
	  ○ 1024 GB on 64 nodes
	● LUMI-D: Interactive data-analytics partition with 4 big-memory nodes (8 TiB each) and 64 visualization GPUs.
	● Interconnect network Cray Slingshot, nodes connected with 1x200Gbps (CPU nodes) and 4x200 Gbps (GPU nodes) links
	● LUMI-F: 8 PiB E1000 all-flash parallel storage system
	● LUMI-P: 80 PiB Lustre parallel storage system
	● LUMI-O: 30 PiB CEPH object storage service

	Jobs are submitted through a batch queueing system. LUMI can be accessed through Unix shell and X forwarding. Users can ● develop their own codes (Fortran, C/C++, python, …), ● install Linux compatible applications via compiling them or by running (singularity) containers ● or utilize LUMI's software collection. For code parallelization MPI and OpenMP can be used. HIP, OpenMP offload, and OpenACC can be used with GPUs. Additionally, mathematical libraries are available. The LUMI computing environment includes tools for debugging and performance analysis. More details about the service are available at https://www.lumi-supercomputer.eu.
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 LUMI user account and a project, which can be applied for either on an academic or commercial basis. See https://www.lumi-supercomputer.eu/get-started/
Service level & availability	The LUMI service SLA is specified in *LUMI Computing Service - Service Level Agreement.* LUMI targets on 97% availability rate.
Service hours and user support	The LUMI service SLA is specified in *LUMI Computing Service - Service Level Agreement.* Support to the service is provided through LUMI User Support channels: ● Webpage and contact form https://www.lumi-supercomputer.eu/user-support/

	• Documentation: https://docs.lumi-supercomputer.eu
Pricing	LUMI resources consumption model: https://docs.lumi-supercomputer.eu/runjobs/lumi_env/billing/
Certifications **Security**	• LUMI hosting is included in the scope of ISO 27001 certification. • CSC Base Line Security. https://www.csc.fi/en/security
Data protection (GDPR) **Location of the LUMI service**	The service is not designed to process personal data. A user must not transfer personal data to the service. The location of the LUMI service production is in the European Economic Area. The LUMI customer support is located in the European Economic Area and in the Switzerland. LUMI consortium members in the European Economic Area and in the Switzerland shall have the right to process the personal data of the users when providing the first level user support service to the users of the LUMI service. Furthermore, the supplier of LUMI system is situated in the USA and have access to servers based on a specific request when providing the advanced second level technical problem solving support. The LUMI consortium shall ensure that the transfer of personal data is implemented in accordance with legislation. The transfer of personal data to Switzerland is based on the European Commission adequacy decision and to the USA on the Binding Corporate Rules of the HPE, Inc. See also LUMI Privacy pages for further information.
Customer's responsibilities	Customers of LUMI are responsible for their data and computing • Backups

	● Information security ● Installations (if not utilizing LUMI software) ● Capacity requests
Service provider's responsibilities	As a service provider CSC is responsible for: ● Producing and developing the LUMI Supercomputer service.
Adjacent services	
Additional services	
Service producer	CSC – IT Center for Science Ltd on behalf of LUMI Consortium