HPC2N
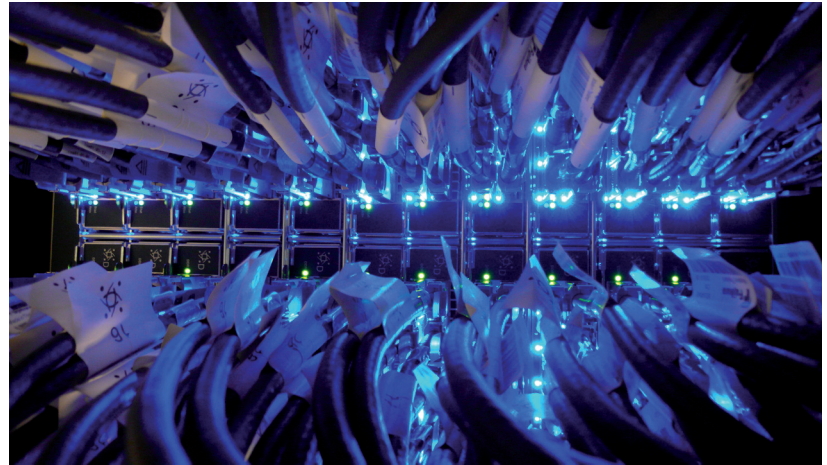
HIGH PERFORMANCE COMPUTING CENTER NORTH

Welcome to contact us!

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A national center with first-class resources and expertise:

- **Scalable and parallel high performance computing**

- **Large-scale storage facilities**

- **Grid and cloud computing**

- **Software and advanced support for eScience applications**

- **International network for research and development**

HPC2N partner coordinators:

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HIGH PERFORMANCE COMPUTING CENTER NORTH

HPC2N is
mainly funded by: SNIC

Our partners:

IRF · LULEÅ TEKNISKA UNIVERSITET · Mittuniversitetet MID SWEDEN UNIVERSITY · SLU · UMEÅ UNIVERSITET

HPC2N think tank!

Scalable and parallel high-performance computing • Large-scale storage facilities • Grid and cloud computing • Software and advanced support for eScience applications • International network for research and development

Prominent node of the national eInfrastructure and the metacenter SNIC

HPC2N – High Performance Computing Center North: A national eScience center and prominent part of the Swedish National Infrastructure for Computing (SNIC), a distributed metacenter under the Swedish Research Council. HPC2N is organized as a consortium between universities and research institutes that form a competence network for scalable high performance and parallel computing, grid and cloud computing, effective large-scale storage solutions as well as eScience applications.

Services and resources @ HPC2N

HPC2N provides a wide spectrum of services ranging from internationally competitive Tier-1-type HPC resources and eInfrastructure to education and user training programs reflecting HPC2N's strong commitment to national and local HPC users as well as new users in emerging areas.

Abisko, the main HPC2N resource deployed during November 2011, has 15264 cores with a peak performance of over 150 Tflops/s. For scalable parallel performance, the system is equipped with a high bandwidth, low latency QDR InfiniBand interconnect, with full bisectional bandwidth. All nodes consist of 48 cores (4 novel 12-core AMD Interlagos processors) and have at least 2 GB/core and some nodes have over 8 GB/core with a total of 45 TB RAM.

Other HPC2N systems include **Akka**, a 54 Tflops/s, 5376 cores dual boot Linux/Windows HPC cluster with 672 nodes (2 low power Intel Xeon quad-core) with a total of 10.7 TB RAM and 100 TB disk, and SDR Infiniband interconnect. **Ritsem,** one of SNIC's six Swegrid clusters (68 dual Intel Xeon quad-core, 16 GB of memory, in total 544 cores and 2 TB RAM, Gigabit Ethernet interconnect). HPC2N also provides a few other manycore-type

architectures and GPGPU processors. HPC2N operates mass-storage resources for SNIC-Swestore and the Swedish LHC consortium as part of the Nordic Tier1, including 700 TB disc storage and several PB tape library storage.

R&D activities @ HPC2N

HPC2N participates in several international eInfrastructure projects including EGI, NDGF, PRACE, WLCG, Nordic Resource Trading, and the ESFRI project Eiscat3D. In close cooperation with the department of Computing Science and as partner of the eSSENCE programme, HPC2N actively participates in several international R&D projects. The HPC and parallel computing research focuses on effective and thereby

Provides state-of-the-art resources and expertise for Swedish eScience

greener algorithms and software libraries that handle memory hierarchies, many-multicore and parallel architectures efficiently. HPC2N also contributes with an expert in the European Exascale Software Initiative (EESI). Another active area is interactive simulation methods for visual simulations in educational environments for vehicle simulators in cooperation with Algoryx (HPC2N spin-off). The research topics in grid and cloud computing include generic tools for grid infrastructures, elastic virtual data center technology for federated clouds, and grid applications. The research is performed in broad international collaborations, e.g., including three large-scale EU FP7 IP projects named RESERVOIR, OPTIMIS, and VISION.

Partner coordinators @ HPC2N

Each HPC2N partner has a part-time coordinator responsible for local activities. The HPC2N partner coordinators also identify and give support for new projects and HPC2N users.