Description of the system

The system is composed of HPC compute nodes, each with 256Gbyte RAM and 32 cores (4* CPU Intel 2.13 GHz 8core Xeon-E7 "Westmere-EX"). The compute nodes are connected with 4*10Gbit/s Ethernet to a 192 port non-blocking low latency switch. A virtual machine can use a physical node in its entirety or in parts. Each VM can be equipped with virtual hard disks up to 10Tbyte in capacity. Host software OpenNebula. Hypervisor: KVM/libvirt. Multicore/multiprocess, MPI and OpenMP

At launch in 2011, the HPC Cloud contains a total of 608 cores that enable a peak performance of 11.5K specints / 5TFlops.

For academic use

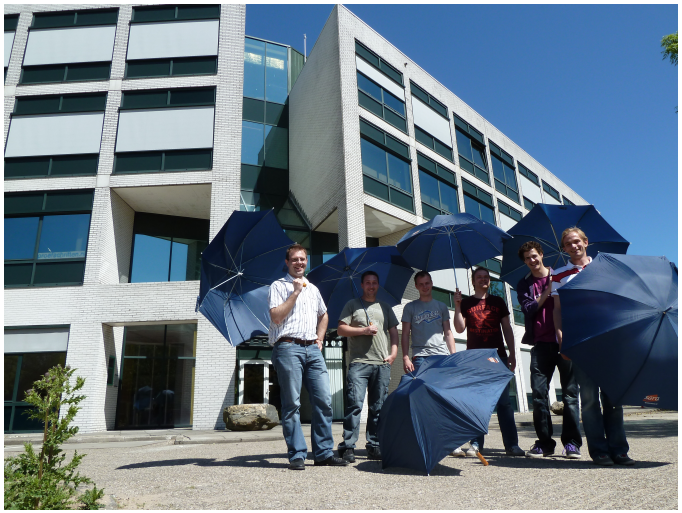
- Data Processing
- Data Analysis
- Scientific services

Virtual Machines

- Private network (vlan), and/or public ip with self service firewall
- Administrative rights inside VM and on private network
- VM specs (max, smaller possible): CPU: 32 cores, RAM 256Gbyte, Network 4*10GigE Scratch Disk 10Tbyte
- Any Operating System: Linux, Windows, etc
- Any software, including database and webservers

Apply now

The system is available to end users with an affiliation to dutch scientific research groups. For further details and advice in connection with your application, pleased mail your questions to cloud-support@sara.nl or go to our website at http://www.sara.nl/systems/hpc-cloud



SARA Support team for the HPC Cloud

Contact Information

SARA Computing and Networking Services

Science Park 121

1098 XG Amsterdam

The Netherlands

Tel. +31(20)592 3000

http://www.sara.nl/systems/hpc-cloud
e-mail: cloud-support@sara.nl

Project Leader HPC Cloud: Floris Sluiter

BiG Grid
the dutch e-science grid

HPC Cloud Computing

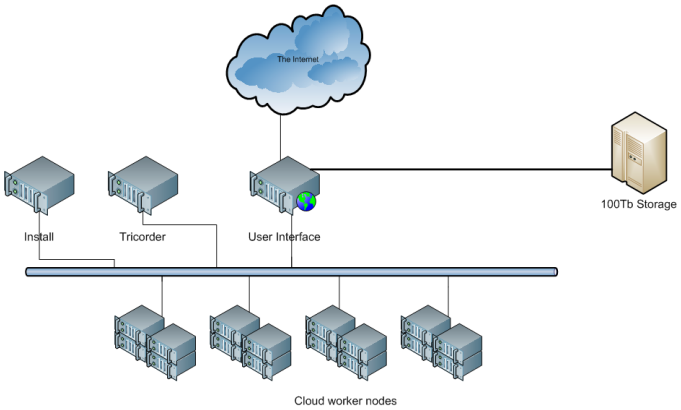
Self Service and Dynamically Scalable High Performance Computing

The new National HPC Cloud: a user-friendly compute cluster for scientists.

With support from BiG Grid, SARA has developed a national High Performance Computing Cloud, specially adapted for scientific applications. The HPC Cloud is available as a separate service within the BiG Grid infrastructure, giving users access to a flexible compute cluster that can be configured optimally for any application.

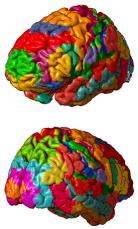
"Zero time application porting"

Scientific applications tend to be developed with a specific architecture and environment in mind. The source code of such applications is not always available. Making scientific applications suitable for High Performance Architectures is usually a time-consuming affair that requires specialist skills.



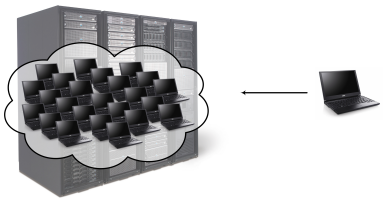
SARA used innovative virtualisation techniques to develop an HPC Cloud that enables dynamic adjustment of architecture and environment to specific applications. For example, the HPC Cloud makes it possible for several different operating systems to be used at the same time – even on the same processor unit. These environments are kept entirely separate, in a safe and secure manner, so that users will not even notice that others are using the system at the same time. In short, the system is adapted to suit the applications, rather than the other way around.

Do it yourself: full control



As users are given an environment entirely of their own, they can also be granted far more control of that environment. Users of the HPC Cloud are provided with a protected private HPC cluster that they can set up entirely in accordance with their own requirements. They can either configure their virtual HPC cluster themselves entirely or, on the basis of existing modules and configurations (templates), opt to select and install programs, libraries and operating systems.

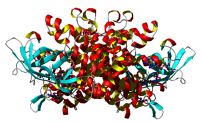
"Clone my laptop: scaling up existing environments"



Alternatively, existing configurations of another system can be started up in the HPC Cloud. For example, users can make a copy of their own work environment, such as a laptop computer, and move it to the HPC Cloud. All current applications on that laptop can be scaled up in this way and be run on a large HPC system, even if the laptop operating system is MS Windows.

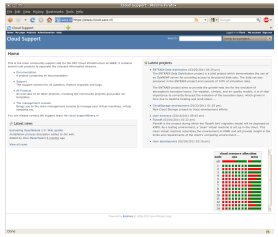
Advantages of virtualization

1. The advantage to the users is that they will gain access to a virtual HPC system that is geared entirely to their own specific requirements. This means that users will need to spend less time on setting up the structure and have more time to concentrate on content.
2. The advantage to BiGGrid is the possibility to offer the system for a wide variety of uses in a very flexible and efficient manner.



Collaboration and flexible support for tailored applications

HPC Cloud offers users the possibility for example in projects, to collaborate in various ways, such as by sharing and exchanging configurations and also system access as needed. The fact that we are now able to offer an HPC system in multiple configurations at the same time creates excellent possibilities for an efficient tailored approach. The HPC Cloud support team offers users guidance and support at any level in the optimal use of the system, ranging from advice on architecture to turnkey solutions.



User experience

Lourens Veen, scientific programmer at the Computational Geo-Ecology group at the University of Amsterdam, sees huge benefits in Cloud Computing for his team: "We have all kinds of scientists here who aren't computational scientists, such as hydrologists, physical geographers, ecologists and ornithologists. Owing to the huge quantities of data and the complex computations, these researchers need to use HPC facilities, but most of these facilities are difficult for these scientists to use. The advantage of Cloud Computing is that we as scientific programmers have full control of the environment. We can build an environment ourselves that our scientists can work with. This allows us to disguise the actual complexity of the system as far as the user is concerned."