

A photograph of three men in a professional setting, laughing and looking at a smartphone held by the man in the center. The man on the left is wearing a white shirt, the man in the center is wearing a yellow shirt, and the man on the right is wearing a grey sweater. The background is blurred, suggesting an office or meeting environment.

SWEDISH
UNIVERSITY
COMPUTER
NETWORK

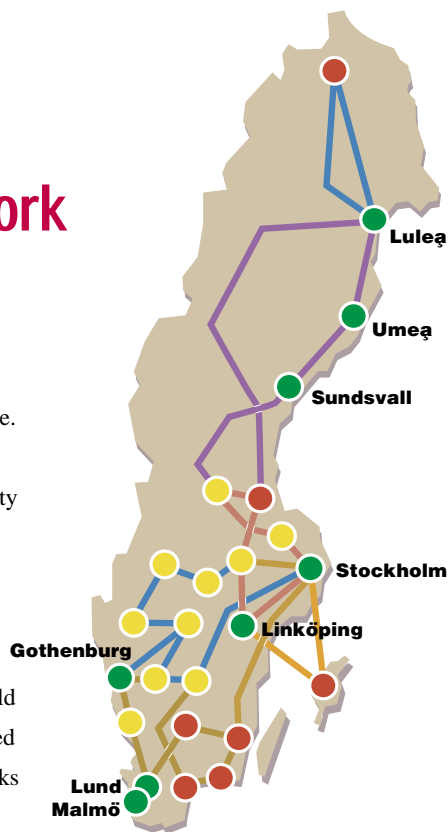
GigaSunet

The University Computer Network of the Future

SUNET is now carrying out an upgrade. The growing communication requirements of the Universities and University Colleges are forming the future of GigaSunet.

This provides University Sweden with a computer network with a capacity of 10 Gbit/sec. Compared to the old network the capacity has been increased sixteen fold! Even local access networks are being created at university sites within the framework for GigaSunet – these sites will be allotted a capacity of 2.5 Gbit/sec.

Work with GigaSunet was started during the fall of 2001. The new network will be ready to be taken into operation in October 2002.



A simplified explanatory sketch of GigaSunet. The sites marked in green are included in phase 1, the yellow sites belong to phase 2 and the red ones will be connected during phase 3. The colored lines on the map mark the different GigaSunet rings.

This is how GigaSunet is built up

The University Computer Network is built up around long distance connections that are kept together via a ring structure. The rings (which in geometrical terms are not ring-shaped!) connect the country's 22 university cities with a capacity of 10 Gbit/sec.

The construction of GigaSunet is being carried out in phases.

Phase 1 is already completed. It comprises Luleå, Umeå, Sundsvall, Stockholm, Linköping, Gothenburg and Malmö/Lund.

Phase 2 will be implemented during the spring of 2002 and will affect Borlänge, Uppsala, Västerås, Örebro, Karlstad, Trollhättan, Skövde, Borås, Jönköping and Halmstad.

Phase 3 comprises the remaining university cities.

At the end of October 2002 the entire GigaSunet will be in operation. All universities and university colleges will be connected – in all 32 seats of learning are involved.

GigaSunet is built in such a way that no university will have more than four hops to Stockholm – from where Internet connections continue to the rest of the world.

From Stockholm emanate a number of connections out into Europe and over the Atlantic.

The five circles – from the little point to the large picture – illustrate the development in capacity of SUNET from 1992 to 2002.

1992 SUNET had a capacity of 2 Mbit/sec.

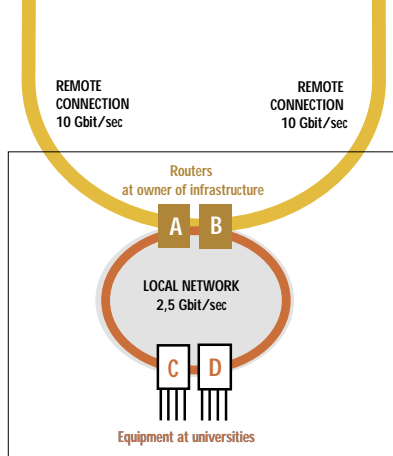
1994 the capacity was increased to 34 Mbit/sec.

1999 SUNET was upgraded to 155 Mbit/sec.

2000 the capacity was increased to 622 Mbit/sec.

2002 GigaSunet will be fully built out to 10 Gbit/sec.





A simplified explanatory sketch of the GigaSunet connection to the country's universities and university colleges.

Advanced and practical

The traffic in the GigaSunet will be conveyed via so called wavelength multiplexing.

Put simply, laser technology is used to allow different colored light beams with varying wavelengths to convey the GigaSunet traffic along a nation-wide network of optical fibers.

If there should be a break in any connection the network will still continue working – the traffic in the affected connection is then automatically directed in the opposite direction.

In addition to the long distance connections between the university sites, GigaSunet also has an access

network at each university site.

All of these local networks have a capacity of 2.5 Gbit/sec.

Most of the local networks in the GigaSunet are built up of dark fibers.

GigaSunet will always work!

Requires a lot of equipment

GigaSunet requires a lot of equipment – e.g. modern routers are required at the delivery points to the universities.

With two routers between the long distance connection and the local network and two routers between the local network and the university's own equipment we are talking about 111 Cisco routers for the whole of GigaSunet.

Sites with many universities, e.g. Stockholm, have been provided with a connection structure requiring less equipment than described in the sketch above.

SUNET has signed a collaboration agreement with Cisco Sweden.

Among other things, a joint project group has prepared the operation of GigaSunet.



United efforts and collaboration

GigaSunet – and SUNET for that matter – is the fruit of a comprehensive collaboration between Sweden's university colleges and universities.

This collaboration is about profiting from the network know-how accumulated at Sweden's university colleges and universities.

There is even collaboration when it comes to the financing of GigaSunet.

In order to build GigaSunet, a large part of SUNET's old equipment must be upgraded or replaced.

Altogether, the GigaSunet equipment will cost 17 million Euro.

The costs for the connections is about 17,5 million Euro to be distributed over a period of four years.

Universities and university colleges will have to pay the main part of the costs in order to have access to a world-class academic computer network.

In addition to this, the Department of Education is providing a basic grant for operation via a State appropriation to SUNET.



From SUNET to GigaSunet

SUNET stands for Swedish University Computer Network. It is a joint organization for the universities, which, without being its own juridical person, works towards the goal that University Sweden will always have access to a computer network that maintains a very good quality.

The Swedish Research Council operates as the responsible administrative authority for SUNET and appoints the SUNET Board.

The Board has established a technical reference group to get advice in technical matters.

The daily work within SUNET is performed at several different universities. For example, the Royal Institute of Technology (KTH) has been responsible of operation of the computer network since the start. The University of Umeå is responsible for development and information.

SUNET also has contact persons at the universities. These are specialized in different areas, e.g. e-mail, security, network structure.

The major task at this moment is putting a computer network that is adapted to the ever more demanding communication requirements of our universities into operation. The new network is called GigaSunet.

Thus, the universities' organization is called SUNET – the universities' new network is called GigaSunet.

When it is fully built out – in the fall of 2002 – Swedish universities and university colleges will have access to one of the world's best academic computer networks.

GigaSunet is tomorrow's solution!!

Although, the next upgrade is probably only a few years away!



The Board of SUNET

The Board of SUNET has been put together in the following way:

Hasse Odenö, chairman

University College of Mälardalen

Gun Djerf

University of Linköping

Anita Kollerbaur

University of Stockholm

Lars-Elve Larsson

University of Uppsala

Lennart Ljung

Swedish Research Council

Kerstin Malmqvist

University College of Halmstad

Kjell Nilsson

National Library of Sweden

Ulf-Björn Rönn

Student Representative

Staffan Sarbäck

Luleå University of Technology

Benny Stridsberg

Student Representative

Arne Sundström

University of Lund

Sven Tafvelin

Chalmers University of Technology

Per Wernheim

Karolinska Institutet

Contact routes and information

You can reach SUNET in many different ways.

The mailing address is:

SUNET

The Swedish Research Council
S - 103 78 Stockholm

The Secretary of the Board is:

Olle Thylander

The Swedish Research Council
Olle.Thylander@vr.se

The rapporteur for the Board is:

Hans Wallberg

University of Umeå

Hans.Wallberg@umdac.umu.se

The public relations officer

at SUNET is:

Lennart Forsberg

University of Umeå

Lennart.Forsberg@umdac.umu.se

E-mail to all board members

can be sent to:

sunstyr@sunet.se

E-mail to SUNET personnel at

The University of Umeå can be sent to:

sunet@umdac.umu.se

E-mail to SUNET personnel at

The Swedish Research Council

can be sent to:

sunet@vr.se

The SUNET homepage is at:

<http://www.sunet.se>

