

# IT-Norrbotten

FTTH CASE STUDY

## County-wide fibre backbone connecting municipal networks

*IT-Norrbotten brings high-speed fibre connectivity to rural areas in Sweden's northernmost county, enabling small towns to thrive.*

With a population density of just 2.6 inhabitants per square kilometre, the county of Norrbotten in Sweden is one of the most sparsely populated regions in Europe. Population centres are small (most have between 3 000 and 10 000 inhabitants) and the distances between them are long. "There is no interest from commercial operators to take broadband to rural areas, but for us it is a matter of survival," said Tony Blomqvist, chief executive of IT-Norrbotten.

### General information

**Project promoter:** IT-Norrbotten

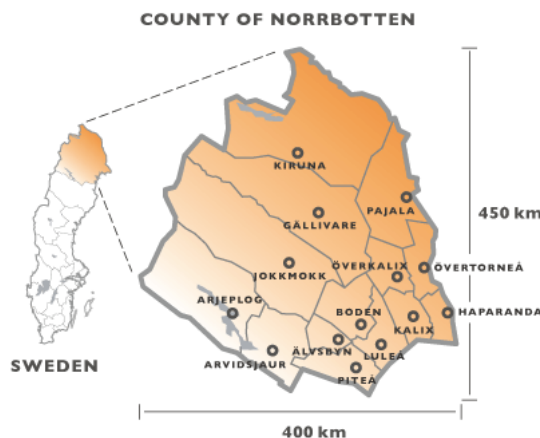
**Location:** Sweden

**Project name:** Broadband network - Lumiora

**Network size:** 3500km

IT-Norrbotten was created in 1996 by the municipalities of Norrbotten, Luleå University of Technology, and Norrbotten County Council together with the County Administrative Board. (Since 2005 the company has been owned by the 14 municipalities of Norrbotten and Norrbotten County Council.) In the late 1990s the Swedish government decided to encourage development of IT infrastructure to counter regional imbalances between the sparsely populated north and the more densely populated south of the country. IT-Norrbotten was given the task of coordinating the building of broadband networks for the 14 municipalities in Norrbotten, which were built between 2001 and 2006.

At the same time IT-Norrbotten planned and built the regional backbone, which connects the municipal-owned networks or "stadsnät". The regional backbone, called "Lumiora", is a resilient dark fibre network that links all the population centres in the county. The network provides connectivity to local authority sites such as schools, hospitals and administrative centres and to the municipal



networks. As well as managing the network for the public sector, IT-Norrbotten sells business-grade services and wholesale connectivity (Ethernet, wavelengths and dark fibre) to large businesses and telecoms operators.

To improve broadband services to residential properties in northern Sweden, in 2008 IT-Norrbotten signed a framework agreement with communications provider OpenNet. The framework provides an opportunity for each municipality to contract with OpenNet. "We chose OpenNet because it has a well developed model for the promotion and development of urban networks and extensive experience in similar assignments," explained Blomqvist.

OpenNet operates the urban networks, but does not provide any services of its own. Instead, it invites retail service providers onto the network, who then provide the services and content for the end users. This is good for the consumer because it creates a competitive retail environment in which they have a choice of service providers. Customers can change provider at short notice, and even have different providers for Internet, telephone and TV if they wish. It is also good for service providers because they get access to a large number of urban networks in Sweden and can expand without major infrastructure investments.



### Deployment & Take Up

#### Technology/architecture:

Lumiora is a regional backbone (dark fibre) network

**Time to deploy:** 2001 to 2006

**Municipal networks connected to Lumiora:** Arjeplog, Arvidsjaur, Gällivare, Haparanda, Jokkmokk, Kiruna, Pajala, Övertorneå and Övertorneå (98% of homes in the county have access to broadband).

Being owned by the public sector, IT-Norrbotten is motivated not just by commercial interests, but also by the benefits that high-speed networks bring to society. The Lumiora network enables local government to work more efficiently, and has brought significant improvements to how the county council delivers healthcare and education services.

IT-Norrbotten has linked municipal administrations with the County Council in a joint platform for distance meetings. This opens up new possibilities for cooperation between municipalities and county councils. The administration of the Association of Local Authorities was first off the mark, and now conducts the majority of its meetings long distance. In the same way, municipal chief executives, council leaders and other chief officers often meet digitally. Travel is reduced, saving time, money and the environment.

## Business Case

**Total cost:** ~€73M invested in IT infrastructure including ~ €7M from EU structural funds

**Who runs the network:** IT-Norrbotten (regional backbone), OpenNet (municipal networks).

Norrbotten County Council is responsible for health, medical and dental care. With the help of IT-Norrbotten, the council has linked the county's five hospitals, 33 health centres and 34 dental clinics. A number of services have been improved by the fibre network: electronic prescriptions, patient record systems, digitised X-ray handling, virtual meetings and IP telephony.

Virtual meetings are widely used in healthcare, typically to allow local doctors to access consultants in larger hospitals. For example, a consultant dermatologist can see the problem areas of a patient's skin and diagnose them remotely; ear surgeries are performed at local hospitals with the help of specialists from the regional hospital at in Luleå working at a distance; with



videoconference it is possible to “borrow” doctors from other hospitals to help overcome a shortage of doctors in adult psychiatry, for example.

Another exciting use of the technology is to monitor premature babies when they first go home. Families with premature babies often stay in hospital for a long time and feel unsafe and insecure when they finally go home. To ease the transition, the parents can borrow videoconference equipment and use it to stay in touch with the hospital. The personnel at the hospital can see the baby over the video link and give their recommendations to the parents at home.

## End-user Services

**Residential:** consumers have a choice of supplier for broadband, TV and phone services, available through OpenNet – [www.norrbotten.opennet.se](http://www.norrbotten.opennet.se)

**Business:** IT-Norrbotten offers wholesale services to other operators, as well as business-grade services direct to local businesses and the county council.

In education, videoconferencing is used for remote learning. Pupils in Norrbotten are entitled to mother-tongue lessons in more than 91 languages, but there are not enough qualified teachers in each town to cover so many languages. Instead, pupils from different language areas have virtual meetings for learning and practising their mother tongue. This takes place during the school day together with pupils from other schools across the county. Through sound and image, the teacher communicates with the pupils in the schools that are participating in the session. The technology makes it possible to coordinate mother-tongue teaching, and to hire qualified teachers for all the languages.



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