

Virve to implement new technology in 2020s

What is Virve 2.0?

State Security Networks Group Finland (Erillisverkot) safeguards the Finnish society by offering authorities and critical operators engaged in critical infrastructure and services secure and reliable ICT services. Much like in the civilian world, communication between authorities includes transferring images and video material to an increasing degree, which results in ever-growing data transfer volumes and, subsequently, new kinds of demands for all communication networks. Virve is a means of ensuring communication and cooperation between authorities and other partners across organisational borders into the future. It also entails the introduction of a higher service standard, as the transfer to broadband, estimated to take place in 2022, will make it possible to transfer video material, images and data. This will mean that it will be possible to send video material in a reliable and secure way in the case of accidents, for example. The radio network Virve, based on Tetra technology, will reach the end of its lifecycle by the end of the 2020s. The current Virve network will be used simultaneously with the new Virve 2.0 network until, at least, 2025.



The next generation of the administrative radio network, i.e. Virve 2.0, will be a joint effort of authorities and commercial partners. State Security Networks Group Finland will carry out a tendering process for commercial network operators in 2019. State Security Networks Group Finland will implement the solutions that will be used by the authorities on top of the winning 4G network and become the service operator."

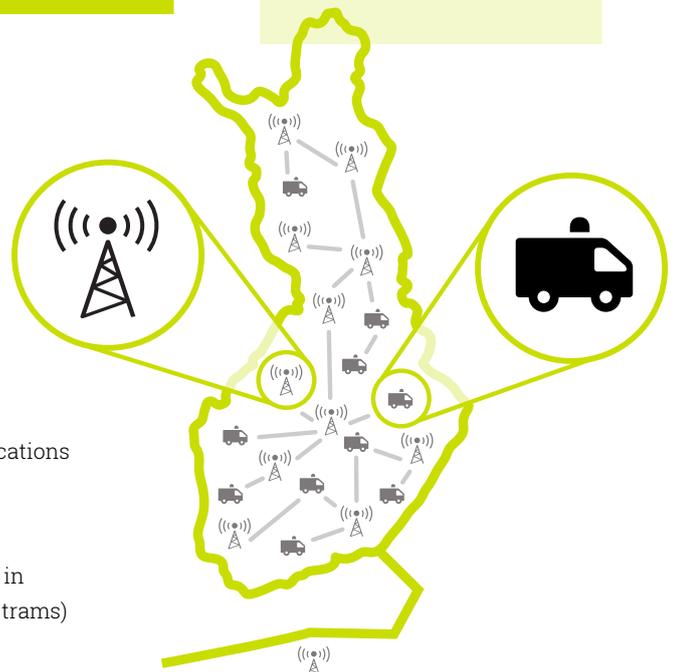
TIMO LEHTIMÄKI
CEO OF STATE SECURITY NETWORKS GROUP FINLAND



As Virve users, agencies, which need **mission critical communication**, are prioritised compared to general public when using mobile broadband services. This means that their broadband access and availability of services will be guaranteed in almost all circumstances, including when the network is congested. Furthermore, quick and disturbance-free groups calls and SDS messages are guaranteed.

The Virve network covers all of Finland, the Finnish territorial waters and the sea area of the Gulf of Finland. The primary users of Virve include

- Rescue services
- Police
- Social and healthcare services
- Defence forces
- Border guard
- Railway operators
- Customs
- Emergency response services
- Finnish Transport and Communications Agency
- Finland's national public service broadcasting company YLE
- Finnish Transport Infrastructure Agency
- Finnish Meteorological Institute
- Maritime Search and Rescue System
- Safety and telecommunications companies
- Energy sector
- Public transport services in the Helsinki area (metro, trams)



VIRVE AT PRESENT

History and current status

Upon its completion in 2002, Virve was the world's first nationwide network built for public safety agency communications based on the Tetra standard. Nearly all European countries now have a similar digital dedicated narrow band radio network for public safety agencies. The most extensive such public safety radio network in the world was implemented in Germany in 2006. The German radio network for public safety agencies has been designed for over one million administrative users and it is otherwise identical but three times larger to the Finnish Virve network.



The neighbours of Finland – Estonia, Sweden and Norway – have public safety radio networks with also identical technical properties. radio networks serving public safety authorities of Finland, Sweden and Norway were interconnected last year, which is a great improvement to cross-border cooperation and makes it possible for authorities to communicate and work across the border using instant group calls with the same radio terminal in all three countries.

In 2016, the Finnish Ministry of Transport and Communications auctioned the 700 Mhz frequencies previously occupied by television broadcasters, to commercial teleoperators.



Services of the Virve 2.0 network:

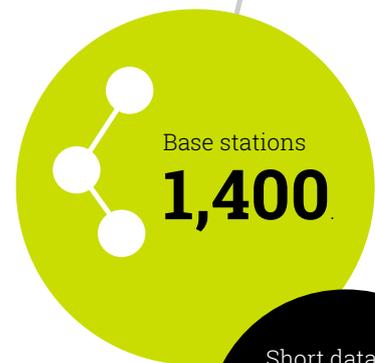
- **Communications in the radiophone category:** group calls. Direct mode operation will be offered when available.
- **Communications in the ordinary telephone network category:** individual calls.
- **Data traffic** – direct mode, package data and geographic information, images, video material

Indoor coverage solutions

Since Virve 2.0 will be operating in a network owned by a commercial operator after 2022, indoor coverage solutions by commercial operators will be applied to ensure coverage in buildings used as public spaces. State Security Networks Group recommends the implementation of the indoor coverage solutions as broadband network providing services offered by the operator, who wins the tender. This would mean that a joint access to network would cover the frequencies used by the present-day Virve network and the Virve 2.0 network that is estimated to be taken into use in 2022. In addition to the internal coverage connection, the internal coverage design must take into account the requirements related to rescue services, which needs depend on the purpose of use of the location.



VIRVE AT PRESENT
IN NUMBERS



VIRVE OF THE FUTURE

Future of Virve

We see cooperation in which the authorities and commercial partners implement the public safety radio network in a joint effort and relying on each other as the best solution for the future. State Security Networks Group Finland will implement the solutions that will cater for the needs of the authorities utilising the infrastructure of the commercial network and in compliance what is agreed upon with the operator.

State Security Networks Group Finland was nominated as the **service operator of the mission critical mobile broadband** for public safety agencies services in 2018 when law was passed.

“All key authorities and safety operators will partake in the determination of the services and service levels of the Virve of the future. It is in the best interest of each and every Finn that the safety operators will have discriminating taste in this respect. We currently have the best mission critical radio network in the world, and will continue to do so in the future.”

JARMO VINKVIST
BUSINESS DIRECTOR, VIRVE SERVICES, STATE SECURITY NETWORKS GROUP FINLAND

Advantage of the collaborative model

The commercial network solutions are mainly global, which offers great opportunities for cross-border communication between authorities.

The commercial networks are able to live and develop with state of the art technology. The authorities will always have access to the best frequency bands and they will be able to take advantage of technological developments. It is likely that voice communication will remain the primary operative method for security authorities. In addition to the new mobile broadband network, the demand for the transmission of narrowband data will continue to grow. The use of sensors detecting radiation, temperature, or water levels is increasing in security operations, and the importance of the reliability of the network is growing with the constant flow of measurement data.

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Virve 2.0 procurement schedule 2019

2019 Tendering process of commercial operators

1 February 2019:
Information Society Code entered into force

Spring 2019:
Reception of requests to participate

By the end of 2019,
the operator will be selected