



Iceland Unifies National Radio Communications using Motorola IP-based TETRA Solution



Iceland

Situated mid-way between North America and mainland Europe, Iceland is an island in the North Atlantic covering a total area of 103,000km². Its geography comprises vegetation, lakes, glaciers and wasteland, a coastline of 4,970km, and 758,000 km² of sea area within fishing limits. The centre of Iceland is ruggedly mountainous, and almost four-fifths of the country is uninhabited (and mostly uninhabitable). Indeed, it is the most sparsely populated country in Europe, with an average of just three inhabitants per square km.

As of January 2008, Iceland's population totalled 313,000, with the majority being concentrated in a narrow coastal belt, valleys and the southwest corner of the country, where Reykjavik, the capital city, is situated. Recognised as a progressive and modern European society with a high standard of living and a high level of technology and education, Iceland has a services-based economy, while industry accounts for just under 22% of GDP, followed by agriculture and fishing.

Unifying Disparate Radio Systems and Services

Two separate Tetra networks had been operating in Iceland. In the capital Reykjavik, a Motorola system installed in 2000 had replaced a legacy analogue network employed by the police and fire services, while a second Tetra system based on another vendor's platform was specified as a nation-wide public safety network. However, as the latter was implemented throughout the coastline, issues with coverage and reliability limited its operational scope and resulted in the Icelandic Government embarking on a significant modernisation and improvement programme.

The aim was to create a nation-wide public safety network offering vastly improved security, reliability and coverage, whilst enabling inter- and cross-agency communications and support for advanced data applications such as automatic vehicle location (AVL) and geographical positioning system (GPS). The Government wanted to build on its previous Tetra investments, while meeting the technical and operational challenges posed by Iceland's topology.

Neydarlinan 112 specifies Motorola's advanced Dimetra IP Tetra platform and robust MTP850 hand-portables

In late 2006, Motorola was awarded the contract by Neydarlinan 112, a public company majority owned by the Icelandic government that co-ordinates the emergency and public safety services in Iceland. As well as allowing Neydarlinan 112 to manage agencies including the emergency services, maritime and border control, the new public safety network was to serve organisations including the aviation authority, coast guard, voluntary rescue organisation, public utilities and road administration. It would also be crucial to new homeland security measures being implemented following the departure of the US forces, that had traditionally provided helicopter rescue services.

Customer name

Thorhallur Olafsson,
managing director

Company

Neydarlinan 112 – co-ordinates the emergency and public safety services in Iceland

Industry name

Emergency Services and Public Safety

Product

- Dimetra IP Tetra platform
- Mobile switching office (MSO) with n+1 configuration
- 150 BTS and 25 dispatchers
- 3,000 x MTP850 hand-portables

Solution Features

- Enhanced IP-based and scalable TETRA solution
- Integrated voice, messages, and mobile applications
- Portable DMO (Direct Mode Operation) gateway
- TETRA radios Accelerated Life Tested to simulate over 5 years hard usage

Benefits

- Resilient, robust and reliable network
- Inter-agency calls and strict encryption separation
- Centralised fleet management of air, sea and land vehicles via GPS & GIS
- Improved management and safety of personnel

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Thorhallur Olafsson, managing director

Integrated and resilient services and response, with central control and advance functionality

Motorola's Dimetra IP system has enabled Neydarlinan 112 to provide a nationwide digital radio communications network serving the requirements of Iceland's emergency services and public safety organisations. In unifying agency communications, it has achieved its objective of being able to deliver integrated services and response from its central HQ in Reykjavik, while making significant advances in coverage and functionality. It was also able to build upon its existing Tetra investments, provide coverage in some of the world's most demanding environments, and interface Dimetra IP with state-of-the-art GIS and AVL applications.

“Motorola was chosen because it was able to meet our key selection criteria of cost and required delivery time scales,” states Thorhallur Olafsson, managing director at Neydarlinan 112. “We also wanted to be able to upgrade some of the existing base station sites (BTS), and build on the advanced Tetra functions that we had already interfaced with our IT systems, such as AVL and GPS. Furthermore, most of our users were familiar with using Motorola equipment, which meant we didn't have the additional cost of training, while the functionality we required came as standard.”

Neydarlinan 112 specified Motorola's Dimetra IP Tetra platform – including 150 base stations and 25 dispatchers – and also selected Motorola the supply contract for more than 3,000 MTP850 hand-portables. Delivery commenced in February 2007, with the existing network of 40 base stations in Reykjavik upgraded and coverage expanded (with a further 10 BTS) and fully commissioned by May the same year. By the end of 2007, approximately 120 BTS had been deployed (under phase two) for nationwide coverage and, by June 2008, the system had been completed. Currently, the network provides coverage to 95% of the population and main roads, as well as the highlands – including the peak of Hvannadalshnúkur, Iceland's highest mountain.

To date, the network comprises 150 BTS and a central mobile switching office (MSO) with two zones configured in an n+1 architecture for resilience. Approximately 25 dispatchers have been implemented across local agency sites and at the Neydarlinan 112 headquarters in Reykjavik. “The system was delivered on time and within budget. The implementation and migration of users to the new network were handled excellently by Motorola, while all system goals were achieved,” Olafsson confirms. Coverage has been achieved in some of the most challenging environments, with some BTS even being deployed on glaciers, while Motorola's portable DMO (Direct Mode Operation) gateway is being used to drive Tetra further into coverage black spots.



Unified communications improve efficiency, inter-agency collaboration and emergency response

Neydarlinan 112's network has delivered essential advances in functionality and operational efficiencies. With inter-agency calls and strict encryption separation between shared and individual talk groups, Neydarlinan 112 is able to provide integrated emergency and response services to some 4,700 registered users. Moreover, with Tetra interfaced to Neydarlinan 112's geographic information system (GIS), the HQ has centralised fleet management of air, sea and land vehicles via GPS and GIS, as well as improved management and safety of personnel – who can be located instantly via their GPS-enabled MPT 850 terminals. A system is now being developed to help first responders locate incidents more quickly.

Police response times have already benefited, with Tetra resulting in a significant increase in solved cases too. GPS is being used by the Ministry of Environment to co-ordinate its teams scouting national parks and rural areas, while the voluntary rescue service reports that Tetra has 'revolutionised' its operations. The system's resilience was also demonstrated during a recent earthquake. Using Tetra, response teams were able to maintain communications, while GSM and fixed-line services became over-loaded. “We have a huge capacity for response and all agencies were able to co-ordinate their efforts. Indeed, I was surprised by just how many users were served by just one BTS! Tetra has proved to be a very efficient system,” Olafsson concludes.

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MOTOROLA IP-BASED TETRA SOLUTION/CASESTUDY:ICE(04/09)

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