



ITALIAN AUTONOMOUS PROVINCE IS EXPANDING AND UPGRADING ITS MOTOROLA SOLUTIONS DIMETRA™ IP TETRA NETWORK

THE NETWORK AND ASSOCIATED SERVICES ARE ENSURING MISSION-CRITICAL, OPTIMAL, SCALABLE COVERAGE FOR PUBLIC SAFETY



TRENTINO DIGITALE S.P.A.

Trentino Digitale S.p.A. was formed following a merger between Informatica Trentino S.p.A. and Trentino Network S.R.L, with the aim of delivering a more unified approach between computer science and telecommunications in the area. Together with Motorola Solutions, Trentino Digitale is responsible for fully managing and supporting the civil protection DIMETRA IP TETRA network across the Autonomous Province of Trento in the far north of Italy.

Originally installed ten years ago, the network was rolled out on behalf of the local government and is a public asset, available to all entities in the province for mission-critical communications. Having started across just a small number of sites for use by local municipal police, the system has grown considerably, more than doubling in size; it now comprises nearly 100 sites and is used by circa 4,000 users across 400 different organisations. Last year an average of 3,700 calls were made over the system every day.

Each municipality in the province often has its own small, separate teams of volunteers; and many of these groups communicate over the network: fire brigades, voluntary fire brigades, forestry rangers, highway maintenance teams, Alpine search and rescue, helicopter rescue services (also with communication between helicopters), earthquake and radio activity monitoring teams and the Trentino Meteorological Service all use the system. Ambulance teams will also join this year, as they migrate from analogue to digital for future-proof and enhanced functionality, such as GPS tracking.

The local Motorola Solutions team in Italy is responsible for the entire network maintenance contract, which covers software and hardware repairs, as well as full system reviews; the team is now working together with Trentino Digitale to upgrade the system from its current 8.1 version to the latest TETRA 9.02 release.

CUSTOMER PROFILE

Organisation:
Trentino Digitale S.p.A.

Industry:
Government

Location:
Trentino, Italy

Motorola Solutions Products:

- DIMETRA™ IP TETRA network
- MTS4, MTS2 and MTS1 TETRA Base Stations
- MTH800 and MTP6650 TETRA Portable Radios
- MTM800 TETRA Mobile Radios (for in-vehicle use)
- Range of radio accessories such as remote speaker microphone, earpieces, headsets and IMPRES™ batteries
- TETRA Integrated Terminal Management (iTM)
- TETRA Dispatch Consoles including headsets and desktop gooseneck microphones
- TETRA Dispatch Communication Server (DCS)
- TETRA Voice Logging Recorder
- Motorola Solutions Maintenance Contract

“We have an excellent, long-term collaboration with Motorola Solutions. The local team provides all the support we need and regularly maintains our system, to ensure we really do have mission-critical communications. One example of this was when the network kept working optimally during a recent emergency, ten years after initial instalment, when mobile networks and 50% of electrical supply failed. That’s also testament to the long-term reliability and robustness of the hardware. No wonder we have an increasing number of organisations keen to join the network.”

Andrea Pisetta, Head of Mission Critical Networks, Corporate Services, Trentino Digitale S.p.A.



CHALLENGE

The Province of Trento extends over 6,000 km² and includes challenging terrain, such as the Dolomites, long tunnels and a huge number of lakes. Trentino Digitale is always looking at ways to improve coverage in the mountainous areas and ensure that radio communications remain optimal in all other areas. Having seen how the network has worked seamlessly in recent crises, despite having been installed ten years ago, Trentino Digitale wants to keep investing in Motorola Solutions’ technology. It also decided to refresh its software to the latest release to ensure continued, future-proof, long-term high performance and increased protection from ever-increasing cyber security threats.

SOLUTION

Trentino Digitale is responsible for ordering and delivering radio handsets to system user groups; it also configures and manages the radios at its HQ via Motorola Solutions’ TETRA Integrated Terminal Management (ITM). The system includes three TETRA dispatch consoles: one at Trentino Digitale’s control room, one at the fire brigade’s control room and one at the local police control room, so the relevant organisations can effectively communicate with, inform and coordinate their teams in the field. Trentino Digitale has also deployed a DIMETRA Dispatch Communication Server (DCS) and a TETRA Voice Logging Recorder in its control room, so it can use a range of specialised team-specific solutions and interfaces, as well as record, archive, search and replay all voice and data communications, including for the fire brigade and police.

With the network expansion, Trentino Digitale has now deployed Motorola Solutions TETRA base stations across 80 fixed sites: 62 MTS4 TETRA Base Stations with integrated site controllers, which interface with Trentino Digitale’s base radios subsystems, all with full redundancy, form the core of the network. There are sixteen further MTS2 Base Stations and two MTS1 Base Stations, as well as one mobile MTS2 for emergency communication via satellite. Trentino Digitale has also established 92 microwave link sites, ranging from 7GHz to 23GHz, for repeat microwave connection; the microwave links are configured with 1+1 hot standby, to improve resilience. Moreover, there are three tunnels in the area that are longer than 3 km; Trentino Digitale has utilised Cell Enhancer technology to ensure continued coverage underground.

As part of Trentino Digitale’s maintenance contract, the local Motorola Solutions Service team is responsible for the careful,

regular and detailed maintenance of hardware, software, backup batteries and emergency generators, of particular significance in the mountainous areas, where power cuts can be quite frequent. Twice yearly they visit each site to check equipment and to discharge all base station site backup batteries, recharge them and measure battery efficiency, replacing any end of life or inefficient batteries and generators with the latest, best-in-class technology. They are also on hand 24/7 in case of any issues or failures.

BENEFITS

Each organisation uses its own logical calling groups, operating on independent channels, although there is also a network-wide group, in case of major incidents. Indeed, in recent years there have been several significant happenings, which have really tested the network. Firstly, a tornado with winds reaching 200 km/h and landslides, which razed thousands of trees and wreaked destruction in the province. Mobile networks failed and mains electricity was lost at half of the repeater sites and yet Motorola Solutions’ was the only network in the area that continued to work optimally on the fully maintained backup batteries and power generators for four days, supporting up to 38,100 group calls daily during the crisis. Secondly, the 91st Adunata nazionale degli Alpini (Alpini National Meeting) took place in Trento. Unexpectedly, over half a million people descended on the city, with Trento Centro (central Trento) subscribers increasing dramatically during the event from 204 subscribers over 39 talk groups, to 1,586 subscribers across 60 groups, with daily group calls peaking at 10,700. Mobile phone networks became oversubscribed, but the flexible, scalable TETRA network continued to work optimally, with a first-time call success rate of over 99.9%.

These are just two examples of innumerable events over the last ten years when the Motorola Solutions DIMETRA IP network has performed optimally in extreme conditions, proving its absolute worth as Trento province’s mission-critical public safety communications system. Moreover, the Motorola Solutions programming and dispatch tools increase productivity and efficiencies for Trentino Digitale. The system has shown itself to be robust, reliable, flexible and scalable; and by renewing its maintenance contract and upgrading to the latest TETRA release, Trentino Digitale is ensuring it will continue to deliver clear, secure, mission-critical communications for an ever-increasing number of groups in the province for many years to come.

Benefits:

- The solution provides reliable, robust wide area coverage and crystal-clear instant communications across 99% of urban and rural zones, with key features such as GPS tracking and emergency calling
- The network has proved essential for providing high-volume, mission-critical, instant communications during recent emergencies – both natural disasters and man-made events – when mobile phone networks have failed or become overloaded
- With full geographic redundancy and 1+1 hot standby microwave links, communications have built in resilience to continue, should a repeater or link site fail
- The system enables effective management of officers and volunteers in the field and emergency calling, so enhancing public and user safety
- Motorola Solutions TETRA devices are robust and reliable, able to withstand daily use in a range of conditions, including extreme weather, and offer long-length battery life
- The system is fully scalable and has grown by 50% since first deployment; Trentino Digitale can easily adapt to users’ needs, adding users and groups to the network
- 3rd party devices can also operate over the network, thanks to the TETRA interoperability of the Motorola Solutions infrastructure
- The local Motorola Solutions Service team is responsible for the overall efficiency of the network, ordinary and extraordinary maintenance of hardware, software, antennas, microwave links, backup batteries and emergency generators; this ensures fast repair or replacement and continuous network operation, even in the case of a major power failure