

Motorola TETRA Solutions

Empowering Mission Critical Agencies and Operations



Motorola - A Trusted Leader in providing Turnkey Digital Communications Solutions



Motorola, a world leader in mobile communications for 65 years, is leading the way in next generation wireless digital solutions that help you transform organisations and enable teams to work smarter, faster, and more reliably - wherever they may be. We are committed to helping you navigate the rapidly changing technology landscape to make your organisation the best it can be, now and in the future.



Delivering the Complete End-to-End Solution

Harnessing over 65 years of innovation, Motorola provides more than just enabling technology. We help you access the rapid, mobile intelligence that is so critical to your operations. We work with our customers from concept to delivery and beyond, to design, integrate, optimise and continuously upgrade solutions that are right for your organisation.

Embedded into every Motorola solution is one non-technical, absolute intangible: **Your Peace of Mind.**

TETRA - Broadening Horizons for Mobile Professionals

TETRA (TErrestrial Trunked RAdio) is a user-driven open standard for next-generation digital mobile communications for professional users, delivering voice, data and messaging services for simple one-to-one or complex group communications. As a founding member of the TETRA Memorandum of Understanding (MoU) Association, Motorola has been actively involved, along with other vendors, in the development of the TETRA standard since its inception, and we are committed to investing in future innovation.

Motorola Dimetra Solutions - Integrated Digital Wireless Solutions for the Professional Organisation

Motorola Dimetra Solutions are the global leader in TETRA compliant wireless solutions. Dimetra equipment, integrated with customer specific applications, combined with professionally managed services provide the high performance, dependable, secure and integrated wireless communications solutions that are essential to the effectiveness of professional mobile organisations.

Leveraging off Motorola's proven technological expertise and market leadership in integrated solutions for demanding mission-critical environments, the Scalable Dimetra portfolio is designed to equip your workteams with an extensive array of voice and data capabilities and dependability when you need it most.

Nov 1994

Motorola demonstrated the world's first TETRA mobile system in 380 - 400 MHz at Motorola, Basingstoke, UK.

Dec 1994

Motorola was a founding member of the TETRA Memorandum of Understanding (MoU) Association. Today the TETRA MoU represents 72 signatories from 24 countries (as at July 2000).

Mar 1996

Motorola was first in the market to install a 'Beta' Test TETRA system in Jersey (380MHz - 400MHz).

Feb 1997

Motorola received world's first commercial TETRA contract for Gardermoen (Oslo) Airport in Norway.

June 1997

Motorola launched the world's first operational multi-site TETRA trial system for evaluation by the States of Jersey Emergency Authorities.

Oct 1997

Motorola was first to demonstrate 'group call interoperability' between its own Dimetra equipment and that of another TETRA manufacturer.



April 1999

The Motorola Dimetra Trial System in Hungary was the first operational TETRA system in the world to benefit from Integrated Voice and Short Data.

May 1999

Motorola and local Hungarian partner Guardware Systems (DPS), achieved the first wireless transfer and positive field identification of fingerprints being compared with a centrally held database over TETRA.

Nov 1999

Motorola's d700 TETRA Handset won best TETRA Product 1999/2000 at the TETRA World Congress in Amsterdam.

Nov 1999

Motorola was the first TETRA manufacturer to support cross border TETRA communications testing between Austria (a Schengen State) and Hungary (a Non-Schengen State).

Feature Rich, Benefit Rich

Scalable

Flexibility and simplicity in deployment and expansion -

Motorola Scalable Dimetra IP system accommodates your changing requirements. Starting from a one-rack switch solution, the system is scalable in size and features. It allows customers to grow from a single to multi-sites and even onto a national scale. The features are as scalable. Customers could start with voice services and add on other services (such as short data, packet data, telephone interconnect, as well as security) as the need arises.

Fast contact -

Scalable Dimetra IP flat mesh packet switched software used in our mission critical systems delivers extremely fast, consistent group call set up times, even across multiple wide area zones, allowing consistently high speed call set up connections.



Scalable Dimetra IP

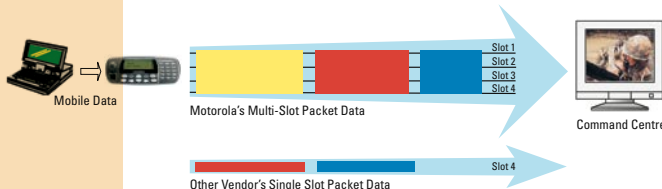
Integrated

Extended communications reach -

With end to end Internet Protocol (IP) connectivity, Dimetra systems let you easily implement or apply IT solutions within your mobile operations.

Higher efficiency packet data -

Dimetra systems, with end-to-end IP configuration, provide the first available packet data service in the TETRA market, keeping you connected and maximising the utilisation of network resources. Applications can simultaneously run in the background without interruption to voice services.



Motorola today supports Multi-Slot Packet Data (MSPD) providing enhanced data services up to four times more data bandwidth over the air. This allows faster database lookup, file and picture transfers, amongst others.

Extensive applications suite -

The Dimetra portfolio supports a wide range of well-documented licensed Application Programming Interfaces (APIs), enabling organisations to connect seamlessly to other telecommunications networks and services, or integrate their operational I.T. applications.

Smart data access and retrieval -

Motorola is able to integrate WAP and GPS based applications as part of our Dimetra solutions portfolio, providing efficient internet information access for mobile workteams.



Reliable

Superior resilience and performance -

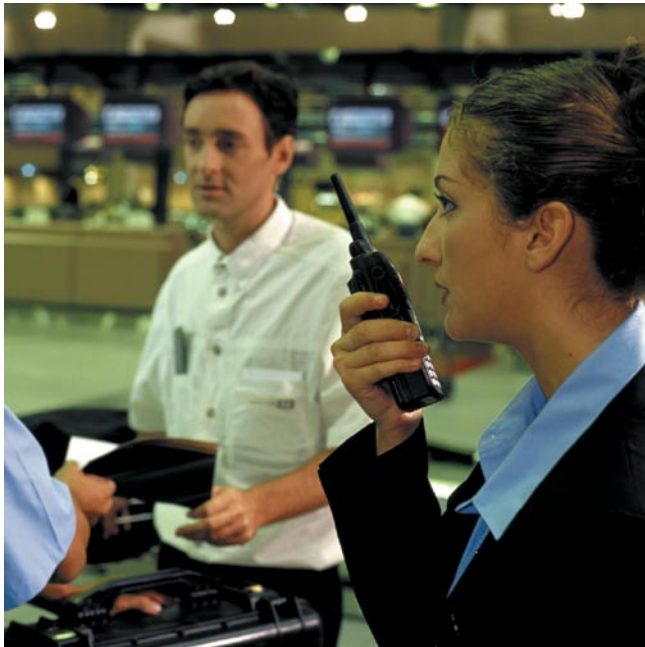
Dimetra base stations provide for intelligent site trunking capabilities, allowing vital communications to continue on a site even if links to the core infrastructure fail. In addition, base stations support base radio and site controller redundancy. With an enhanced receiver sensitivity performance of at least 7dB better than standard TETRA base station, Motorola's next generation base station can achieve significant coverage improvement with fewer sites, without compromising on the grade of service.

MTS 2 and MTS 4 TETRA Base Station



Maximum system availability -

Dimetra's core architecture follows the Internet model of networked servers, ensuring that the system can stay on line during upgrades and expansion, as well as while new services are integrated.



Inherent reliability -

Dimetra systems' key platform components are fault tolerant, ensuring that the network continues to handle and deliver communications under adverse conditions.

Focused

Motorola offers Dimetra system configurations specifically suited to your market demands. When we configure a Dimetra system for mission critical communications, we leverage our extensive experience in Public Safety and Security to delivering network design and feature set capable of addressing the most demanding operational needs.

End-to-end encryption -

Motorola has been successfully implementing encrypted communications for 30 years. Dimetra systems encompass a full range of TETRA compliant encryption solutions to suit your budgets and operational requirements. Authentication and Air Interface Encryption are also offered in Dimetra mission critical systems.

Communications beyond network range -

Direct Mode Operation (DMO) ensures continued communication when you are operating out of the network coverage or in areas with weak signal.

Extensive talk group and subscriber control -

Motorola's advanced IP-based dispatch system helps despatches dynamically manage resources more efficiently, by facilitating the real time creation of new groups, and movement of users and units between groups so as to ensure as effective handling as possible of a particular operational situation.

In addition, Motorola's MCC7500 dispatch console supports cohabitation of Radio Control Manager. This is a network



MCC7500 Dispatch Console

management application capable of supporting radio checks, selective inhibit, dynamic regrouping amongst others.

Security and control -

Virtual Private Networks (VPNs) allow organisations to share a network and still enjoy the security and control they require, without the expense of a dedicated infrastructure. Networks sharing enables organisations to co-ordinate operations through interoperable equipment and common talk groups.



TETRA MTP850 portable radio



TETRA MTM800 mobile radio

Tailored Solutions for Individual Workspace Effectiveness

Even within an organisation focused on one mission, working environments and job performance requirements can vary considerably among individual communications users. The Dimetra portfolio of high quality and award winning radio terminals addresses the needs of individuals, even within a broad community of users.

Tailored for personal effectiveness -

Dimetra products can be selected based on individual user needs such as durability, ergonomics, connectivity among work groups, priority and security of communications.

Customised for performance -

An extensive range of accessories and peripherals incorporating ground breaking technologies that let you further tailor your communications needs in ergonomic and innovative ways.

Mar 2000

British Telecom awarded Motorola the largest ever TETRA based Public Safety contract to supply a nationwide network of over 2500 base sites. Emergency Forces throughout the whole of England, Wales and Scotland will use the network.

April 2000

Motorola's TETRA System in Hungary was deployed to the River Tisza to provide public safety emergency communications to cope with Hungary's worst flooding in living memory.

Oct 2000

Motorola was awarded first ever 800MHz TETRA contract in Asia by Kowloon-Canton Railway Corporation (KCRC), Hong Kong.

Dec 2000

Motorola announced agreement with Damm Frequentis to address small TETRA systems market.

Jan 2001

Motorola led the market with thirty seven signed contracts or operational trials for TETRA systems in twenty four countries. Motorola invested in excess of \$100 million a year in research and development to continually enhance the Dimetra Wireless Solutions Portfolio.

2001

First TETRA contract for rail in Malaysia and the First TETRA rail system to be commissioned in the world - Malaysia Express-Rail Link.

2002

Motorola became the first manufacturer to ship a wide-area fully TETRA over IP network to mm02 Airwave in the UK

2002

First TETRA system for High Speed Rail implementation in the world - Taiwan High Speed Rail and Taiwan Railway Administration

2002

First 800MHz TETRA network project for public safety in Asia - Korea National Police for FIFA World Cup

2003

First and largest TETRA-based Command, Control, and Communications system (CC3) in Asia - Hong Kong Police Force

2003

Motorola was presented the first-ever Interpol Award for "services to the international law enforcement community" at the 72nd Interpol General Assembly in Spain

2004

Motorola selected to supply secure TETRA Public Safety Radio System for the 2004 Athens Olympics

2004

The C2000 is Motorola's largest private radio communications project in the history of the Netherlands - World's first encrypted nationwide mission-critical TETRA network

2004

Largest TETRA system implemented for the seaport industry - Port of Singapore Authority

2005

Largest Mass Rapid Transit contract in Asia - Shanghai Metro

2005

First TETRA-based Public Access Mobile Radio (PAMR) network in Korea - T.On Telecom

2005

First TETRA-based nationwide Government Radio Network (GRN) in Asia - Korea GRN

2006

Largest TETRA city-wide GRN in China - Shanghai GRN

2006

Motorola awarded by Portugal government for a nationwide TETRA network



Delivering Solutions by Integrating Applications

Motorola's relationships with globally recognised market solutions experts enable us to provide a wide range of high quality customer focused applications.

Our Applications Partners undergo a rigorous accreditation and certification process, to deliver the same high quality and reliability standards that you expect from Motorola.

The Dimetra Application Partner Program

The formal accreditation process establishes a partner's ability to develop and integrate applications on Motorola's Dimetra platform. The approval process recognises and certifies the robustness and performance of a partner's Dimetra system application. The partner program delivers a comprehensive and tested Dimetra solutions portfolio embracing all critical aspects of your operational needs.

- Automatic vehicle location
- Computer aided despatch
- Fleet management
- Billing systems
- Command and control systems
- Transport control systems
- Fingerprint biometrics
- Integrated vehicle solutions
- Information management and access
- Customer tailored mobile data solutions (via browsers and WAP) management systems

Optimising Your Investment

Motorola can bring together the right components to create the optimum service package, scaled to your organisational needs.

Motorola professional services include network design and planning, integration, project management and training services to ensure fast implementation and to facilitate fast integration of your Dimetra solution.

Our operations, maintenance and systems management services offer on-going support throughout the lifecycle of your Dimetra system to help your organisation maximise productivity gains and cost savings.

Motorola offers **consultancy services** to help you wirelessly automate your business processes and further leverage your investment to maximise operational and commercial performance.

Choose Motorola Dimetra to deliver intelligence to your operation

Motorola is dedicated to working with you to identify and deliver the right solution for your workteam. We are ready to help your organisation move faster, reach farther, and perform your task with confidence, ensuring peace of mind.

What our customers say

Public Safety

Prior to going ahead with the operational pilot, the Airwave service underwent 7 weeks of extensive scenario testing in Lancashire, involving some 300 police service users. Considering that this was the first opportunity for police officers and support staff to test the system in the operational context, the feedback on the system and the training programme was very encouraging.

"I am convinced that Airwave is the solution to providing the police service with high quality and secure communication, although as we embark on the pilot stage of the project in Lancashire, it is clear that there is still work to be done."

Alan Pitt

User assurance Co-ordinator
Airwave project, UK Police Information

"Enabling the effective and efficient communication of our law enforcement officers is paramount in our priorities. We needed a reliable and long-term solution that provides extensive coverage, is secure, and at the same time, allows for future enhancements. Motorola's TETRA system delivers on our requirements for critical communications."

Dr. Do Xuan Tho

General Director
General Department of Technology
Ministry of Public Security of Vietnam

"Considering the important role that digital radio communication can play in the development of a country's fabric, we needed to be confident that our choice of supplier could provide a mission critical solution that would perform. We also had to be sure that the chosen supplier could be trusted to deliver technological developments as promised and on time. In this respect our past experiences of Motorola's technical capabilities, professional services and assistance have been extremely positive. Motorola has consistently demonstrated that its technology can be relied upon."

M. Mikulic

Chief of the Ministry of Interior
Communications Department
Republic of Croatia

Transit Operations

"Communication plays a significant role in the day-to-day operations of the Express Rail Link. The ERL is the first high-speed train in Malaysia and Motorola's TETRA system will significantly enhance our communication efficiency; enabling us to better monitor and co-ordinate our operations as well as facilitating greater measures for passenger safety."

Dr. Aminuddin Adnan

CEO
Express Rail Link Sdn. Bhd.

"Running an airport is a huge, complex logistical task. The people working here have to be able to communicate well to work together effectively. The TETRA system will make it fast, easy and safe for them to share information which will mean we can operate more effectively and efficiently. Everyone who uses the Eleftherios Venizelos Airport will benefit from faster and more responsive service."

Fotis Karonis

IT and Telecommunications
Manager of the new
Athens International Airport

"Reliability, operational efficiency and safe operation were critical consideration factors. After careful evaluation, we decided on Motorola's dispatch communication system based on their proven track record in TETRA implementations for rail projects. Coupled with Motorola's advanced technology, the new private radio system will enable information and communication to be dispatched in a more effective and secure manner during our daily operations."

Zhu Husheng

Vice President
Shanghai Shentong Metro Co., Ltd.

"Operational efficiency and reliability were key critical factors in selecting a partner for this project. Motorola was selected as the choice partner for its advanced IP-based communication system and subscribers as well as their proven track record in TETRA implementations for government radio network. Multi-government agencies in Korea can communicate as one and better rely on an integrated mission-critical communication network to promptly respond and manage disasters and emergency matters."

Oh Kap Kun

Deputy Director
Korea's National Emergency Management Agency

Ports Operations

"PSA is constantly applying technology to make operations more efficient and speedy for our customers. A reliable, secure and efficient flow of information is vital to our operations, and allows us to deliver consistent and quality service to our customers. We have chosen the Motorola TETRA system because it offers a robust and technologically advanced network that reinforces the excellent connectivity of our four terminals."

Grace Fu

CEO
PSA South East Asia and Japan

Nationwide Network

"TEDA is the largest economic and technology development government body in China. The TETRA-based emergency response communication system will play a significant role in establishing TEDA as a leading government authority in driving new enhancements and investment to promote the region's economic competitiveness and technology development. The TETRA digital trunking system is one critical part of the Emergency Response Communications system that will integrate the command and control communications for emergency crisis management."

Li Yon

Director
TEDA Management Committee



Over 65 years of understanding the needs of our customers.

Over 65 years of wireless communications.

You need a partner who understands what Mission Critical is all about: the lives and well-being of your employees and the citizens they protect. That's why Motorola is a leading provider of interoperable voice and data communications systems for public safety, first responders, and government agencies. We have implemented over 100,000 networks for customers around the world. Along the way we have developed unmatched expertise in wireless networks and systems integration. In 2005 alone, Motorola worldwide spent US\$3.7B on research and development, receiving 21,000 patents along the way.

Our experience, along with our skills, people, partnerships and alliances, allow us to provide innovative, fully integrated technologies that help organisations like yours share vital information with ease and confidence. These technologies are supported by an unparalleled support network, enabling you to maximise the utility of your investment.

We've been doing it for 65 years, and we'll be standing by you for years to come.

We are committed to bring all of our knowledge and technical expertise to bear on the challenges you face so you can focus on what you do best – serving and protecting the public.



www.motorola.com/governmentandenterprise

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