

Brochure



DIMETRA X Core

Mission-critical TETRA communications
for today and tomorrow

TETRA

Terrestrial Trunked Radio (TETRA) is a global digital open standard for Land Mobile Radio (LMR).

The standard was developed by public safety organisations, the two-way radio industry and the European Telecommunications Standards Institute (ETSI). Their goal was to ensure secure, reliable and instant voice and data communications in mission-critical, operations-critical and business-critical environments.

The effectiveness, reliability, security and continuing innovation of TETRA combined with its range of applications, makes it the primary means of mission-critical communication for many public safety agencies, organisations and businesses.



DIMETRA X Core



DIMETRA™ X Core is a highly flexible, reliable and secure TETRA digital radio system, for voice and data, that's scalable from a single site to a national network.

DIMETRA X Core is a mission-critical communications solution for large organisations and public safety agencies. It's based on the TETRA open standard for digital trunked radio technology, the proven DIMETRA TETRA technology from Motorola Solutions, and the three pillars of mission-critical communications: reliability, security and capacity.

Whether your organisation is deploying a mission-critical communications network for the first time, replacing a legacy analogue network or refreshing an existing TETRA network – DIMETRA X Core provides the mission-critical voice and data communications your organisation needs for the next 15 years or more.

As technology develops and as your needs change, DIMETRA X Core's software defined core lets you add new features and capabilities. This extends the value of your DIMETRA system, maximising operational efficiency, safety and security. Your organisation can also take advantage of optional licensed features to tailor the communications solution to your organisation's needs.

A key feature of DIMETRA X Core is its robust and reliable mission-critical voice and data capability, designed to work in the most challenging

environments. Multiple levels of fallback built into DIMETRA X Core helps protect your communications against loss of voice and data services.

Communication solutions also need to offer organisations wide-reaching collaboration so that everyone who needs to be part of a conversation, can be. DIMETRA X Core allows individuals across agencies, regions and even countries to work together. It also enables interoperability with mobile broadband networks.

To help you keep your system operating at peak performance Motorola Solutions offers service and support packages that also include regular DIMETRA software updates. These updates give you access to new capabilities as they are developed and include the latest security updates.

DIMETRA X Core is a system that's been developed, built and supplied by a world leader in critical communications technology. Motorola Solutions has a track record of more than thirty years providing robust, reliable and secure TETRA radio communication solutions. With expertise spanning public safety, transportation, hospitality, energy and more, organisations across the world rely on Motorola Solutions for their mission-critical communications.



Mission-critical communications
Dedicated digital voice and data communications



Robust and resilient
Reliable communications with multiple levels of fallback



Advanced security
Multi-layered security



An expandable solution
Grows with your needs



Effective collaboration
Communicate without barriers



Operate with confidence
Communications your organisation can rely on





Mission-critical communications



Scalable mission-critical communications

DIMETRA X Core is a scalable, reliable and secure TETRA digital radio system that is ready to provide mission-critical voice and data communications.

It has a scalable architecture that allows system design and expansion from one site to 5000, or more. This means DIMETRA X Core can be designed and configured to meet the coverage, capacity and capability needs of a large facility such as an oil refinery, a regional utility company or a national public safety agency.

As technology evolves and business needs change, so can DIMETRA X Core. With a software-defined core that runs on virtual servers, it provides the operational agility required to easily add new features and capabilities.

Deploying or upgrading to a DIMETRA X Core TETRA network will give your organisation the mission-critical voice and data communications it needs for the next 15 years or more.

Mission-critical voice and data

Mission-critical voice and data is the core component of a DIMETRA X Core TETRA solution.

DIMETRA X Core enables organisations to take advantage of an array of voice and data features:

Voice services including group calls, emergency calls and individual calls that allow TETRA radio users to communicate efficiently and effectively.

Short data messaging services such as text messaging that provide an efficient way to share information without impacting voice traffic or IP data.

Multi-slot packet data for when a radio user needs to send large amounts of data. The radio can use up to 4 time slots, increasing data throughput.

Call-out makes alerting people faster and easier. Radio users who receive an alert are also able to respond, and dispatchers can see who has responded or not — and so can call out additional resources if required.

Voice logging for logging, recording and storing voice calls so information can be retrieved for later use.

Location services provide tracking and monitoring of a user's radio location via GNSS for optimising workforce efficiency and safety.

Upgrade to DIMETRA X Core

Refreshing an existing DIMETRA network with DIMETRA X Core enables customers to cost-effectively enhance and prolong the service life of their Radio Access Network (RAN). It's an easy way to maintain mission-critical communications, it enables your organisation to take advantage of the new features and capabilities of DIMETRA X Core and is a smart investment for the collaborative future with mobile broadband, while protecting your investment in your existing RAN.



Land mobile radio

LMR solutions such as TETRA provide a dedicated network, essential for mission-critical communications. Dedicated networks can be tailored to allow organisations to benefit from the 5Cs:

Coverage - designed to meet specific requirements, whether a single-site facility, a multi-site operation, a regional or national network

Capacity - the system is designed to address peak usage, using dedicated licensed spectrum and right-sized to each organisation's specific needs

Cost - predictable costs, no additional airtime fees like those associated with commercial mobile phone networks

Control - a high degree of control over the system requirements, design, priorities, features and operation — allowing a system to be configured for how you need to use it

Capabilities - purpose-built devices and networks, secure communications with core safety and reliability features, and data applications to increase efficiency and productivity



A dedicated network gives your organisation control

Your DIMETRA X Core network is your private, dedicated network.

As a Land Mobile Radio system DIMETRA X Core is your private network, giving your organisation control of the coverage, capacity, cost and capabilities of the network. Your organisation also controls who has access to the network, and who has priority on the network.

Between periods of peak activity, your organisation can save power, and associated operational costs, with Eco mode¹. Eco mode helps your organisation with energy efficiency by monitoring real-time capacity demand of your base stations and temporarily placing base radios that are not required into stand-by mode, to save energy. Base radios in stand-by mode can be instantly brought back into operation in line with your organisation's capacity demands. By being energy efficient, Eco mode could also help you with your sustainability goals and enable your back-up power solutions to last longer in the event of a power outage to your base stations.

You can also tailor the solution with extra capabilities such as dispatch consoles or voice loggers, as well by adding additional licensed features² and third party applications.

All of this means the costs can be managed predictably for the life of the network, as your organisation is in control of your network.

¹ For MTS2 and MTS4 base stations. At least one base radio must be active per base station.

² For the full range of licensed software features, please visit our software features catalogue: motorolasolutions.com/dimetrasoftwarefeatures



Eco mode places base radios that are not required into stand-by mode to save power and associated operational costs





Robust and resilient



Reliability is vital

Designed with advanced architecture and multiple levels of resiliency and redundancy, DIMETRA X Core provides secure, reliable communications in mission-critical, operations-critical and business-critical environments.

For public safety organisations, communication is mission-critical. TETRA technology is relied on by public safety agencies around the world, including police forces, fire and rescue services, and emergency medical services. A DIMETRA X Core TETRA network

provides the lifeline that those at the frontline rely on to keep them safe and complete their missions.

People in business and other organisations also need communications that they can depend on every minute of every day, so they can collaborate efficiently and work productively.

Based on the three pillars of mission-critical communications

DIMETRA X Core is based on the proven TETRA technology relied on by public safety agencies and the three pillars of mission-critical communications: reliability, security and capacity.

Reliability

Many Public Safety organisations use DIMETRA TETRA technology for their critical communications. DIMETRA X Core has been designed and built with inherent hardware and software reliability to provide robust and resilient communications around the clock.

DIMETRA X Core has layers of redundancy and fallback including local and geographic redundancy of the core server, redundant links, Edge Resilience, local site trunking, redundant base radios, as well as Direct Mode Operation (DMO) of the TETRA radios. This layered redundancy capability with fast service recovery of the core and base radios helps maintain communications during disruptions.

Security

A DIMETRA X Core network is secure, with a layered defence architecture that protects both the over-the-air communications and the infrastructure components.

The over-the-air communications are protected by authentication to help ensure that only legitimate users are on the system, as well as Air Interface Encryption (AIE), that protects over-the-air communications and signalling between the radios and base stations. The level

of encryption can be enhanced to include End-to-End hardware based encryption, that protects the voice and data communications between the radio devices, radio dispatchers and the other endpoints of the system.

The infrastructure components are protected: via firewalls between your IT network and your DIMETRA X Core, Operating System (OS) hardening, regular software updates including OS security patches and the latest antivirus protection. Security is also enhanced with multi factor authentication for Linux and Windows devices, site link encryption, centralised log extraction and monitoring support – including auditing and event forwarding to backend Security Information and Event Management (SIEM) systems.

Capacity

As a dedicated network, your DIMETRA X Core network can be configured to your organisation's needs, with the coverage and capacity where it is needed. With management tools, the manager of the system can monitor the available capacity at different sites so that extra base radios can be added as demand increases over time.

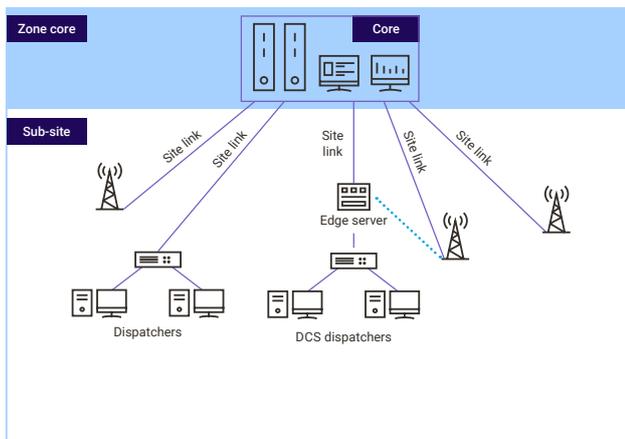


Edge Resilience

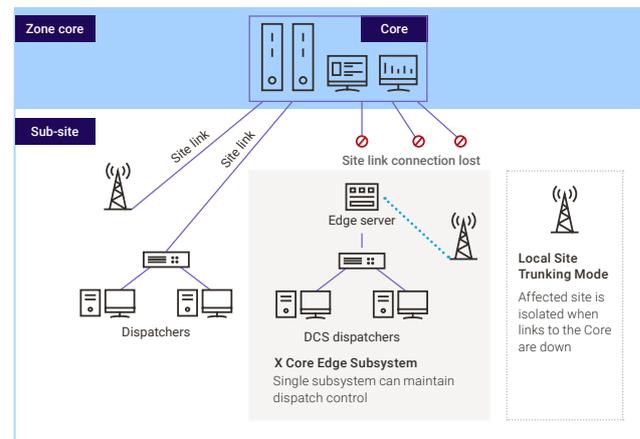
Edge Resilience provides an extra level of resilience to your DIMETRA X Core network. It provides a fallback mode with wide area communications functionality at the local site if links to the DIMETRA Core are unavailable.

During normal operations, the system is connected by site links in trunked mode. If those links are lost, users at each site will normally revert to local site trunking and not be able to communicate with the wider network. This also means that dispatchers on the trunked network won't be able to communicate via their dispatch consoles with users at the affected sites. Edge Resilience installs an Edge server between the DIMETRA core, a local site and dispatchers. In the event that a local site loses connectivity with the main DIMETRA Core, Edge Resilience provides dispatchers with a connection to the local site and full communication with the radios on that site maintaining voice and data services.

DIMETRA X Core network Trunked mode



Fallback operation DIMETRA X Core Edge Resilience maintains communications



Multiple levels of redundancy and resilience

DIMETRA X Core delivers robust and resilient TETRA networks.

Key to the resilience in maintaining mission-critical DIMETRA X Core TETRA communications are its eight levels of fallback. If a failure occurs, control passes to the next level of protection moving outwards from the core.

Redundant core components

All core components are duplicated, so if a component fails, a fall-back component can take over to continue to provide the service.

Local redundancy

Provides an additional server within the same location as the primary server, that can take over if the primary server fails.

Geographic redundancy

Provides additional servers in separate geographic regions, protecting the network from localised failures.

Redundant links

Adding redundant links to the network provides alternative paths that bypass a link that has stopped working.

Edge Resilience

A new capability that preserves communication between dispatchers and a local site if the site's connection to the core goes down. Edge Resilience also maintains the telephone interconnect and the short data functionality.

Local site trunking

Enables each base station to continue to act as a TETRA compliant trunking system, and still enable user-to-user radio communications via the base station, if communication with the core is lost.

Redundant base radio and site controller

If the system detects that an active base radio or site controller has failed, a back-up with complete functionality is switched into service to preserve communications.

Direct Mode Operation (DMO)

The TETRA portable and mobile radios themselves can fallback to direct communication between the radio terminals.





Advanced security

A multi-layered holistic approach

Combating the threats against communication systems and critical infrastructure that are growing in reach and sophistication.

Attackers are becoming increasingly pervasive, persistent and proficient at evading security and disrupting operations. Today's organisations can best combat these threats by adopting a holistic, multi-layered approach to security. DIMETRA X Core follows the United States' National Institute of Standards and Technology (NIST) Cybersecurity Framework³, a recognised international standard.

With this level of security support, DIMETRA X Core helps to keep organisations safe from ever more aggressive attacks.

NIST: protecting organisations, people and assets

The NIST Cybersecurity Framework relies on a risk-based strategy that begins by identifying and reviewing the complete range of risks an organisation faces. It then identifies five steps required to reduce risk or remediate a situation:



Identify
Assess risks



Protect
Develop safeguards



Detect
Make timely discoveries



Respond
Take action



Recover
Restore functionality

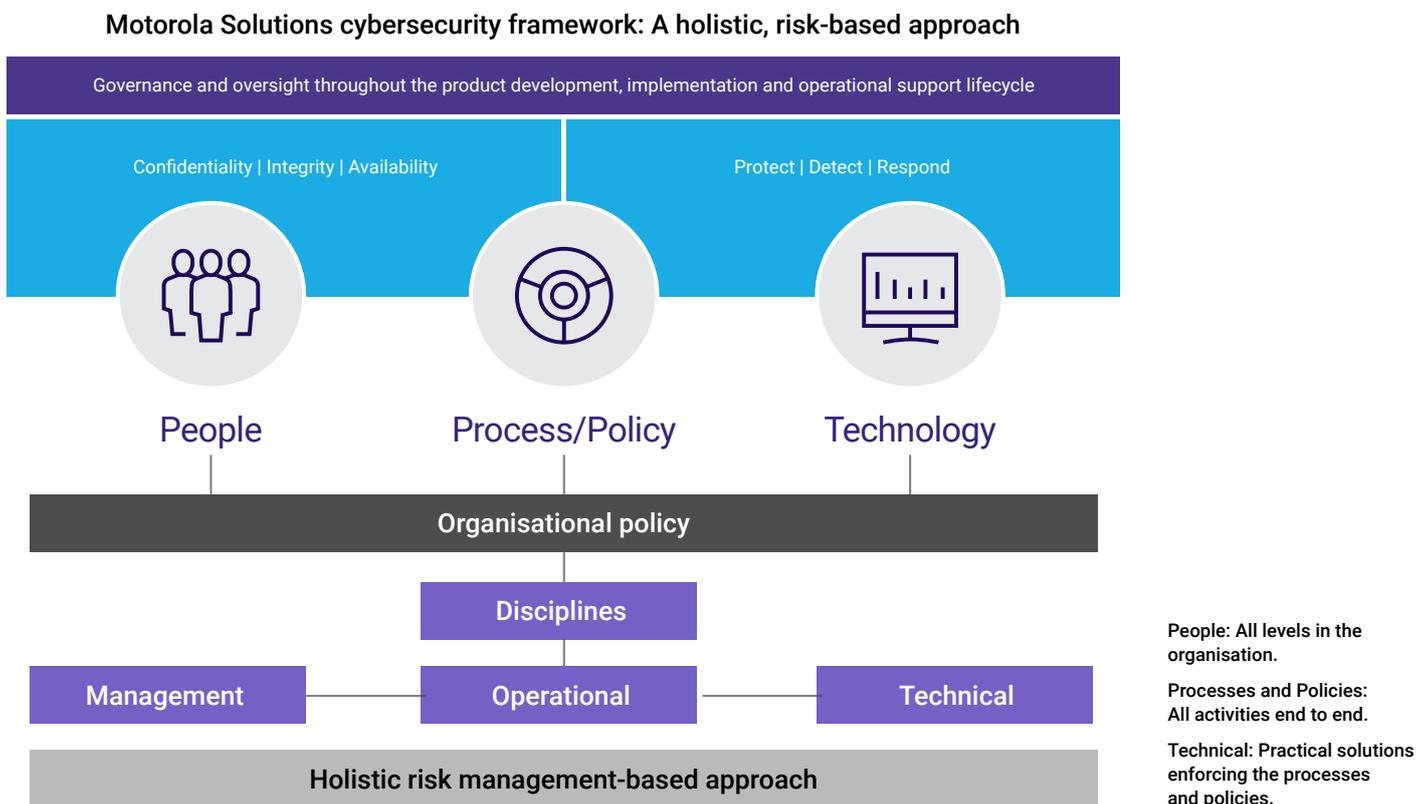
³ <https://www.nist.gov/cyberframework>



Security and protection for the whole system

With DIMETRA X Core, organisations are supported during every phase of the NIST Framework.

The cybersecurity framework applies throughout the lifecycle of a product: product development, implementation and during the operational phase. The three key components – People, Processes and Policies, and Technical Solutions – work together to apply the framework.



DIMETRA X Core helps to keep organisations safe from ever more aggressive cybersecurity attacks.

The integrated cybersecurity protection includes system hardening, networking enforcement points, multi-factor authentication, malware protection supplemented with regular anti-virus updates, operating system (OS) patching and security updates to help protect the core network.⁴

For the purpose of detecting and monitoring anomalies and events, DIMETRA X Core supports: firewall intrusion detection (IDS), the forwarding of alarms to an external Manager of Managers solution, as well as forwarding all

syslog events to an external SIEM (Security Information and Event Management) solution.

Air Interface Encryption protects communications between the radios and the base stations. DIMETRA X Core supports security classes 2 - 3, including class 3G, that can be used to provide cryptographic separation between different radio user groups.

End-to-End Encryption supplements Air Interface Encryption, protecting device-to-device communications throughout the entire network.

⁴ Security updates are included in the Service Packages. Please visit motorolasolutions.com/dimetra-core for more information about the different service and support packages available.





An expandable solution

A system that grows with your needs

DIMETRA X Core can meet your organisation's communication needs today and grow with your changing needs for tomorrow.

It's easy to expand your DIMETRA X Core system by adding Motorola Solutions MTS base stations, additional channels, sites, zones or clusters to increase your coverage and capacity. Extra subscriber radios can also be added to your fleet at any time.

Regular software releases provide new features and functionality that can be added to your system with software upgrades. Your organisation can also add licensed features to enhance the capability of your network.

DIMETRA X Core also supports Application Programming Interfaces (APIs), the software link that allows two applications to communicate. With APIs, solutions can be tailored to specific applications and individual needs using third-party elements. This level of agility enables organisations to extend the value of their DIMETRA X Core radio system to maximise operational efficiency, safety and security.



Enhance and tailor your DIMETRA X Core system with additional capabilities to meet your specific needs.

For the full range of licensed software features, please visit our software features catalogue:

motorolasolutions.com/dimetrasoftwarefeatures



A vast range of optional mission-critical features

In addition to the standard DIMETRA X Core voice and data features, there are a wide array of optional licensed features to help your organisation tailor your communication solution to meet your specific needs.

Data

In addition to the included Packet Data and Multi-Slot Packet Data capability, your organisation can enhance its mission-critical communications with features that optimise the use of data for safer, quicker, more effective responses. Options include the ability to extend the Short Data Messaging Service to a Group Short Data Service for more effective communications across a broadcast region, increase short data capacity with additional licenses, and install a secondary Short Data Router (SDR) as a standby, in the event of failure of the active SDR.

Security

Licensed features include Group Cipher Key (GCK) that provides cryptographic separation between talkgroups for an enhanced level of Air Interface Encryption, and Security Group Partitioning that allows radios, talkgroups and other system elements to be allocated to security groups managed by different system managers.

Control room

Take advantage of advanced control room capabilities with features that improve the efficiency of communications between radio users and dispatchers.

Network operations and management

Maximise network operations and management with features that provide better system visibility, reporting and control of critical assets. Options include Zone Performance reports that allow network managers to produce historical and dynamic usage reports on infrastructure and radio resources, and a System Health Application Suite for analysing traffic patterns and troubleshooting radio and RF Site issues.

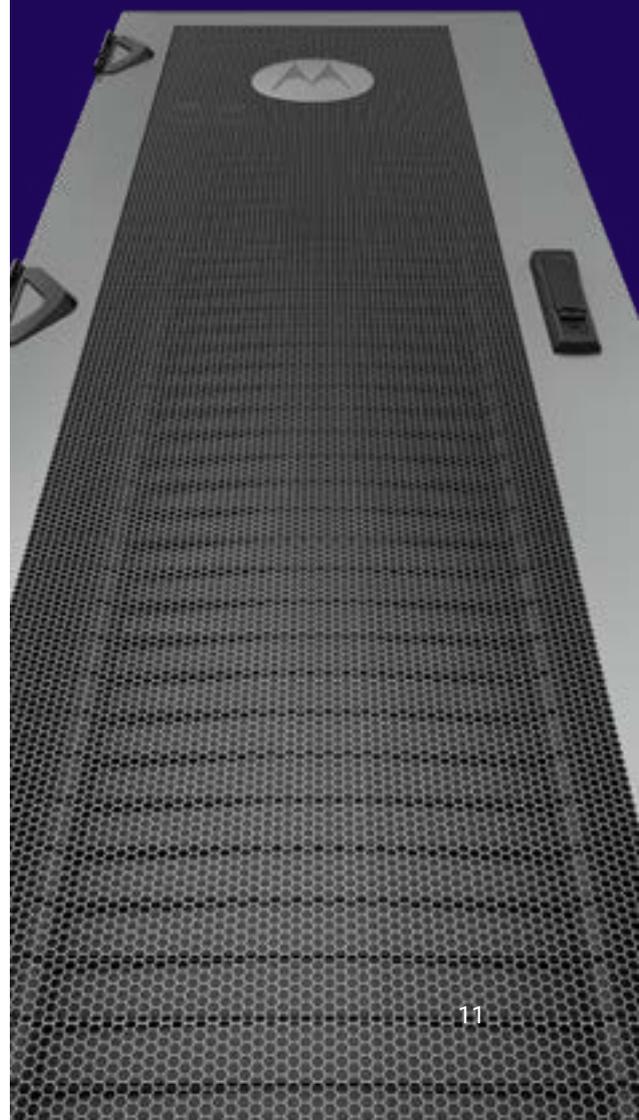
Workforce management

Improve the efficiency of everyday tasks with a range of call management, console telephony, talkgroup, and radio authentication functionality. Features include Object Call that enables radio users to participate in talkgroups that are not programmed in their radio and Agency Priority Matrix that gives selected agencies and users preferential access to RF channels.

ICCA 2019 winner: Best new infrastructure solution

Our innovative DIMETRA X Core solution won the ICCA (International Critical Communication Awards) 2019 award for Best New Infrastructure.

Judges felt this was a great product that combines new as well as tried and trusted technology to enhance the service offering. An example of a state of the art core network that clients clearly trust.





Effective collaboration

DIMETRA X Core enables interoperability

Communication solutions need to offer organisations wide-reaching collaboration capability so that everyone who needs to be part of a conversation can be.

DIMETRA X Core allows individuals across agencies, regions and even countries to work together. It also enables interoperability with mobile broadband networks via DIMETRA Connect⁵ and WAVE PTX™.

Agency partitioning

DIMETRA X Core has the ability for two or more organisations to share the same system securely. Agency Partitioning allows organisations such as a municipal police force and the local fire service to use the same network infrastructure by segmenting it into virtual private networks. If interoperability is required between agencies, this can be immediately and securely provisioned via specific inter-agency talk groups.

The security of communications can be further enhanced through the use of Group Cipher Keys (GCK), that provide cryptographic separation between different user groups within an organisation and between the different organisations using the network.

Cross-border communication

DIMETRA X Core supports the Inter-System Interface (ISI), a solution that helps radio users at the border of two radio networks connect and work together. With ISI, people can use their own radio on both networks so they can communicate with colleagues in their own organisation as easily as with people on the other network.

Inter-System Interface (ISI) in action

Motorola Solutions was one of the driving forces behind cross-border collaboration in the Nordic region. Norway, Sweden and Finland have their own independent public safety TETRA networks. ISI enables Norwegian radio users to communicate with their and Swedish and Finnish colleagues for cross-border public safety collaboration.

⁵ For more information about DIMETRA Connect visit: motorolasolutions.com/dimetraconnect



DIMETRA Connect enables users to stay connected with their team – even outside of TETRA coverage

There are occasions when TETRA Device users may need to temporarily go beyond the range of their TETRA network coverage. They may need to temporarily work in a heavily built-up area, deep inside a building, or even outside their own country or region. In these situations a DIMETRA Connect-enabled device, such as the MXP660, can use its broadband capabilities to keep users connected.

Even outside of TETRA coverage, DIMETRA Connect⁶ enables users to stay connected with their team, maintaining their usual workflows.

When there is no TETRA coverage, a DIMETRA-Connect enabled device automatically switches to an available broadband network such as LTE or Wi-Fi. End users maintain their TETRA features and usual workflows as TETRA packets are routed via broadband. TETRA remains the preferred bearer for all critical communications and the device will automatically switch back to TETRA when a stable connection is available.

WAVE PTX enables smartphone and broadband devices on your radio network

WAVE PTX allows those who rely on smartphones and broadband devices to benefit from the same PTT communications as those using TETRA radios, accelerating the flow of information for faster, more coordinated workflows.

DIMETRA X Core interoperates with our WAVE PTX solution – a carrier-independent broadband PTT service that enhances team communication by instantly connecting your people at the push of a button. This solution connects teams over a wide geographical area, enabling everyone to communicate together: from the field engineer using a TETRA radio on site, to the operations director using a smartphone from home or in the office.

DIMETRA Connect and WAVE PTX working together

DIMETRA Connect and WAVE PTX are complementary solutions. When a TETRA device user is outside of LMR coverage, DIMETRA Connect helps them stay connected, via broadband, to team members who are using WAVE PTX on their smartphones or other broadband devices. The result is increased efficiency, improved productivity and greater collaboration for organisations of all sizes.

⁶ For more information about DIMETRA Connect visit: motorolasolutions.com/dimetraconnect

Telecom CLM: Connecting agencies and organisations

One of Spain's top telecommunications providers, Telecom CLM, was one of the first to migrate to DIMETRA X Core. The company, based in Castilla-La Mancha, is leveraging mobile broadband interoperability via WAVE PTX Radio Gateway to expand the network user base, allowing dozens of public safety agencies to join the regional network. The transition to DIMETRA X Core is helping public safety agencies react faster and be their best in critical moments. As well as connecting first responders, the new system also supports mission-critical communications for enterprise organisations. Its robust infrastructure with enhanced cyber security features to protect from ever increasing threats will support Castilla-La Mancha's critical communication needs for years to come.





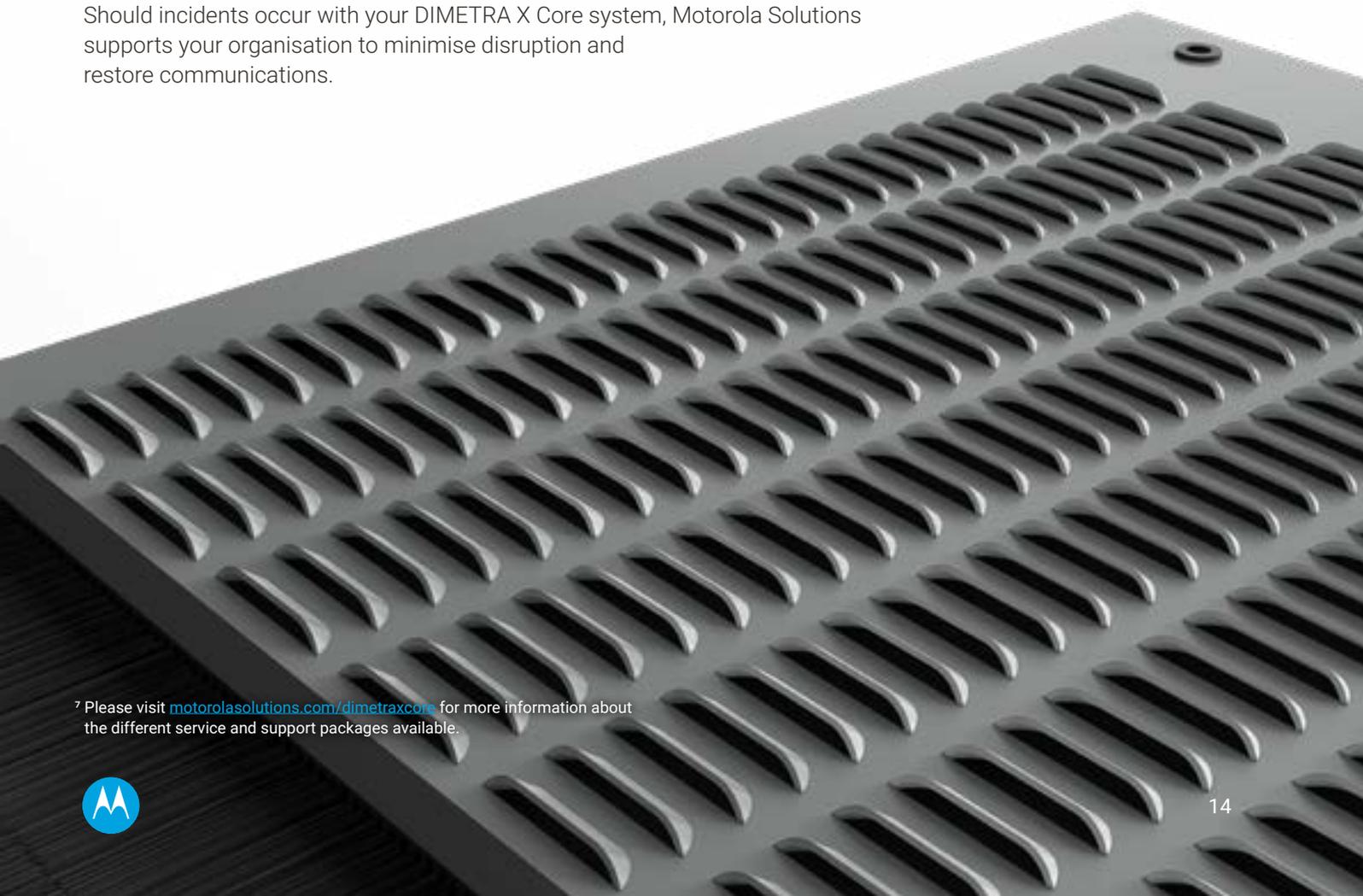
Operate in confidence

Keep systems operating at peak performance

Rely on us to help you achieve your performance targets with our service and support packages.

From Essential to Premier, each service package⁷ transfers to Motorola Solutions a higher level of risk and responsibility for keeping your network operational.

Should incidents occur with your DIMETRA X Core system, Motorola Solutions supports your organisation to minimise disruption and restore communications.



⁷ Please visit motorolasolutions.com/dimetraxcore for more information about the different service and support packages available.



DIMETRA X Core Deployable

Based on the proven DIMETRA mission critical communications technology, DIMETRA X Core Deployable is a secure digital radio communications system designed to meet the unique needs of military, defence and security organisations. Customised to each organisation's requirements it gives them the dynamic and deployable radio communications system they need.

For more information please visit motorolasolutions.com/dimetra-core-deployable



Trust a world leader in TETRA

The DIMETRA X Core solution is built on a strong heritage of more than thirty years of proven DIMETRA technology.

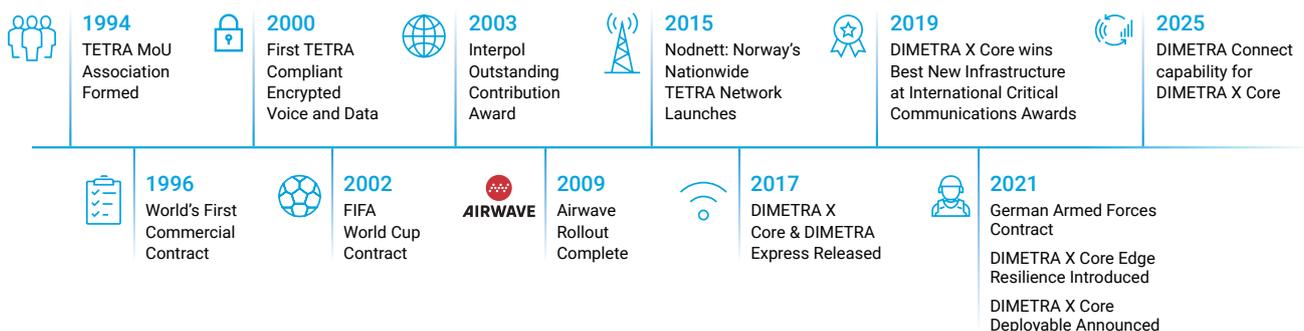
Motorola Solutions has been developing robust, reliable TETRA communication solutions for over thirty years and in that time has deployed over one thousand DIMETRA systems in over a hundred countries. Motorola Solutions are one of the founders of TETRA and have helped to develop it into a recognised ETSI standard for mission-critical compatibility and interoperability. As a market leader, we continue to invest in DIMETRA TETRA technology and deliver new features and capabilities such as Edge Resilience and DIMETRA X Core Deployable.

Deploying or upgrading to a DIMETRA X Core TETRA network will provide your organisation with mission-critical TETRA communications for today and tomorrow.

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A history of leadership

Over thirty years of DIMETRA and TETRA. Our timeline charts the milestones along the way.





For more information, please visit
motorolasolutions.com/dimetra-core



Some of the capabilities mentioned in this brochure require a license. Please see the full list of licensed capabilities for DIMETRA X Core at:
motorolasolutions.com/dimetrasoftwarefeatures

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