ACCESSNET®-T IP

For professional TETRA communications

ACCESSNET®-T IP is the comprehensive and efficient solution
for all professional mobile radio applications.

TETRA

TCCA
TETRA + Critical Communications Association

ACCESSNET®-T IP
For professional TETRA Communications

TETRA " Germany Technology"
Hytera Mobilfunk GmbH is a German supplier of solutions and products in the field of Professional Mobile Radio (PMR). As a known specialist for mobile radio technology, we have been pioneers of professional digital mobile radio systems for more than 30 years and are one of the world's leading manufacturers of TETRA infrastructure components. The expertise of our company lies in the development, planning and implementation of digital trunked radio systems. Each of our mobile radio systems is a customised solution with optimum performance.

Well-proven all over the world
TETRA radio systems by Hytera Mobilfunk GmbH offer a maximum of flexibility and reliability for voice and data communications of professional users.

Flexible and Robust system

The ACCESSNET®-T IP TETRA radio system by Hytera Mobilfunk GmbH is a highly scalable digital TETRA mobile radio system for all applications in the field of Professional Mobile Radio (PMR). It has a non-hierarchical meshed network architecture making it independent from topological constraints. It can be used to implement structures ranging from single-cell systems up to nationwide networks. ACCESSNET®-T IP supports decentralized as well as centralized network architectures, enabling it to satisfy all user requirements optimally.

We tailored the system architecture to meet the requirements of the professional mobile radio (PMR) market. ACCESSNET®-T IP provides unsurpassed system availability based on an elaborate redundancy concept and exceptional robustness. The flexible network structure and the system design enable scalable solutions tailored to meet the wide range of availability and capacity requirements existing within the overall system.

Consistent use of advanced IP technology

ACCESSNET®-T IP employs state-of-the-art IP technology for its signaling, management and communications functions. The use of IP routing rather than static routing helps to avoid bottlenecks and single points of failure within the overall solution.

Powerful applications

ACCESSNET®-T IP supports you with the implementation of powerful applications for all requirements. The IP approach lets the applications easily access ACCESSNET®-T IP's comprehensive voice and data services.

Applications run with the ACCESSNET®-T IP system are operating independently from the system and use standard interfaces and protocols. They can be run at remote sites using conventional transmission links such as LAN or WAN. ACCESSNET®-T IP allows you the implementation of customized TETRA solutions based on standardized products.

ACCESSNET®-T IP supports multiple simultaneous applications. It also provides you with comprehensive functionality for monitoring the transmission links between the TETRA system and its applications and for detecting unauthorized access. Further more, the application interface includes mechanisms that isolate the TETRA system from its applications reliably, thus granting you a maximum of stability and security.

We developed ACCESSNET®-T IP in compliance with the specifications issued by the European Telecommunications Standards Institute (ETSI) and it meets all the requirements of the internationally recognized ETSI TETRA standard.

Benefits and key features

Use of existing IP infrastructure

- The IP-based interconnection of the individual network elements allows you the use of existing IP infrastructure, which makes extra transmission links superfluous and saves expenses
- High-quality IP networks for voice communications already exist at many sites

Network architecture designed for flexibility

- Decentralized or centralized network topology offers you unsurpassed flexibility by means of network design and customization of the system according to your needs
- Ultimate flexibility: distribution of gateways and network transitions can be customized across decentralized network nodes according to your needs

System growing in step with requirements

- ACCESSNET®-T IP can be flexibly scaled – from single-cell systems up to nationwide networks

Secure, reliable and failure-resistant

- Excellent voice quality due to the use of digital TETRA technology
- Support of TETRA encryption (E2EE and AIE) and authentication
- Unsurpassed system reliability due to intelligent redundancy concept and robust system design

Our customers in all industries worldwide; in public safety as well as in the industry, benefit from the high network availability, communication security and application capability of ACCESSNET®-T IP.

System Architecture

Flexibility for tailor-made TETRA solutions

The unique, modular system design of the innovative ACCESSNET®-T IP by Hytera Mobil funk GmbH enables us to design the TETRA system exactly according to your specific requirements. The system design allows distributed as well as centralised architectures.

With centralised systems, the switching of voice and data as well as the transition to external networks such as PABX/PSTN is implemented at a central point in the system. The centralised switching architecture is the classic model for switching in a mobile communications system.

The distributed variant of the ACCESSNET®-T IP provides you with a larger flexibility in designing the system due to the possibility of implementing switching functions and gateways at any desired point in the system; this is done by distributing the operative function blocks to the various network elements. Apart from the increased flexibility, the distributed architecture offers an increased robustness of the systems against the failure of individual locations.
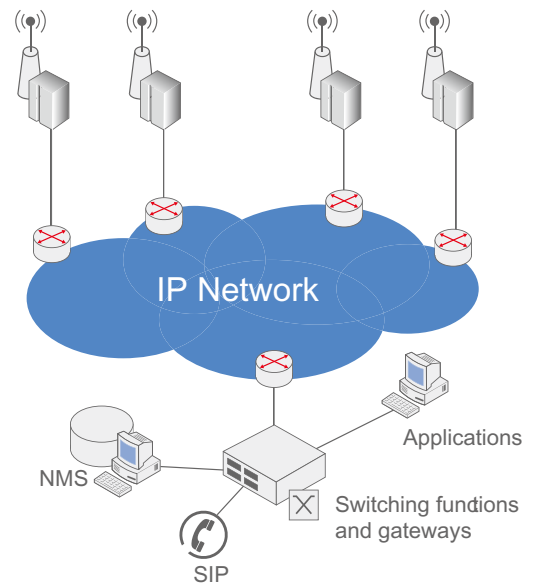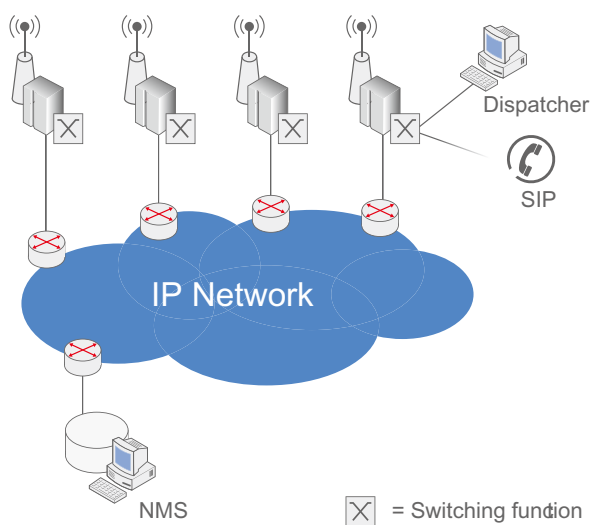
Chracteristics of the distributed switching function

- No separate or proprietary switching hardware in the TETRA network needed
- Highest robustness against failure of the transmission network by distributed intelligence
- Fast re-arrangement of base stations and split-os of network sections possible (sub-networks)
- Useable for mobile deployment scenarios as needed in crisis situations or at major events (military, Public Safety and humanitarian missions)
- Flexible deployment of system gateways / interfaces to external systems, even within the base station

Characteristics of the centralised switching architecture

- COTS platform for switching software
- Central high capacity telephony and application gateways (Session Initiation Protocol, SIP)
- Highest availability for central network node (IPN) through redundant design of all critical components (geo-redundancy of components is possible)
- Redundant connections to PABX/PSTN and applications
- Cost-eective use of server hardware - multiple functions are combined on high-performing servers
- Servers provide high capacity gateways Optimised bandwidth on the radio sites

ACCESSNET®
TETRA Base Station

Base Station

DIB-500

ACCESSNET®-T IP
Digital Indoor Base Station

The ACCESSNET®-T IP DIB-500 R4.1 developed by Hytera Mobilfunk GmbH is the TETRA base station used in ACCESSNET®-T IP. The air interface of the ACCESSNET®-T IP DIB-500 R4.1 is implemented in compliance with the EN 300 392-2 specification (TETRA Voice plus Data (V+D); Part 2: Air Interface (AI)). Thus the base station is completely compliant to the TETRA standard; this ensures that terminal equipment of any vendor can be used.

ACCESSNET®-T IP
TETRA Base Station ▶▶

In a radio system, the base station is responsible for providing radio coverage for a specific area. It includes the air interface that enables wireless communications between subscribers.

DIB-500 at a glance

- **High radio characteristics**
  up to 50 W output power at TX output of transceiver module (TETRA-modulated), outstanding receiver sensitivity
- **Reliable network coverage**
  and dependable availability
- **Comprehensive Fallback functionality**
  and autonomous operation without restrictions
- **Switching functionality on the base station**
  due to integrated, powerful processing unit
- **Scalable**
  from one to eight carriers
- **Full remote monitoring**
  of modules and components; centralized display in Network Management System (NMS)
- **Configurable external alarm inputs and outputs**
  therefore convenient site monitoring and monitoring of external components via Network Management System is possible
- **Support of a large number of antenna configurations**
  for all fields of application, for example many configurations with leaky feeder for in-house and tunnel coverage are available
- **Exceptional modularity, compactness and energy efficiency**
  result in minimum site requirements and low cost of ownership for the operator

IP Node

IPN

**ACCESSNET®-T IP
IP Node**

IPN is the flexible server concept developed by Hytera Mobilfunk GmbH for all centralized system functions within the ACCESSNET®-T IP. The different system functions such as switching, gateways to other networks, applications, and network databases are implemented fully software-based on standard hardware elements. Therefore capacity and scope of services of the IPN can be adapted and extended according to your needs at any time.

ACCESSNET®-T IP Switching and application server ▶▶

The IP Node (IPN) is a network element of the TETRA ACCESSNET®-T IP radio system by Hytera Mobilfunk GmbH and acts as provider of the switching function, as a server for the Network Management System (NMS) and as an application server for the dispatcher and voice recorder, for example.

The IPN is equipped with hardware according to the output requirements and network capacity to adapt it flexibly to your needs. Thus, depending on the respective requirements, the 19" equipment rack houses a variable number of IPN servers and further components.

IPN at a glance:

Server concept for system functions

In ACCESSNET®-T-IP networks with a centralized switching function, the IPN operates as a classical system controller node. In this case, an IPN server takes over the software-based switching functions. In addition, additional servers can be integrated to provide additional functions such as telephone interfaces (PABX / PSTN) or applications like dispatchers.

Flexibly expandable

Depending on the desired scope of functions, the IPN can be expanded by additional hardware. If a second IPN equipment rack is required, the two equipment racks can be stacked to save space.

The IP Node (IPN) makes servers available for various functions in the ACCESSNET®-T IP. It provides the network database and serves as a platform for applications. In networks with a centralized system controller node, the IP Node is responsible for the switching functions.

Network Manage-ment

NMS-500

**ACCESSNET®-T IP
Network Management System**

Our network management system is complete. There are Network Management Clients (NMCs) for all tasks of network administration and configuration available. We apply the different NMCs according to your needs and the functional range of your TETRA-System.

ACCESSNET®-T IP System control and administration ⠶

NMS is the network management system for the TETRA mobile radio system ACCESSNET®-T IP by Hytera Mobilfunk GmbH. With this software package, you manage all the functions, network elements and subscribers of your mobile radio solution. For every TETRA solution, we supply a useful NMS package with all modules required for the respective system. Thanks to the modular design, we can expand it if needed and adapt it perfectly to your system.

Overview of the technology

The NMS is based on an almost limitless scalable client-server structure. This allows the system to access from a central location as well as distributed locations within the ACCESSNET®-T IP network – no matter how complex your mobile radio solution may be.

All clients access the current data provided by the NMS servers via IP networking. The architecture protects your mobile radio network against data loss, optimizes the workflow and offers you control features that are demand-oriented and configurable in any ways.

System architecture of the NMS

Combining all the management functions of a system on a single PC carries a high risk. For this reason, the functions of the NMS can be distributed in the network to different units that are communicating with each other: the system remains fully functional even if individual components should fail.

Benefits and key features:

- User-friendly software for the management of your Hytera mobile radio solution
- Flexible management of all functions, network elements and subscribers (spatially / technically separated or central)
- Modular structure scalable to user-defined system sizes
- Highly configurable, data access via robust IP networking
- Maximum data availability and security
- Highly automated, reliable data flows
- Uncomplicated coupling and monitoring of external system components
- Detailed access control to the NMS to protect the system
- User interface (GUI) of the NMS client is already available in many languages, additional languages possible upon customer request
- Extensive customer support

Dispatching System

DWS

Overview of DWS

The ACCESSNET-DWS is a TETRA-based digital dispatch system featuring plug-in design and providing remote dispatch and management capabilities. It is applicable for industries and sectors such as manufacture, energy, public security, transport, finance, water conservancy, social work and military. Via the ACCESSNET-DWS, the urgent notice and command can be sent quickly and effectively to the target, and the status of end users are displayed in the ACCESSNET-DWS

ACCESSNET-DWS ▶▶

Key features:

Dispatch Feature
Via this feature portfolio, the user can implement daily dispatch duties, such as alarm receiving, responding, disposing and dispatching, monitoring, reporting, etc.

Monitor Feature
This feature allow the user acquire the location information, call status, on/off status of the terminal in a real-time way.

Auxiliary Feature
Via this feature portfolio, the user can manage the ACCESSNET-DWS.

The DSS window allows you to view the status of the DWS (server).

Multi-way Call Window (Client).

Recording System

DVRS
Overview of DVRS

Nowadays, public safety, security organizations – all these entities face the challenge of providing the communication evidence for post-event analysis and investigative purpose, or even of replaying a call to the dispatcher. In this case, voice and data recording ranks as most critical application in the digital radio system.

Hytera Digital Voice Recording System ("DVRS") is designed to address your problems now-and in the future. It is an IP-based professional digital audio recording solution, delivering precise call and data recording, legally accessible recordings , detailed scenario reconstructions, call statistics and backup. This system is comprised of the Recording Server, Database Server, Web Server, Search & Playback Terminal ("SPT") and Storage Array (optional). It easily integrates with the TETRA network at system level.

Digital Voice Recording System ▶▶

Key features

Basic recording management:
Capturing a Call/Retrieving a Recording/Replaying a Recording/ Downloading a Recording/ Tagging a Recording/ Exporting the Recording List

Settings management:
User Settings/Recording Settings/General Settings

Logs & Report
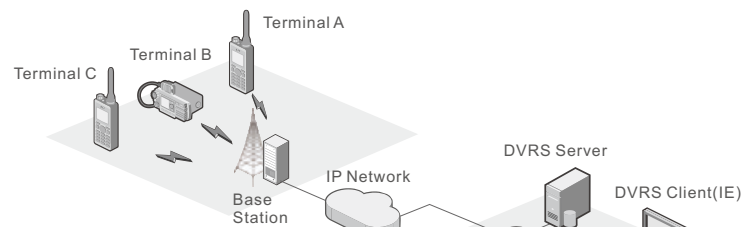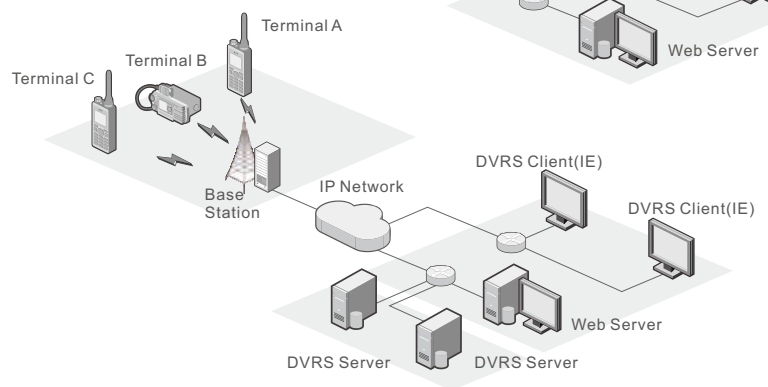Logs Service/ Statistics Service/ Exporting a report

Status & Alarm monitoring

Short Data Service
Configuring the Message/Capturing the Message/Exporting the Message List

Stand-alone Scheme

Terminal A
Terminal B
Terminal C
Base Station
IP Network
DVRS Server
DVRS Client(IE)
Web Server

Active-Standby Scheme

Terminal A
Terminal B
Terminal C
Base Station
IP Network
DVRS Client(IE)
DVRS Client(IE)
Web Server
DVRS Server
DVRS Server

Hytera
Respond & Achieve