



## ACCESSNET®-T IP

TETRA system technology from Hytera

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





At a glance

## ACCESSNET®-T IP For professional TETRA communication

### **TETRA "Made in Germany"**

Hytera Mobilfunk GmbH is a German supplier of solutions and products in the field of Professional Mobile Radio (PMR). As a well-known specialist in mobile radio technology, we have been pioneers of professional digital mobile radio systems for more than 35 years, and we are one of the world's leading manufacturers of TETRA infrastructure components. Our core competence lies in the development, planning and implementation of digital trunked radio systems. Each of our mobile radio systems is a customized solution with optimal performance.

### **Well-proven all over the world**

TETRA mobile radio systems from Hytera Mobilfunk GmbH provide maximum flexibility and reliability for voice and data communications of professional users.

### **System architecture**

ACCESSNET®-T IP, the TETRA radio system from Hytera Mobilfunk GmbH, is a highly scalable, digital TETRA mobile radio system for all professional mobile radio applications. It features a non-hierarchical meshed network architecture making it independent from topological constraints. ACCESSNET®-T IP can be deployed as a small single-cell system up to a large, nationwide network. The system supports both centralized and decentralized network architectures to ensure that all your requirements can be optimally met.

We have tailored the architecture of ACCESSNET®-T IP for the professional mobile radio (PMR) market. It provides unsurpassed system availability based on an elaborate redundancy concept and exceptional robustness against external influences. The flexible architecture and the system design permit scalable solutions that are precisely tailored to wide-ranging availability and capacity requirements within the overall system.

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

## Characteristics and benefits

### Consistent use of state-of-the-art technology

ACCESSNET®-T IP uses state-of-the-art IP technology for its signalling, management and communications functions. Instead of static routes, the IP routing eliminates bottlenecks and "Single Points of Failure" within the overall solution.

### Powerful applications

ACCESSNET®-T IP provides powerful applications for each use case. Due to the comprehensive IP approach, applications are given comprehensive access to the data and services of the ACCESSNET®-T IP in a very simple way.

Applications running with the ACCESSNET®-T IP system are operating independently from the system and use standard interfaces and protocols. They can be operated at remote sites via the usual transmission links, such as LAN or WAN. The simple integration of applications in the ACCESSNET®-T IP permits customized TETRA solutions on the basis of standardized products.

ACCESSNET®-T IP supports multiple simultaneous applications and also provides comprehensive mechanisms for monitoring the connection between the application and the TETRA system as well as for checking for unauthorized access. To achieve a maximum of security and stability, the application interface ensures reliable separation between the TETRA system and application.

### Main features and benefits

#### 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-grade IP networks for voice communication already exist at many sites

#### Network architecture designed for flexibility

- Decentralized or centralized network topologies offer flexibility in network design and adaptation of the system to customer requirements
- Flexible distribution of the gateways according to individual requirements is possible in all nodes

#### The system grows with demands

- ACCESSNET®-T IP can be scaled flexibly in line with demands, from single-cell systems to nationwide networks

#### Secure and resilient to errors

- Excellent voice quality due to digital TETRA technology
- Supports TETRA encryption (E2EE and AIE) and authentication
- Maximum system reliability due to intelligent redundancy functions and robust system design



The high network availability, communication security and application capability of ACCESSNET®-T IP benefit our customers in all sectors around the world; in public security as well as in industry.

# System architecture

## At a glance

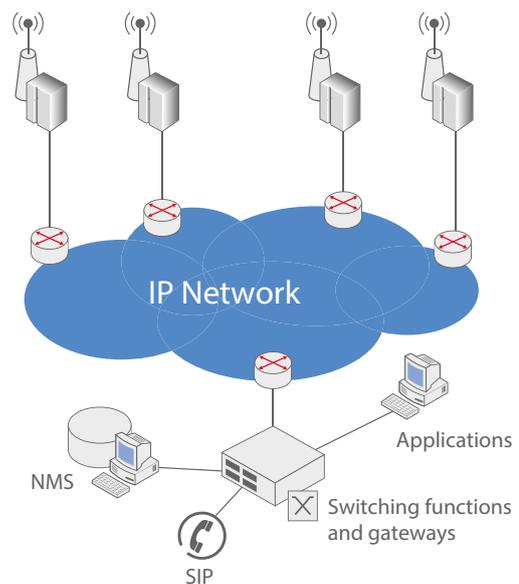
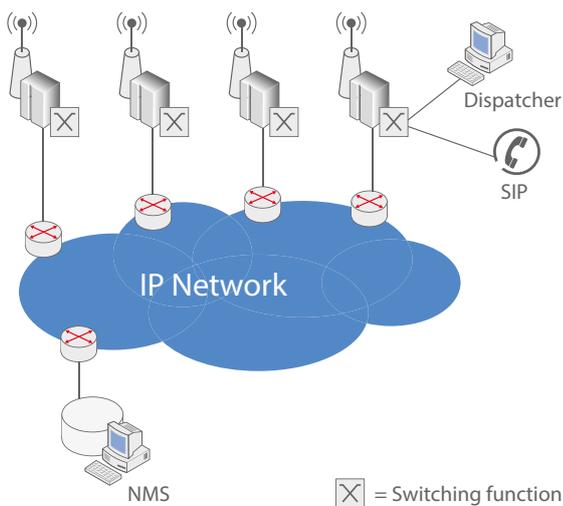
### Flexibility for tailor-made TETRA solutions

The unique modular system design of the ACCESSNET®-T IP permits the design of the TETRA systems exactly in line with your requirements. The system design permits both distributed and also centralized architectures for flexible adaptation of the TETRA system to customer wishes.

In centralized systems, switching of voice and data as well as the transition to external networks (gateways) such as PABX/PSTN are implemented at a central point in the system. The centralized switching architecture is the classical model in the world of telecommunications.

The distributed switching architecture of ACCESSNET®-T IP permits greater flexibility in designing the system through the possibility of implementing switching functions and gateways at any points in the system.

For example, the software-based switching function can be operated on a dedicated server or directly on a base station. In addition to the increased flexibility, the distributed architecture offers greater system robustness against the failure of individual sites.



### Characteristics of the distributed switching architecture

- No separate or proprietary switching hardware in the network
- Maximum robustness against faults in the transport network due to distributed intelligence
- Rapid reorganization of base stations and distribution into sub networks possible
- Suitable for rapid deployment scenarios for fast implementation of TETRA systems in crisis situations or in the event of disasters, for example
- Flexible provision of interfaces to external systems, even within the base station

### Characteristics of the centralized switching function

- Commercially available server for software-based switching function
- Central telephone and application interfaces with high capacity
- Maximum availability of the centralized network node (IP Node) through redundant system architecture (geographical redundancy possible)
- Redundant connection of PABX and applications
- Interfaces with high capacity – software functions can be combined on powerful servers
- Optimized bandwidth "of the last mile" to the base stations

# Base Station

## DIB-R5

### ACCESSNET®-T IP Digital Integrated Base Station

Reliable radio coverage is the most important basis for a mission-critical radio system. The DIB-R5 provides top-of-class radio performance and supports redundant operation without a single point of failure.

The DIB-R5 corresponds to the latest specification for TETRA Release 2 and the TETRA Enhanced Data Service (TEDS). This makes the base station not only the perfect selection for the design of a TETRA mobile radio system, but also for integrated high-performance data applications.



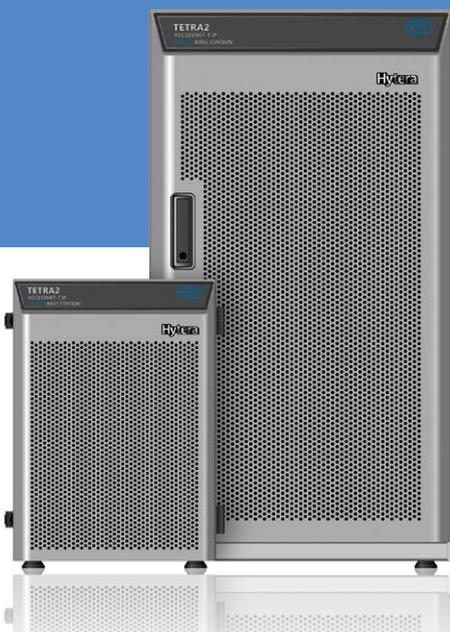
## ACCESSNET®-T IP TETRA base station

The DIB-R5 is the latest generation of reliable and powerful base stations by Hytera for ACCESSNET®-T IP TETRA radio systems. Pioneering TETRA Release 2 and TEDS capability makes the DIB-R5 highly attractive for all scenarios where availability and high-speed data capability are essential.

The DIB-R5 supports the highest sensitivity with 3-way receiver (Rx) diversity to optimize the radio characteristics of the base stations and to reduce the number of base stations required to cover a certain area. Different RF antenna coupling system configurations are supported, including motor tuned cavity combiner allowing remote frequency change. With its high output rating of 25 W PSK modulated with cavity combiner at the antenna connector, reliable coverage is ensured. Up to four RF carriers are supported in one equipment rack and up to eight carriers with a further equipment rack (for DIB-R5 advanced)

### Main features

- 25 W TETRA 1/PSK and 10 W TEDS/QAM at the antenna connector
- The transceiver can be programmed to support either TETRA 1/PSK or TEDS/QAM
- Up to 150 kHz RF radio bandwidth for TETRA Enhanced Data Service (TEDS)
- Sophisticated RF distribution system with 3-way diversity
- Motor tuned cavity combiner for DIB-R5 advanced
- Remote software updates
- Operation without GNSS/GPS with PTP precision time
- Full redundancy option (controller, transceiver, power supply)
- Operating temperature range -30 °C to +55 °C
- Supports distributed switching architecture without central nodes
- Fallback operation with complete scope of functions
- All configuration parameters can be set remotely
- Sophisticated jamming detection
- Hot-swap capability for controller and transceiver module



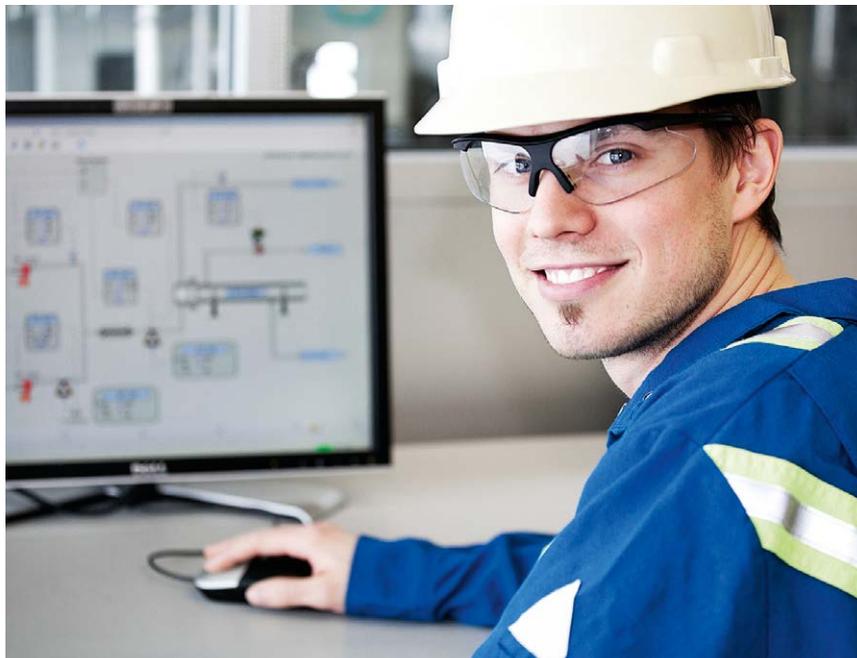
# IP Node

## IPN

### ACCESSNET®-T IP IP Node

The IPN is the flexible server concept we have developed for implementing the central system functions in the ACCESSNET®-T IP.

The various system functions, such as the switching function, gateways to other networks and systems as well as applications and network databases, are implemented in the IP node completely software-based on standard hardware. This means that the capacity and scope of supply of the IP Node can be adapted and expanded according to customer requirements 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 from Hytera Mobilfunk GmbH and is used to provide the switching function, as a server for the Network Management System (NMS) and as a platform for applications for the dispatcher and voice recorder, for example.

Depending on performance requirements and network capacity, the IP node can be equipped with hardware to adapt it flexibly to customer requirements. The 19" equipment rack can therefore accommodate different numbers of servers and further components as necessary.

### IPN at a glance:

#### Server concept for system functions

In ACCESSNET®-T IP networks with a centralized switching function, the IPN operates as a classic system controller node. An IPN server performs the software-based switching function. Additional servers can also be integrated to provide other functions such as telephone interfaces (PABX/PSTN) or applications such as dispatchers.

#### Flexibly expandable

Depending on the desired function scope, 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 IPN contains servers for key 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 IPN is responsible for the switching functions.



# Network management

## NMS

### ACCESSNET®-T IP Network Management System

Our network management system is complete. Different Network Management Clients (NMCs) are available for all management and configuration tasks in the ACCESSNET®-T IP. We implement them in the system according to your requirements and the scope of functions of your TETRA system.



## ACCESSNET®-T IP system control and administration

NMS is the network management system of the TETRA mobile radio system ACCESSNET®-T IP from Hytera Mobilfunk GmbH. This software package is used to manage all of the functions, network elements and subscribers of your mobile radio solution from Hytera Mobilfunk GmbH. For each TETRA solution, we supply an NMS package compiled with all the modules required for the particular system. Thanks to the modular design, we can expand it as needed and optimally adapt it to your system.

### The technology at a glance

The NMS is based on an almost limitless scalable client-server architecture. The system therefore provides you with access both from a central site as well as from distributed sites within the ACCESSNET®-T IP network, irrespective of the complexity of your mobile radio solution.

All clients access the current data provided by NMS servers over the IP network. The decentralized architecture of the NMS protects your mobile radio network against data losses, optimizes operational sequences and offers you demand-based, highly configurable control functions.

### System architecture of the NMS

Combining all management functions of a system on a single PC carries a high level of risk. For this reason, the functions of the NMS in the network can be distributed over various units that communicate with each other: This means that the NMS remains fully functional even if individual components fail.

### The network management system at a glance:

- User-friendly software for managing your Hytera mobile radio solution
- Flexible administration of all functions, network elements and subscribers (spatially/ technically separate or central)
- Modular structure scalable to any system size
- Highly configurable, data access via robust IP networking
- Maximum data availability and security
- Highly automated, dependable processes
- Uncomplicated coupling and monitoring of external system components
- Access control to the NMS to protect the system
- The user interface (GUI) of the network management system applications is already available in many languages; additional languages are possible upon customer request
- Comprehensive customer support



Your Hytera partner:



Further information can be found at:

[www.hytera-mobilfunk.com](http://www.hytera-mobilfunk.com)

Contact us if you are interested in sales,  
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