



SLOVENSKI STANDARD PSIST ETR 300-4:2001

01-februar-2001

Df]nYa b]gbc dcj b]fUX]c`fH9HF5Ł!'; cj cf`]b`dcXUh_]fU Ž8Ł!`BUj cX]c`nU
bU flcj Ub`Y!("XY. l dfUj`Ub`Yca fYj`U

Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Designers' guide; Part 4:
Network management

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Ta slovenski standard je istoveten z: **PSIST ETR 300-4:2001 ETR 300-4 Edition 1**
<https://standards.iteh.ai/catalog/standards/sist/5c94b51a-0c46-43e3-a85c-5aa5138cabd4/psist-etr-300-4-2001>

ICS:

33.070.10	Prizemni snopovni radio (TETRA)	Terrestrial Trunked Radio (TETRA)
-----------	------------------------------------	--------------------------------------

PSIST ETR 300-4:2001

en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[PSIST ETR 300-4:2001](#)

<https://standards.iteh.ai/catalog/standards/sist/5c94b3fa-0c46-43e3-a85c-5aa5138cabd4/psist-etr-300-4-2001>



ETSI
TECHNICAL
REPORT

ETR 300-4

July 1997

Source: EP-TETRA

Reference: DTR/TETRA-01011-4

ICS: 33.020

Key words: TETRA, network management

**Terrestrial Trunked Radio (TETRA);
Voice plus Data (V + D);
Designers' guide;
Part 4: Network management**

<https://standards.iteh.ai/catalog/standards/sist/5c94b3fa-0c46-43e3-a85c-384141414141>

ETSI

European Telecommunications Standards Institute

ETSI Secretariat

Postal address: F-06921 Sophia Antipolis CEDEX - FRANCE

Office address: 650 Route des Lucioles - Sophia Antipolis - Valbonne - FRANCE

X.400: c=fr, a=atlas, p=etsi, s=secretariat - **Internet:** secretariat@etsi.fr

Tel.: +33 4 92 94 42 00 - Fax: +33 4 93 65 47 16

Copyright Notification: No part may be reproduced except as authorized by written permission. The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 1997. All rights reserved.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[PSIST ETR 300-4:2001](#)

<https://standards.iteh.ai/catalog/standards/sist/5c94b3fa-0c46-43e3-a85c-5aa5138cabd4/psist-etr-300-4-2001>

Contents

Foreword	5
1 Scope	7
2 References	7
3 Definitions and abbreviations	7
3.1 Definitions	7
3.2 Abbreviations	8
4 General principles of network management	8
4.1 Introduction	8
4.2 What it does	9
4.3 General recommendations	9
4.4 Using network management as a tool	10
4.5 Management Functional Areas (MFA)	10
5 Architecture and services	12
5.1 CNM/LNM concept	12
5.2 Services	12
5.2.1 Typical central services	12
5.2.2 Typical local services	13
5.3 Architectures	14
5.3.1 Single tier system	14
5.3.2 Multi-tier system	14
5.3.3 Multiple supplier system	15
6 Options for integration	16
7 User's specification check list	17
7.1 Matters to be taken into account	17
7.1.1 Organization of network management	17
7.1.2 Geographical division of management facilities	17
7.1.3 Distribution of management functions among players	17
7.1.4 Flexibility of the network management system	18
7.2 Writing requirements	18
7.2.1 What is in ETR 292	18
7.2.2 Writing functional requirements	18
7.2.3 Writing requirements for network management protocols and platforms	19
7.2.4 Other requirements	19
Annex A: Annotated list of references	20
A.1 TMN	20
A.2 OSI management	20
A.3 SNMP	21
History	22

Blank page

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[PSIST ETR 300-4:2001](https://standards.iteh.ai/catalog/standards/sist/5c94b3fa-0c46-43e3-a85c-5aa5138cabd4/psist-etr-300-4-2001)

<https://standards.iteh.ai/catalog/standards/sist/5c94b3fa-0c46-43e3-a85c-5aa5138cabd4/psist-etr-300-4-2001>

Foreword

This ETSI Technical Report (ETR) has been produced by ETSI Project TErrestrial Trunked RAdio (TETRA) of the European Telecommunications Standards Institute (ETSI).

ETRs are informative documents resulting from ETSI studies which are not appropriate for European Telecommunication Standard (ETS) or Interim European Telecommunication Standard (I-ETS) status.

An ETR may be used to publish material which is either of an informative nature, relating to the use or application of ETSs or I-ETSs, or which is immature and not yet suitable for formal adoption as an ETS or I-ETS.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[PSIST ETR 300-4:2001](https://standards.iteh.ai/catalog/standards/sist/5c94b3fa-0c46-43e3-a85c-5aa5138cabd4/psist-etr-300-4-2001)

<https://standards.iteh.ai/catalog/standards/sist/5c94b3fa-0c46-43e3-a85c-5aa5138cabd4/psist-etr-300-4-2001>

Blank page

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[PSIST ETR 300-4:2001](https://standards.iteh.ai/catalog/standards/sist/5c94b3fa-0c46-43e3-a85c-5aa5138cabd4/psist-etr-300-4-2001)

<https://standards.iteh.ai/catalog/standards/sist/5c94b3fa-0c46-43e3-a85c-5aa5138cabd4/psist-etr-300-4-2001>

1 Scope

This ETSI Technical Report (ETR) is intended to serve as an informative reference document for network operators or managers of mobile radio systems who are contemplating Terrestrial Trunked Radio (TETRA) solutions. It aims to explain the general requirements for network management, the implications of different network architectures on the services needed at particular locations and how these can be realised.

Within TETRA a standardized management interface (I5) will facilitate central management of inter-working between different systems (e.g. systems from different manufacturers). Management at a central level will generally require a different set of services to those provided locally in individual systems. Typical 'local' and 'central' services are summarized in this ETR (see subclause 5.2) and many of these are defined in greater detail in ETR 292 [1].

The use of the standardized interface is just one option for integrating different management systems. Other bespoke solutions may be required if additional central services are needed or if interface I5 is not available in early releases of TETRA systems. This ETR examines alternative options (see clause 6) to give practical guidance to those considering such integration and includes a useful check list for drawing up user specifications for network management facilities (see clause 7).

2 References

For the purposes of this ETR the following references apply:

- [1] ETR 292: "Terrestrial Trunked Radio (TETRA); User requirements for network management".
- [2] ITU-T Recommendation M.3400: "TNM Management Functions".

The reader is referred to annex A for a list of further useful information.

3 Definitions and abbreviations

3.1 Definitions

For the purposes of this ETR, the following definitions apply:

Base Station (BS): A physical grouping of equipment which provides the fixed portion of the air interface. One BS transmits and receives radio signals to and from a single location area (a single region of geographical coverage).

gateway: A device which will enable the interconnecting of two networks which inherently use different and incompatible protocols.

network: A collection of subscriber terminals interconnected through telecommunications devices.

real time: Refers to the generation of network management information in a timeframe comparative to the real life process that it is controlling or monitoring.

signalling: The exchange of information specifically concerned with the establishment and control of connections, and with management, in a telecommunication network.

site: Physical location within the network.

subscriber activity log: A system record which contains information on attach/detach Individual TETRA Subscriber Identity (ITSI); enable/disable terminal; registrations; location updates vs. time; call re-establishment; authentication; call start time, call end time, and called party; type of call; supplementary services invoked; whether uplink Bit Error Ratio (BER) or Message Error Rate (MER) are below an operator pre-determined threshold; plus any other relevant activity record.

subscriber data: A system record which contains information on the individual subscriber ITSI, Group TETRA Subscriber Identities (GTSIs), supplementary services allowed, privileges allowed and other system accesses allowed.

subscriber management: The functionality within the management system, for dealing with subscribers to the system.

subscriber terminal: An equipment which an internal user can use to communicate with another user. Mobile Stations (MS) and Line Stations (LS) are the only types of subscriber terminal.

supplementary service: A supplementary service modifies or supplements a bearer service or a teleservice. A supplementary service cannot be offered to a customer as a stand alone service. It should be offered in combination with a bearer service or a teleservice.

Switching and Management Infrastructure (SwMI): All of the TETRA equipment for a Voice plus Data (V+D) network except for subscriber terminals. The SwMI enables subscriber terminals to communicate with each other via the SwMI.

transaction (packet transaction): All the processes and procedures associated with the transmission of one packet of information between peer network layer protocol entities on opposite sides of the air interface.

transaction (voice transaction): Part of a voice call comprising the transmissions of each talking party. The total of all transactions make up the call.

3.2 Abbreviations

For the purposes of this ETR the following general abbreviations apply:

ASN.1	Abstract Syntax Notation one
BER	Bit Error Rate
BS	Base Station
CMIP	Common Management Information Protocol
CNM	Central Network Management
GTSI	Group TETRA Subscriber Identity
ISTI	Individual TETRA Subscriber Identity
LNM	Local Network Management
LS	Line Station
MER	Message Error Rate
MFA	Management Functional Area
MIB	Management Information Base
MS	Mobile Station
NMF	Network Management Facility
NMS	Network Management System
RFC	Request For Comment
OSI	Open Systems Interconnect
SMI	Structure of Management Information
SNMP	Simple Network Management Protocol
SwMI	Switching and Management Infrastructure
TMN	Telecommunications Management Network
V+D	Voice plus Data

4 General principles of network management

4.1 Introduction

Network management provides a distributed application enabling monitoring and control of network resources, in order to control the overall environment in an orderly fashion. It has to interface across all of the physical elements in a network, and to this end it is increasingly important that open standards are adopted as the norm in all network elements, enabling the control of the network to be undertaken by an integrated network management system.

It is important to be able to receive information and apply controls to all elements in a network in an efficient manner. The elements and services that are contained within a managed network need to be modelled in an abstract manner, so as to allow the operator to exercise actions and controls without needing in-depth knowledge of each of the pieces of equipment being managed.

4.2 What it does

Network management covers all activities concerned with monitoring and controlling a network e.g. planning, building/expanding, operating and making the most efficient use of the available resources. The typical features of a network management system are:

- planning;
- service provision;
- network monitoring;
- fault management;
- network traffic management;
- configuration (including subscriber management).

Network management applications are based around management frameworks, examples of these are Open Systems Interconnect (OSI), Telecommunications Management Network (TMN) and Simple Network Management Protocol (SNMP). These frameworks provide an inter-operable interface to achieve interconnection between various types of equipment, communicating via a defined management protocol. The two most common open protocols are Common Management Information Protocol (CMIP) and SNMP.

A management framework enables the use of generic information models and standard protocols and identifies uniquely the inter-operable interface for co-operating management applications. Typical components of a framework are:

- managed objects: <https://standards.iteh.ai/catalog/standards/sist/5c94b3fa-0c46-43e3-a85c-5aa5138cabd4/psist-etr-300-4-2001>
 - the term managed object is used as means to describe management information;
- Structure of Management Information (SMI):
 - defines how to define new managed objects, places restrictions on their types and specifies rules for naming. A collection of managed objects is viewed as the schema for the Management Information Base (MIB);
- data representation:
 - to express the format of the packets exchanged in a machine independent way, a formal system is used, the most common form being Abstract Syntax Notation (ASN.1). This is used in the definition of the MIB.

The interoperable interface = SMI + MIB + management protocol.

4.3 General recommendations

Management systems need to be flexible and have a distributed modular architecture that allows service providers to adapt to customer needs. Given the sophistication and growth of services, a flexible management environment has to be established in order to:

- enable rapid service deployment;
- promote faster service activation;
- efficiently manage and distribute data throughout the network.