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TETRAPOL FORUM

TETRAPOL Secretariat

Postal address: BP 40 78392 Bois d'Arcy CEDEX - FRANCE
Tel.: +33 1 34 60 55 88 - Fax: +33 1 30 45 28 35

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1.

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Foreword

This document is the Publicly Available Specification (PAS) of the TETRAPOL land mobile radio system, which shall provide digital narrow band voice, messaging, and data services. Its main objective is to provide specifications dedicated to the more demanding PMR segment: the public safety. These specifications are also applicable to most PMR networks.

This PAS is a multipart document which consists of:

Part 1	General Network Design
Part 2	Radio Air interface
Part 3	Air Interface Protocol
Part 4	Gateway to X.400 MTA
Part 5	**Interface to dispatch centre**
Part 6	Line Connected Terminal interface
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Part 18	Base station to Radio switch interface
Part 19	Stand Alone Dispatch Position interface

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2. Scope

The TETRAPOL R6 interface to a dispatch centre is a network-to-network interface between one TETRAPOL switching and management infrastructure (SwMI) and one dispatch centre (DC).

R6 interface is split between R6-I1 route with its voice channels and its circuit related protocol at network layer, and R6-I3 route and its associated service control protocol at applicative layer, that complements the operations over R6-I1 between the SwMI and the dispatch centre.

The service control messages of the R6-I3 interface are described in this document and shall provide:

- Local control of the R6-I3 interface
- Circuit control of the AG of the R6 interface
- System monitoring for group communications
- Call control to access voice services
- Data services
- Call advertising of group communications
- Voice traffic signalling

These flows of information are described in part 5-4 of the DC interface.

This document corresponds to sub-part 5.5 of the TETRAPOL interface to a dispatch centre, which is divided into five sub-parts:

- Part 5.1 Technical requirements;
- Part 5.2 Speech control protocol design on digital support
- Part 5.3 Speech related protocol design for R6-I1 analog interface
- Part 5.4 Service control protocol design for R6 interface
- Part 5.5 Service control messages for R6-I3 interface

This sub-part specifies the message structures for the service control protocol described in PAS 0001-5-4 [7] between the dispatch access controller (DAC) functional entity of a TETRAPOL SwMI and the dispatch control server (DCS) functional entity of a dispatch centre.

3. Normative references

This PAS incorporates by dated and undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter.

[1] PAS 0001-1-1: "TETRAPOL Specifications; General Network Design; Reference Model".

[2] PAS 0001-5-1: "TETRAPOL Specifications; Interface to dispatch centre; Technical requirements specifications."

[3] PAS 0001-5-2: "TETRAPOL Specifications; Interface to dispatch centre; Speech Control Protocol Design on digital support".

[4] PAS 0001-12: "TETRAPOL Specifications; Network management centre interface"

[5] PAS 0001-3: "TETRAPOL Specifications; Air Interface Applicative protocol"

[6] ITU-T Recommendation Q.120x series.

[7] PAS 0001-5-4: "TETRAPOL Specifications; Interface to dispatch centre; Service control protocol design".

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4. Definitions, symbols and abbreviations

4.1 Definitions

The following definitions apply:

Access gate (AG): Functional entity in the TETRAPOL SwMI, radio connected or line connected, that supplies voice and signalling facilities to the dispatch center.

Access handler (AH): Functional entity in the TETRAPOL SwMI, regrouping a set of trunks that belong to the same line connected or radio connected "base station" of the dispatch centre.

Base station (BS): Interface unit containing a set of radio transmitters/receivers providing access to communications with radio terminals.

Dispatch Access Controller (DAC): Functional entity within the TETRAPOL system that acts as Service Control Point (SCP) in ITU-T Recommendation Q.120x series [6] for the dispatch centre.

Dispatch Centre (DC): The dispatch centre shall include a dispatch control server (DCS) and a dispatch position switch (DPS) which connects a number of dispatch positions (DPs) to the TETRAPOL network. The dispatch centre provides the dispatchers from one or several DC-organizations with incoming and outgoing TETRAPOL voice services and system. it may supply call center facilities, e.g. call automatic call distribution, that are however out of the scope of the TETRAPOL system.

Dispatch control server (DCS): Functional entity within the dispatch centre that carries control signalling and interface related information between the DAC and the DC.

Dispatch Position Switch (DPS): Call control functional entity within the dispatch centre that supports voice calls over the R6-I1 interface to the TETRAPOL SwMI.

Dispatch Position (DP): Work position connected to the DPS and the DCS where the dispatchers operate.

Dispatcher: A subscriber of the dispatch centre that uses a dispatch position..

ICS proforma: A document, in the form of a questionnaire, which when completed for an implementation or system becomes an ICS.

Implementation Conformance Statement (ICS): A statement made by the supplier of an implementation or system claimed to conform to a given specification, stating which capabilities have been implemented. The ICS can take several forms: protocol ICS, profile ICS, profile specific ICS, information object ICS, etc.

Incoming call: Call from SwMI to DC

Line access base station: Interface unit connecting several lines connected terminals to a radio switch.

Talkgroup: Group communication involving group members over a coverage defined with a set of cells

Operational group: Group of subscribers that share a certain right to participate in a group communication.

DC-Organization: A DC-organization consists of a set of trunks. The DC-organization serves for administrative purposes in the dispatch center.

Outgoing call: Call from DC to SwMI

Protocol ICS (PICS): An ICS for an implementation or system claimed to conform to a given protocol specification.

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

System Terminal: Service access reference point provided to the user by the system. System terminals (STs) are radio terminals (RTs), line connected terminals (LCTs).

System: The TETRAPOL system is composed of the large area fixed infrastructure (SwMI) called network and of the system terminals allowing user access to the available services.

Switching and Management Infrastructure (SwMI): The SwMI shall be a subsystem of the TETRAPOL network. It includes two subsystems: the base station (BS and LABS) and the radioswitch network (the radioswitch or RSW may include one or several switches organised or not with several hierarchical levels, as a manufacturer option). The SwMI also includes one or several DAC, the operation and maintenance centre (OMC) and the key management centre (KMC). OMC and KMC are outside the scope of the present specification.

Stand Alone Dispatch Position (SADP): The stand alone dispatch position shall be an isolated dispatcher position providing dispatching and management functions to one dispatcher at a time. Neither switching capability nor interworking with external networks are considered in the SADP equipment.

Trunk: A set of access gates. All AG of a trunk belongs to the same DC-organization and to the same AH. All Ag of one trunk support the same type of communication.

4.2 Symbols

Not applicable.

4.3 Abbreviations

The abbreviations from document PAS 0001-5-1 [2] apply, including the following abbreviations:

AG	Access gate at SwMI side of the R6-I1 interface
BS	Base station
COV	Coverage of a group communication
DAC	Dispatch access control functional entity in the SwMI
DC	Dispatch centre
DCS	Dispatch centre server functional entity in the DC
DPS	Dispatch position switch functional entity in the DC
ICS	Implementation Conformance Statement
IUT	Implementation Under Test
IE	Information Element in a message
LABS	Line access base station
PDU	Protocol data unit
PICS	Protocol implementation conformance statement
PTT	Push-to-talk
R6	Reference point for the TETRAPOL SwMI-Dispatch centre interface
RN	Regional network of the SwMI
RSW	Radio switch
SCF	Service control functional entity
SDU	Service data unit
SCS	System Conformance Statement
SNMP	Simple Network Management Protocol
SUT	System Under Test
ST	System Terminal
SwMI	TETRAPOL Switching and management infrastructure

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5. Message coding requirements

5.1 Coding rules

The encoding rules that apply over R6-I3 interface require octet-bounded information elements.

The objective of the coding rules is that the direct octet-encoding of the messages be handled without any ambiguity between DAC and DCS on heterogeneous platforms.

The encoding rules shall take into account:

- no data structure alignment: flat encoding with no nested structures;
- no stuffing octet: octet boundary.

The following items shall be provided with the following conventions:

- field coding order in a transmitted message, being the same sequence order as downwards read in the tables;
- octet coding in a field of a message is big endian coding.

Should some messages contain fields (octets or bits) which are not always used or significant in all contexts, then the unused parts shall be set to zero, unless otherwise stated (in that case a non-significant value is defined: NSIG_XXX)

5.2 TCP connexion

The DCS is a TCP client, and the DAC a TCP server.

When the DAC starts, it creates one server socket with the service name "MC9600-DAC", that supports the dialog with the DCS.

It then waits for a connection from the client.

Once the connection is established, DAC-DCS messages can be exchanged.

5.3 Framing

TCP is a transport level protocol that knows data flow. The framing of this data flow, allowing the notion of message is made as follow:

version	reserved	Packet length	TPDU
1 byte	1 byte	2 bytes	variable length

version: version number of the packet protocol: 0x01

reserved: reserved for future use: 0x00

Packet length: big-endian coded.

5.4 Compatibility rules

For evolutions of the protocol, new fields can be added at the end of messages. The position and size of existing fields is not changed between versions. Thus, to be upward compatible, the DAC and the DCS must accept message even if the size of the message is bigger than the one expected.

This version of the document describes version 3 of the protocol. An upward compatibility with version 1 and 2 is assumed.

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5.5 Local control

5.5.1 DAC_CONFIGURATION_IND

Direction: DAC ⇨ DCS

Short description: This PDU shall indicate the operational configuration of R6 interface. The semantics of the message is as follows: " here is the list of objects (object type, number of objects, list_of.object_attribute) that report to the designated sort (sort_class, sort_identifier) ".

This message is either sent as an answer to a DCS_CONFIGURATION_REQ query or sent spontaneously by the DAC (when an attribute of an object changes).

When the DAC spontaneously sends DAC_CONFIGURATION_IND, the following parameter values should be used by the DAC.
Sort_Class = NSIG_CLASS,
Sort_Identifier = NSIG_ID,
Object_class = the class of the object.

When the DAC sends DAC_CONFIGURATION_IND as an answer to a query with DCS_CONFIGURATION_REQ, the following parameter values should be used
Sort_Class = the class of the criterion for building the list of objects,
Sort_Identifier = Identifier of the criterion for building the list of objects,
Object_class = class of the objects from the list.

When the DAC sends DAC_CONFIGURATION_IND for its own attributes (NSIG_CLASS,NSIG_ID,DAC_CLASS) should be used.

Table 1: DAC_CONFIGURATION_IND

Information element	Length	comment
Codop	2	
Sort_class	1	list sorted per sort_class
Sort_identifier	ID_LENGTH	
Object_class	1	class of objects sorted
Number_of_elements	1	number of objects
object_configuration_attribute	variable: depending on the object_class	configuration object attribute
...	...	...
object_configuration_attribute	variable: depending on the object_class	configuration object attribute

Information element description:

In this version of the interface, the following values are supported :

- Spontaneous messages (when attributes change):

(NSIG_CLASS, NSIG_ID, DAC_CLASS,1, DAC attributes): the DAC sends its own attributes (note that the attributes of the DAC contains its ID)

(NSIG_CLASS, NSIG_ID, ORG_CLASS, 1, ORG attributes): the DAC sends the attributes of an organisation (note that the attributes of the DC_organization contains its ID)

(NSIG_CLASS, NSIG_ID, TRUNK_CLASS, 1, TRUNK attributes): the DAC sends the attributes of a Trunk (note that the attributes of the trunk contains its ID)

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(NSIG_CLASS, NSIG_ID, AG_CLASS, 1, AG attributes): the DAC sends the attributes of an AG (note that the attributes of the AG contains its ID)

(NSIG_CLASS, NSIG_ID, AH_CLASS, 1, AH attributes): the DAC sends the attributes of a cell (note that the attributes of the CELL contains its ID)

- Messages in answer to a query :

(NSIG_CLASS, NSIG_ID, DAC_CLASS,1, DAC attributes): the DAC sends its own attributes (note that the attributes of the DAC contains its ID) in answer to DCS_CONFIGURATION_REQ(NSIG_CLASS, NSIG_ID, DAC_CLASS).

(DAC_CLASS, DAC_id, ORG_CLASS, nb of org, ORG attributes): provides the list and attributes of the DC_organizations of the DAC, in answer to DCS_CONFIGURATION_REQ(DAC_CLASS, DAC_ID, ORG_CLASS).

(ORG_CLASS, ORG_id, TRUNK_CLASS, nb of trunks, Trunk attributes): provides the list and attributes of the trunks of an DC_organization. in answer to DCS_CONFIGURATION_REQ(ORG_CLASS, ORG_ID, TRUNK_CLASS).

(TRUNK_CLASS, Trunk_id, AG_CLASS, nb of AG, AG attributes): provides the list and attributes of the AG of a TRUNK. In answer to DCS_CONFIGURATION_REQ (TRUNK_CLASS, TRUNK_ID, AG_CLASS).

(DAC_CLASS, DAC_id, AH_CLASS, nb of cells, Cells, attributes): provides the list and attributes of cells per DAC. In answer to DCS_CONFIGURATION_REQ(DAC_CLASS, DAC_ID, AH_CLASS).

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5.5.2 DCS_CONFIGURATION_REQ

Direction: DCS ⇨ DAC

Short description: This PDU shall be used for request of the operational configuration of R6 interface. It is used for the DCS to query the configuration stored in the DAC. The semantics of the query is " give me all objects (object-class) that are associated with a designated sort (sort class, sort identifier)"

Table 2: DCS_CONFIGURATION_REQ

Information element	Length	comment
Codop	2	
Sort_class	1	list sorted per sort_class
Sort_identifier	ID_LENGTH	
Object_class	1	class of objects sorted

Information element description:

In this version of the interface, the following values are supported:

(NSIG_CLASS, NSIG_ID, DAC_CLASS): request for the attributes of the DAC

(DAC_CLASS, DAC_id, ORGANIZATION_CLASS): Request for the list and attributes of the DC_organizations of the DAC

(DAC_CLASS, DAC_id, CELL_CLASS): request for the list and attributes of the AH of the DAC.

(ORGANIZATION_CLASS, ORG_id, TRUNK_CLASS): request for the list and attributes of trunks of an DC_organization.

(TRUNK_CLASS, Trunk_id, AG_CLASS): request for the list and attributes of AG of a TRUNK.

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5.5.3 DCS_CONFIGURATION_UPDATE_REQ

Direction: DCS ⇨ DAC

Short description: This PDU shall be used for request modification of the configuration of R6 interface. In this version, this is only used to request for relationship modification between AG and AG trunks.

Table 3: DCS_CONFIGURATION_UPDATE_REQ

Information element	Length	comment
Codop	2	
Sort_class	1	list sorted per sort_class
Sort_identifier	ID_LENGTH	identification of the parent object
Object_class	1	class of objects to modify
Number_of_elements	1	number of objects
object_configuration_attribute	variable: depending on the object_class	configuration object attribute modified
...	...	...
object_configuration_attribute	variable: depending on the object_class	configuration object attribute modified

Information element description:

In this version of the interface, the following values of sort class, sort identifier, object class are supported:

(TRUNK_CLASS, Trunk_id, AG_CLASS): request for update of attributes and relationships of AG of a TRUNK.

All parameters of the modified objects must be set in the request. If some dynamic parameters are handled by the TETRAPOL SwMI, they will be updated from TETRAPOL side. They will be taken into account with no control by the DAC.

No creation nor deletion of object is possible. All objects must exist in the configuration.

If a modification of relationship between objects is requested, the destination parent object must exist in the configuration.

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5.5.4 DAC_CONFIGURATION_ACK

Direction: DAC ⇨ DCS

Short description: This PDU shall be used for operational configuration of R6 interface, e.g. to acknowledge the DCS_CONFIGURATION_REQ request if an error occurred otherwise DAC_CONFIGURATION_IND is sent.

Table 4: DAC_CONFIGURATION_ACK

Information element	Length
Codop	2
Sort_class	1
Sort_identifier	ID_LENGTH
Object_type	1
Cause type	1
cause	CAUSE_LENGTH
Family_cause	1

Cause type shall be set to DAC cause.

Cause ≠ 0x00 because an error occured.

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5.5.5 DCS_INTERFACE_REQ

Direction: DCS ⇨ DAC

Short description: This PDU shall be the very first message sent to the DAC after the transport layer connection. It indicates the preferred interface version of the DCS.

Table 5: DCS_INTERFACE_REQ

Information element	Length
Codop	2
Interface_version	1

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5.5.6 DAC_INTERFACE_IND

Direction: DAC ⇨ DCS

Short description: This PDU shall be the message sent to the DCS upon receipt of DCS_INTERFACE_REQ

Table 6: DAC_INTERFACE_IND

Information element	Length
Codop	2
Interface_version	1

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5.6 Circuit control

5.6.1 DCS_AG_RESET

Direction: DAC ⇦ DCS

Short description: This PDU is used to reset an AG.

Table 7: DCS_AG_RESET

Information element	Length	comment
Codop	2	
AG_identifier	ID_LENGTH	
reserved	1	

Information element description:

AG_identifier indicates which access gate is to reset.

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5.6.2 DAC_CIPHERING_MODE

Direction: DAC ⇨ DCS

Short description: This PDU shall indicate the encryption state or a modification of the manual encryption state of the on-going communication through an AG. This PDU is sent during the communication.

Table 8: DAC_CIPHERING_MODE

Information element	Length	comment
Codop	2	
AG_identifier	ID_LENGTH	
Encryption_state	1	
Manual_key_modifier_index	1	

Information element description:

AG_identifier identifies the access gate involved in the communication.

Encryption_state indicates whether clear speech, network encryption or manual keying applies in the network up to the access gate,

If the system supports the optional manual keying service and if the communication where the AG is involved is manually encrypted, the manual key modifier index used for the communication is indicated, as set with DCS_SET_MANUAL_KEY and DCS_USE_MANUAL_KEY, otherwise the field is not significant.

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5.6.3 DCS_CONFIG

Direction: DAC ⇦ DCS

Short description: This PDU is used to change temporarily the behaviour of the AG. Its use is limited to the possibility to forbid temporarily reception of incoming private calls, to request a radio AG to provide the DCS with the monitoring flow, and to request a radio AG to provide the DCS with the SMS.

Table 9: DCS_CONFIG

Information element	Length	comment
Codop	2	
Sort class	1	
Sort_identifier	ID_LENGTH	
Config_type= CONFIG_TYPE_INCOMING_CALLS	1	Name of field
incoming_calls	1	Value of field
Config_type= CONFIG_TYPE_MONITORING	1	Name of field
monitoring_designation	1	Value of field
Config_type= CONFIG_TYPE_DATA_BEHAVIOUR	1	Name of field
data_behaviour	1	Value of field
Config_type = CONFIG_TYPE_NSIGN	1	

Information element description:

At least one of the possible config_type must be present. Information elements may be in any order in the PDU, except that CONFIG_TYPE_NSIGN shall be the last information element of the PDU.

If no information element is present in the message, it shall be ignored by the receiver with no error.

The information element is encoded according to type-value format

For CONFIG_TYPE_INCOMING_CALLS,

Sort class can take values AG_CLASS or TRUNK_CLASS.

Sort_identifier is the identifier of the concerned object.

Incoming_calls field indicates if incoming calls shall be accepted or not by the AG or by the AG belonging to the trunk (either private voice calls and/or data messages)

For CONFIG_TYPE_MONITORING

Sort class can only take value AG_CLASS

Sort identifier is the identifier of the concerned AG

Monitoring_designation field requests for delivery of monitoring flow of information to DCS. Monitoring_designation is a boolean field with TRUE value if AG is used for monitoring, and FALSE value if AG is not used for monitoring.

This can only apply to an AG attached to a radio cell. If the request aims a line connected AG, the message shall be rejected by the DAC with an error.

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For CONFIG_TYPE_DATA_BEHAVIOUR,

Sort class can only take value AG_CLASS.

Sort_identifier is the identifier of the concerned AG.

Data_behaviour field indicates if SMS implicitly addressed to the DC should be received preferentially through this AG.

This can only apply to an AG attached to a radio cell. If the request aims a line connected AG, the message shall be rejected by the DAC with an error.

Config type =CONFIG_TYPE_NSIGN is mandatory to indicate the end of the PDU

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5.6.4 DCS_FORWARD_REQ

Direction: DAC ⇦ DCS

Short description: This PDU shall modify the forward parameters of one of the AG .

Table 10: DCS_FORWARD_REQ

Information element	Length	Comment
Codop	2	
AG_identifier	ID_LENGTH	
Action	1	
Address	5	host address

Action indicates whether the forwarding service is activated or deactivated.

The host address is used for calls to be forwarded-to.

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5.6.5 DAC_FORWARD_STATE

Direction: DAC ⇨ DCS

Short description: This PDU shall indicate the forward state of the AG. It is send to give the result of a forward request.

Table 11: DAC_FORWARD_STATE

Information element	Length	Comment
Codop	2	
AG_identifier	ID_LENGTH	
Forward_state	1	
Address	5	Host address
Cause_type	1	
Cause	1	
Family_cause	1	

The call request to the AG are deviated to the host address.

Family_cause indicates the result of the forwarding request.

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5.6.6 DCS_PTT_PRIORITY_CHANGE_REQ

Direction: DAC ⇦ DCS

Short description: This PDU shall be used to request a new PTT priority. This request remains valid until new PTT priority change request.

Table 12: DCS_PTT_PRIORITY_CHANGE_REQ

Information element	Length	Comment
Codop	2	
AG_identifier	ID_LENGTH	
PTT_priority	1	

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5.6.7 DCS_SET_MANUAL_KEY

Direction: DAC ⇦ DCS

Short description: This optional PDU is relevant for the manual keying service when it is supported in the system. This PDU shall request a modification of the manual key of an access gate. This PDU is not related to a communication.

Table 13: DCS_SET_MANUAL_KEY

Information element	Length	comment
Codop	2	
AG_identifier	ID_LENGTH	
Manual_key_modifier_index	1	
Manual_key_modifier	4	

Information element description:

AG_identifier indicates which access gate is concerned by the transaction.

Manual_key_modifier_index, Manual_key_modifier are the parameters to be set.

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5.6.8 DCS_USE_MANUAL_KEY

Direction: DAC ⇦ DCS

Short description: This optional PDU is relevant for the manual keying service when it is supported in the system. This PDU shall request the use of a manual key for an access gate or the end of its use. This PDU is not related to a communication.

Table 14: DCS_USE_MANUAL_KEY

Information element	Length	comment
Codop	2	
AG_identifier	ID_LENGTH	
Action	1	
Manual_key_modifier_index	1	

Information element description:

AG_identifier indicates which AG is concerned by the transaction.

Action is either to enable or disable the manual keying.

Manual_key_modifier_index is significant if manual keying is enabled and a key modifier has been set for the related index.

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5.7 System monitoring

5.7.1 Sorted list protocol data units

5.7.1.1 DCS_ SORTED_LIST_REQ

Direction: DAC ⇦ DCS

Short description: This PDU shall request from the DAC a list of elements according to a criterion (sort_class and sort_identifier). These elements shall be of the same class (Object_class). The purpose of this PDU is to request the DAC to provide the list of elements of the same <Object_class> according to (<sort_class>,<sort_identifier>).

Table 15: DCS_ SORTED_LIST_REQ

Information element	Length	comment
Codop	2	
Sort_class	1	List sorted per sort_class
Sort_identifier	ID_LENGTH	id of the member of the sort class concerned
Object_class	1	Class of object sorted

Information element description:

Available combinations for (sort class, object class) parameters are :

(TRUNK_CLASS, ECH_CLASS): request for available ECH of a trunk

(TRUNK_CLASS, TALKGROUP_CLASS): request for available talkgroup of a trunk

(TRUNK_CLASS, MOCH_CLASS): request for available MOCH of a trunk

(TRUNK_CLASS, COV_CLASS): request for established COV within a trunk

(TRUNK_CLASS, OG_CLASS): request for available internal and external OG of a trunk

The sort_identifiers are configuration parameters of the DAC.

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5.7.1.2 DAC_SORTED_LIST_IND

Direction: DAC ⇨ DCS

Short description: This PDU shall provide the DCS with a list of elements from the DAC according to a criterion (sort_class and sort_identifier). These elements shall be of the same class (Object_class).

Table 16: DAC_SORTED_LIST_IND

Information element	Length	comment
Codop	2	
Sort_class	1	list sorted per sort_class
Sort_identifier	ID_LENGTH	id of the member of the sort_class concerned
Object_class	1	Class of objects sorted
Number_of_elements	2	number of objects
Object_attribute	depending of the object class	Attributes of the object according to the object class
...	...	..
Object atttribute	depending of the object class	

Information element description:

Sort_identifier is either an AG_identifier, a Trunk_identifier according to Sort_class value.

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5.7.1.3 DAC_SORTED_LIST_ACK

Direction: DAC ⇨ DCS

Short description: This PDU shall be to acknowledge the DCS_SORTED_LIST_REQ request if an error occured, otherwise DAC_SORTED_LIST_IND shall be sent instead of DAC_SORTED_LIST_ACK.

Table 17: DAC_SORTED_LIST_ACK

Information element	Length	
Codop	2	
Sort_class	1	
Sort_identifier	ID_LENGTH	
Object_class	1	
Cause type	1	
cause	CAUSE_LENGTH	
family_cause	1	

Information element description:

Cause type is set to DAC cause.

When an error occurs, the family_Cause is ≠ 0x00.

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5.7.1.4 DCS_ SORTED_LIST_IND

Direction: DAC ⇦ DCS

Short description: This PDU shall provide the DAC with a list of elements from the DCS according to a criterion (sort_class and sort_identifier).

Table 18: DCS_ SORTED_LIST_IND

Information element	Length	comment
Codop	2	
Sort_class	1	
Sort_identifier	ID_LENGTH	
Object_class	1	
Number_of_elements	2	number of objects
Object_attribute	Depending on the object class	
...	...	...
Object_attribute	Depending on the object class	

Information element description:

Available combinations for (sort class, object class) parameters are:

(TRUNK_CLASS, OG_CLASS): to provide the external OGs of a trunk.

The provided OGs shall be external OGs belonging to the organization related to the trunk. The list is an exhaustive list of external OGs for the trunk which shall supersede previous list.

The elements shall be of the same class (Object_class).

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5.7.2 Sorted list possible values

This section provides the possible values and utilisation of the sorted_list message supported by this version of the interface. All other configurations are not supported.

5.7.2.1 AVAILABLE ECH of a TRUNK (DAC_SORTED_LIST_IND)

Direction: DAC ⇨ DCS

Short description: This PDU shall indicate the list of set up emergency open channels for a trunk of AG, providing, for each ECH, and the cell where the ECH has been initiated. The list of ECH may be segmented into several PDU.

This message is either sent spontaneously by the DAC (for every modification of the list) or in response of a DAC_SORTED_LIST_REQ (with the associated sort_class, sort_identifier and object_class) ie (TRUNK_CLASS, Trunk_id, ECH_CLASS).

Table 19: DAC_SORTED_LIST_IND for ECH_LIST of a TRUNK

Information element	Length	comment
Codop = DAC-SORTED_LIST_IND	2	
Sort_class = TRUNK_CLASS	1	List sorted per trunk of AG
Sort_identifier = Trunk_identifier	ID_LENGTH	Part of the DAC configuration
Object_class = ECH_CLASS	1	elements are ECH
Number_of_elements	2	number of ECH in the list
Object_attribute = ECH_Attribute	1+ ID_LENGTH+1	Attributes of the ECH
...	...	..
Object atttribute= ECH_Attribute	1+ ID_LENGTH+1	

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5.7.2.2 AVAILABLE TALKGROUP of a trunk (DAC_SORTED_LIST_IND)

Direction: DAC ⇨ DCS

Short description: This PDU shall provide the list of talkgroups, defined by a couple (OG, COV) within coverage of the DC, seen from a trunk of AG on the Air Interface. This list is a superset of the talkgroups in which the trunk is allowed to participate. Talkgroup whose coverage is released shall not appear in the list of available talkgroups.

This message is either sent spontaneously by the DAC (for every modification of the list) or in response of a DCS_SORTED_LIST_REQ (with the associated sort_class, sort_identifier and object_class) ie (TRUNK_CLASS, Trunk_id, TALKGROUP_CLASS).

Table 20: DAC_SORTED_LIST_IND for TALKGROUP_LIST of a TRUNK

Information element	Length	comment
Codop = DAC-SORTED_LIST_IND	2	
Sort_class = TRUNK_CLASS	1	List sorted per trunk of AG
Sort_identifier = Trunk_identifier	ID_LENGTH	Part of the DAC configuration
Object_class = TALKGROUP_CLASS	1	elements are talkgroups
Number_of_elements	2	number of talkgroups in the list
Object_attribute = Talkgroup_Attribute	ID_LENGTH+3	Attributes of a talkgroup
...	...	..
Object atttribute= Talkgroup_Attribute	ID_LENGTH+3	

Number_of_elements is the number of talkgroups in the list and shall not exceed TALKGROUP_MAXNB.

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5.7.2.3 AVAILABLE MOCH in a Trunk (DAC_SORTED_LIST_IND)

Direction: DAC ⇨ DCS

Short description: This PDU shall indicate the list of MOCH that are within the coverage of the DC for one trunk of AG. The attributes of each MOCH are provided, including MOCH identifier, priority, OG, type of associated cell.

This message is either sent spontaneously by the DAC (for every modification of the list) or in response of a DAC_SORTED_LIST_REQ (with the associated sort_class, sort_identifier and object_class) ie (TRUNK_CLASS, Trunk_id, MOCH_CLASS)

Table 21: DAC_SORTED_LIST_IND for MOCH_LIST of a TRUNK

Information element	Length	comment
Codop = DAC-SORTED_LIST_IND	2	
Sort_class = TRUNK_CLASS	1	List sorted per trunk of AG
Sort_identifier = Trunk_identifier	ID_LENGTH	Part of the DAC configuration
Object_class = MOCH_CLASS	1	elements are MOCH
Number_of_elements	2	number of MOCH in the list
Object_attribute = MOCH_Attribute	variable (see Moch_attribute definition)	Attributes of a MOCH
...	...	..
Object atttribute= MOCH_Attribute	variable (see Moch_attribute definition)	Attributes of a MOCH

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5.7.2.4 COV SORTED LIST in a TRUNK (DAC_SORTED_LIST_IND)

Direction: DAC ⇨ DCS

Short description: This PDU shall indicate the setup coverages (COV) accessible through Trunk of AG.

This message is either sent spontaneously by the DAC (for every modification of the list) or in response of a DAC_SORTED_LIST_REQ (with the associated sort_class, sort_identifier and object_class) ie (TRUNK_CLASS, Trunk_id, COV_CLASS).

Table 22: DAC_SORTED_LIST_IND for MOCH_LIST of a TRUNK

Information element	Length	comment
Codop = DAC-SORTED_LIST_IND	2	
Sort_class = TRUNK_CLASS	1	List sorted per trunk of AG
Sort_identifier = trunk_identifier	ID_LENGTH	Part of the DAC configuration
Object_class = COV_CLASS	1	elements are COV
Number_of_elements	2	number of COV in the list
Object_attribute = COV_Attribute	1+ ID_LENGTH+1	Attributes of a COV
...	...	..
Object atttribute= COV_Attribute	1+ID_LENGTH+1	Attributes of a COV

Information element description:

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5.7.2.5 OG SORTED LIST in a TRUNK (DAC_SORTED_LIST_IND)

Direction: DAC ⇨ DCS

Short description: This PDU shall indicate the OG accessible through Trunk of AG .

This message is sent in response of a DCS_SORTED_LIST_REQ (with the associated sort_class, sort_identifier and object_class) ie (TRUNK_CLASS, Trunk_id, OG_CLASS).

The OG provided are internal and external ones.

Table 23: DAC_SORTED_LIST_IND for OG _LIST of a TRUNK

Information element	Length	comment
Codop = DAC-SORTED_LIST_IND	2	
Sort_class = TRUNK_CLASS	1	List sorted per trunk of AG
Sort_identifier = trunk_identifier	ID_LENGTH	Part of the DAC configuration
Object_class = OG_CLASS	1	elements are OG
Number_of_elements	2	number of OG in the list
Object_attribute = OG_identifier	2	Attributes of a OG
...	...	..
Object atttribute= OG_identifier	2	Attributes of a OG

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5.7.2.6 Allocation of external OG to the DAC (with DCS_SORTED_LIST_IND)

Direction: DAC ⇦ DCS

Short description: This PDU shall indicate to the DAC a list of external OG to be used for talkgroups.

This message is acknowledged by the message DAC_SORTED_LIST_ACK.

Table 24: DCS_SORTED_LIST_IND for external OG of a trunk

Information element	Length	comment
Codop = DCS-SORTED_LIST_IND	2	
Sort_class = TRUNK_CLASS	1	List sorted per trunk of AG
Sort_identifier = trunk_identifier	ID_LENGTH	Part of the DAC configuration
Object_class = OG_CLASS	1	elements are OG
Number_of_elements	2	number of OG in the list
Object_attribute = OG_Attribute	ID_LENGTH	Attributes of a OG
...	...	..
Object atttribute= OG_Attribute	ID_LENGTH	Attributes of a OG

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5.8 Call control

5.8.1 DAC_ALERTING

Direction: DAC ⇨ DCS

Short description: This PDU is sent to indicate to the DCS that the called terminal is rung for the private call routed through the access gate. It applies to a private call from the dispatch centre to the system.

Table 25: DAC_ALERTING

Information element	Length	comment
Codop	2	
AG_identifier	ID_LENGTH	
Call_reference	1	previousely Allocatedby the AG

Information element description:

AG_identifier applies to the AG through which the call is routed.

Call reference identify the call..

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5.8.2 DCS_CALL_ANSWER

Direction: DAC ⇦ DCS

Short description: This PDU shall be sent to indicate to the AG that the dispatcher hooks off and accepts the incoming private call within the time window defined over the air interface (T710 timer). It applies to a private call from the system to the dispatch centre

Table 26: DCS _CALL_ANSWER

Information element	Length	comment
Codop	2	
AG_identifier	ID_LENGTH	
Call_reference	1	

Information element description:

AG_identifier applies to the AG through which the call is routed. It is the one provided in DAC_INCOMING_SETUP message.

Call reference identify the call.

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5.8.3 DAC_CALL_REFERENCE

Direction: DAC ⇨ DCS

Short description: A transaction over R6-I3 interface is identified with a Call_reference. This PDU indicates that the transaction through the indicated access gate is proceeding and provides a Call_reference related to it.

Table 27: DAC _CALL_REFERENCE

Information element	Length	comment
Codop	2	
AG_identifier	ID_LENGTH	
Call_reference	1	Allocated by the AG
Reference_Type	1	

Information element description:

AG_identifier indicates which access gate allocated the Call_reference.

Call reference is allocated by the AG for the transaction duration.

Reference_Type indicates if the Call_reference is a new one or is the current one.

For communications from the SwMI to the DC, the call_reference is provided by the access gate in the appropriate messages.

NSIG_CALL_REF is a reserved value for Call_reference.

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5.8.4 DAC_CONNECT

Direction: DAC ⇨ DCS

Short description: This PDU shall be sent to establish the voice path connectivity, synchronise the end of the establishment of a group communication or a private call and indicate the encryption state of the call if known.

Table 28: DAC_CONNECT

Information element	Length	comment
Codop	2	
AG_identifier	ID_LENGTH	
Call_reference	1	identify the call
Encryption_state	1	
Call_priority	1	
Boolean_bitmap	1	bitmap field
Manual.key_modifier_index	1	

Information element description:

The connect request is related to a communication through an AG, characterised with Call_reference and AG_identifier.

Encryption and priority information elements are provided.

Encryption_state indicates whether clear speech, network encryption or manual keying applies in the network up to the access gate,

Boolean_bitmap indicates whether the call involves a PABX, is partially setup, whether message-trunking or activation-based trunking applies.

Manual_key_modifier_index is significant if Encryption_state= MANUAL_ENCRYPTION and if a key modifier has been set for the related index.

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5.8.5 DAC_CRISIS_NOTIFICATION

Direction: DAC ⇨ DCS

Short description: This PDU shall indicate the establishment of a crisis call, providing the identity of the terminal in emergency situation, and the reference of the MOCH used for the crisis call. Only the AG in monitoring mode shall transmit this PDU.

Table 29: DAC_CRISIS_NOTIFICATION

Information element	Length	Comment
Codop	2	
AH_identifier	ID_LENGTH	
MOCH/COV_identifier	ID_LENGTH	
Address	5	
Reserved	1	
Number_of_elements	1	
OG_identifier	ID_LENGTH	
...	....	
OG_identifier[]	ID_LENGTH	

AH identifier indicates the routing direction from which information come from TETRAPOL.

MOCH/COV identifier gives the identity of the setup crisis MOCH.

Address identifies the terminal in emergency situation if any.

Number and OG list gives the list of OG used for setup of the crisis MOCH, as it is known by TETRAPOL system.

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5.8.6 DCS_DEFAULT_CALL_ENTER

Direction: DAC ⇦ DCS

Short description: This PDU shall be sent to select an AG to participate to a group communication (select it as the default communication of an AG). Default communication means that when the AG is not busy with another communication, the default group communication applies.

A group communication is either a MOCH, a BOCH, an EMOCH, a talkgroup, a talkgroup merging or an ECH.

This message is also used to enter into a scanning service.

Before selecting an access gate for a scanning service in sequential listening mode, the DCS shall check that at least one of the scanned communication is established within the coverage of the AG.

Before selecting an access gate for a priority scanning service, the DCS shall check that the priority communication is established within the coverage of the access gate.

For external groups, the DCS shall check that corresponding COV are established.

Table 30: DCS_DEFAULT_CALL_ENTER

Information element	Length	comment
Codop	2	
AG_identifier	ID_LENGTH	
Call_type	1	Default call type
OG_identifier	ID_LENGTH	Activation OG
Call_priority	1	
Number_of_elements	1	Number of calls
call_attribute	1+3*ID_LENGTH	Attributes of a group communication
...	...	...
Call_attribute	1+3*IDLENGTH	

Information element description:

Call_type defines the type of default communication in which AG has to participate

The OG_identifier (used for activation OG) indicates on which OG of the group communication, activation of the communication will apply. It is the OG of the communication if there is only one OG, or all OGs if there are several.

Call_priority defines an activation priority of the group communication. It shall be consistent with the one delivered in group communication lists broadcast by system monitoring flow.

For a talkgroup:

- Call_type is TALKGROUP_TYPE
- OG identifier is the OG of the talkgroup
- Call priority is ROUTINE_PRIO

For a MOCH or an EMOCH, or a talkgroup merging communication :

- Call_type is MOCH_TYPE
- OG identifier is set to ALL_OG
- Call priority is set to the priority of the communication broadcast in MOCH list of system monitoring flow (either Routine or flash for MOCH or crisis for EMOCH)

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For a BOCH:

- Call_type is BROADCAST_TYPE
- OG identifier is set to ALL_OG
- Call priority is set to "Broadcast"

For an ECH:

- Call_type is ECH_TYPE
- OG identifier is set to ALL_OG
- Call priority is set to "Emergency"

For a sequential listening scanning:

- Call_type is SEQUENTIAL_LISTENING_SCAN_TYPE
- OG identifier is set to ALL_OG for a scan of MOCH, or the OG of the first talkgroup for a scan of talkgroups.
- Call priority is set to the priority of the first communication of the list, defined as for previous cases.

For priority scanning (only for MOCH):

- Call_type is PRIORITY_SCAN_TYPE
- OG identifier is set to ALL_OG for a scan of MOCH
- Call priority is set to the priority of the first communication of the list, defined as for previous cases.

Number_of_call shall be equal to 1 when the call type is not a scanning service. Only one call_attribute shall be provided in this case.

When Call_type is SEQUENTIAL_LISTENING_SCAN_TYPE or PRIORITY_SCAN_TYPE. Its value is between 2 and CALL_PER_SCAN_MAXNB. One call_attribute element shall be provided per scanned group communication.

Parameters of call attribute for one group communication

For an ECH:

- Call_type is not significant
- MOCH/COV_identifier is not significant
- Participation_OG_identifier is not significant
- Cell_identifier is reserved for identifying an ECH (An ECH is identified by the cell where the emergency happens).

For a MOCH, EMOCH, talkgroup merging, BOCH:

- Call_type is not significant
- MOCH/COV_identifier is a MOCH identifier
- Participation_OG_identifier is not significant
- Cell_identifier is not significant.

For a talkgroup

- Call_type is not significant
- MOCH/COV_identifier is a COV identifier
- Participation_OG_identifier is the same OG as activation OG
- Cell_identifier is not significant

Parameters of call attribute for scanning services

The list of call attributes shall contain a maximum of CALL_PER_SCAN_MAXNB elements.

Scanning services is not allowed for BOCH nor for ECH communications.

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The first call attribute in the list refers to the main communication for a scanning service, on which push-to-talk is associated per default and on which manual keying and attach procedures may apply.

For a sequential listening of MOCH, EMOCH, talkgroup merging:

- Call_type is set to MOCH_TYPE
- MOCH/COV_identifier is a MOCH identifier
- Participation_OG_identifier is not significant
- Cell_identifier is not significant.

For a sequential listening of talkgroups :

- Call_type is set either to TALKGROUP_TYPE for talkgroups
- MOCH/COV_identifier is a COV identifier
- Participation_OG_identifier is the same OG as activation OG
- Cell_identifier is not significant

For a priority scanning of MOCH, EMOCH

- Call_type is set to MOCH_TYPE
- MOCH/COV_identifier is a MOCH identifier
- Participation_OG_identifier is not significant
- Cell_identifier is not significant

For a scanning service, some COV identifiers or Participation OG may be unknown and shall be set to a non significant value. Their actual value can be provided later using DCS_MODIFY_DEFAULT_CALL. This does not apply to the priority communication in a priority scanning service (which is the first one of the list).

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5.8.7 DAC_DEFAULT_CALL_IND

Direction: DAC ⇨ DCS

Short description: This PDU shall indicate the entry in a group communication selected by the DCS. It applies to all group communications.

Table 31: DAC _DEFAULT_CALL_IND

Information element	Length	comment
Codop	2	
AG_identifier	ID_LENGTH	
Call_reference	1	
Call_type	1	default call type
OG_identifier	ID_LENGTH	Activation OG
Call_priority	1	
Number_of_elements	1	number of calls
Call_attribute	1+3*ID_LENGTH	Attributes of a group communication
....	....	....
Call_attribute	1+3*ID_LENGTH	

The attributes of the communication (group communication) are indicated in the call_attribute element. In case of scanning, one call_attribute element shall be provided per scanned communication.

Information element description:

Call_type defines the type of default communication: MOCH_TYPE, BROADCAST_TYPE, ECH_TYPE, TALKGROUP_TYPE, SEQUENTIAL_LISTENING_SCAN_TYPE or PRIORITY_SCAN_TYPE.

The Activation OG is set to:

- ALL_OG for a MOCH, a BROADCAST or an ECH,
- the OG of the talkgroup for a Talkgroup,
- ALL_OG for a scan of MOCH,
- the OG of the first talkgroup of the list for a scan of talkgroups.

The participation OG is the OG_identifier of the group in case of a talkgroup/group call (It is equal to the activation OG)

it shall be set to ALL_OG in case of MOCH, ECH and BROADCAST.

Number_of_element shall be equals to 1 when the call type does not refer to a scanning service.

When Call_type is SEQUENTIAL_LISTENING_SCAN_TYPE or PRIORITY_SCAN_TYPE. Its value is between 2 and CALL_PER_SCAN_MAXNB

In the call attribute,, Call_type is significant for scanning service. In that case, call_type defines the type of the scanned communications

For a scanning service, all Call_type fields in the call attribute structures shall all be equal. it is either MOCH_TYPE or TALKGROUP_TYPE. Mixing MOCH _TYPE and TALKGROUP _TYPE in a scanning set-up command is not supported.

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For other services, that involves just one group communication, the call type field in the call attribute is non significant

MOCH/COV_identifier is a MOCH coverage identifier or a COV identifier for a talkgroup/ group call. It is not significant for an ECH.

Cell_identifier is reserved for identifying an ECH and is not significant otherwise. (An ECH is identified by the cell where the emergeny happens).

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5.8.8 DCS_DEFAULT_CALL_RESP

Direction: DAC ⇦ DCS

Short description: This PDU shall be sent to acknowledge the positive entry indication in a default call.

Table 32: DCS_DEFAULT_CALL_RESP

Information element	Length	comment
Codop	2	
AG_identifier	ID_LENGTH	
Call_reference	1	

Information element description:

AG_identifier designates the AG through which the group communication is routed.

Call reference shall be set to the value previously allocated by the AG.

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5.8.9 DCS_DEFAULT_CALL_WITHDRAWAL

Direction: DAC ⇦ DCS

Short description: This PDU shall be sent to withdraw from an on-going default group communication or to cancel the default communication definition.

Table 33: DCS_DEFAULT_CALL_WITHDRAWAL

Information element	Length	comment
Codop	2	
AG_identifier	ID_LENGTH	
Call_reference	1	

Information element description:

To cancel a default call definition for an AG.

The call_reference shall be the one of the group communication

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5.8.10 DCS_ECH_RELEASE

Direction: DAC ⇦ DCS

Short description: This PDU shall be sent to release an ECH.

Table 34: DCS_ECH_RELEASE

Information element	Length	comment
Codop	2	
AG_identifier	ID_LENGTH	
Cell_identifier	ID_LENGTH	An ECH is identified by a cell_identifier.

Information element description:

Cell_identifier identifies the ECH to be released.

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5.8.11 DCS_ECH_SETUP

Direction: DAC ⇦ DCS

Short description: This PDU shall be sent to setup an emergency open channel.

Table 35: DCS_ECH_SETUP

Information element	Length	comment
Codop	2	
AG_identifier	ID_LENGTH	
address	5	Terminal address in emergency situation
Cell_identifier	ID_LENGTH	
reserved	1	

Information element description

The address is the one of the terminal in emergency situation

Cell_identifier identifies the ECH.

Encryption mode of the ECH is determined by TETRAPOL system

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5.8.12 DAC_EMERGENCY_NOTIFICATION

Direction: DAC ⇨ DCS

Short description: This PDU shall indicate the establishment of an ECH in the AH, providing the identity of the terminal in emergency situation, and its cell.

Table 36: DAC_EMERGENCY_NOTIFICATION

Information element	Length	
Codop	2	
AH_identifier	ID_LENGTH	
cell_identifier	ID_LENGTH	Cell associated to the ECH
address	5	address of the terminal in emergency situation

Information element description:

AH_identifier identifies a routeing direction from where the emergency notification is received.

Cell_identifier characterize the cell associated to the ECH.

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5.8.13 DCS_EMERGENCY_SETUP_ACK

Direction: DAC ⇦ DCS

Short description: This PDU shall be used to notify to the DAC, the acceptation or the refusal by the DCS, to set up an emergency or a crisis call.

This PDU shall be used only as an answer to the PDU DAC_SIGNALLING_IND whose information element Signal_code is SIGNAL_ECH_SETUP_REQ or SIGNAL_CRISIS_CALL_SETUP_REQ.

Table 37: DCS_EMERGENCY_SETUP_ACK

Information element	Length	Comment
Codop	2	
AG_identifier	ID_LENGTH	
Boolean	1	Decision
Cell_identifier	ID_LENGTH	
Address	5	
Network_organization	1	

Decision is either to accept or refuse the setup of the call.

Cell_identifier and Address refers to the cell and the ST concerned by the emergency- or crisis call. These informations shall be those present in PDU DAC_SIGNALLING_IND.

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5.8.14 DAC_END

Direction: DAC ⇨ DCS

Short description: This PDU shall indicate the end of a call or the end of a transaction or the abortion of a transaction: release of private call, setup or release of MOCH, end of transfer. On receipt of DAC_END the call_reference is no longer valid.

Table 38: DAC _END

Information element	Length	comment
Codop	2	
AG_identifier	ID_LENGTH	
Call_reference	1	
Cause_type	1	
Cause	CAUSE_LENGTH	
Family_cause	1	
Codop	2	codop of DCS message that causes error

Information element description:

Cause_type differenciates between cause indication originating from the network or from the DAC and cause indications local to the access gate. Family_cause give a transcription of internal causes of the TETRAPOL system.

Codop of DCS message is set if a bad formatted message is received by DAC

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5.8.15 DCS_FALLBACK_MOCH_ENTER

Direction: DAC ⇦ DCS

Short description: This PDU shall be sent for a radio AG to enter in a fallback MOCH, in a cell where the base station is in BSC disconnected mode, instead of reselecting another cell. The DCS shall check that the cell were the radio AG is registered is in such a fallback mode (FB_MODE32).

It shall not be used for Line Connected AG.

Table 39: DCS_FALLBACK_MOCH_ENTER

Information element	Length	comment
Codop	2	
AG_identifier	ID_LENGTH	

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5.8.16 DAC_INCOMING_SETUP

Direction: DAC ⇨ DCS

Short description: This PDU shall be sent for an incoming private call setup.

Table 40: DAC_INCOMING_SETUP

Information element	Length	Comment
Codop	2	
AG_identifier	ID_LENGTH	
Call_reference	1	allocated call reference
Call_type	1	
Call_priority	1	
Address	5	calling party address
Length	1	length (in number of quartets) of the called party subaddress
subaddress	SUBADDRESS_MAXLENGTH	called subaddress
Behaviour_on_incoming_call	1	Display of calling party address

Information element description:

Call_type is either PRIVATE_CALL_TYPE or PABX_CALL_TYPE,

When significant, the calling party address is the RFSI address of the calling party.

When its length is not zero, the called subaddress is a subaddress over the Airand may be interpreted by the DCS.. The called subaddress is BCD encoded. Its length is given in quartets. The length of the called subaddress shall be shorter or equal to SUBADDRESS_MAXLENGTH.

For an incomming call, a call reference is allocated.

Behaviour_on_incoming_call indicates whether the calling party address should be displayed or not to the operator. Inside TETRAPOL, the calling party address is not displayed if "No" value is set.

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5.8.17 DCS_INTRUSION

Direction: DAC ⇦ DCS

Short description: This PDU shall be sent to intrude into a Private call. Other uses are reserved.

Table 41: DCS_ INTRUSION

Information element	Length	comment
Codop	2	
AG_identifier	ID_LENGTH	
Intrusion_type	1	
(Reserved use)	ID_LENGTH	
Address	5	Calling party address
(Reserved use)	ID_LENGTH	

Information element description:

Intrusion_type can only be PRIVATE_CALL_INTRUSION

Address is the calling party address of the intruded call.

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5.8.18 DCS_MOCH_RELEASE

Direction: DAC ⇦ DCS

Short description: This PDU shall be sent to release an established MOCH.

Table 42: DCS_MOCH_RELEASE

Information element	Length	comment
Codop	2	
AG_identifier	ID_LENGTH	
MOCH/COV_identifier	ID_LENGTH	
reserved	1	

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5.8.19 DCS_MOCH_SETUP

Direction: DAC ⇦ DCS

Short description: This PDU shall be sent to request the setup of an MOCH.

Table 43: DCS_MOCH_SETUP

Information element	Length	comment
Codop	2	
AG_identifier	ID_LENGTH	
MOCH/COV_identifier	ID_LENGTH	
Call_priority	1	
reserved	1	
Activation_mode	1	
Number_of_elements	1	number of OG
OG_identifier	ID_LENGTH	participation OG
....	....	....
OG_identifier	ID_LENGTH	participation OG

Information element description:

Call_priority is the external establishment priority.

Call_priority, activation_mode are attributes of the MOCH identified with MOCH/COV_identifier.

Ciphering mode is always determined by the network on setup of the callActivation_mode is set to either MOCH_ACTIVATION for a MOCH or an EMOCH or BROADCAST_ACTIVATION for a BOCH.

The list of OG is the list of participation OG for the MOCH. This is optional and erases the existing list. In case of ciphering, all participation OG must be ciphered.

There shall be a maximum of OG_MAXNB OG identifiers in the list for a MOCH and OG2_MAXNB for a BOCH or an EMOCH.

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5.8.20 DCS_MODIFY_DEFAULT_CALL

Direction: DAC ⇦ DCS

Short description: This PDU may be used as a request to modify the list of calls for a scanning service previously installed by a DCS_DEFAULT_CALL_ENTER message.

Table 44: DCS_MODIFY_DEFAULT_CALL

Information element	Length	comment
Codop	2	
AG_identifier	ID_LENGTH	
Call_reference	1	
OG_identifier	ID_LENGTH	Activation OG
Number_of_elements	1	number of calls
call_attribute	1+3*ID_LENGTH	Attributes of a group communication
....	....	....
call_attribute	idem	

Information element description:

There shall be eithertwo or a maximum of CALL_PER_SCAN_MAXNB call_attributes in the list.

The AG_identifier indicates an AG where a scanning service has been previousely defined by a DCS_DEFAULT_CALL_ENTER.

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5.8.21 DCS_OUTGOING_SETUP

Direction: DAC ⇦ DCS

Short description: This PDU shall be sent for an outgoing private call setup request.

Table 45: DCS _OUTGOING_SETUP

Information element	Length	Comment
Codop	2	
AG_identifier	ID_LENGTH	
Call_priority	1	
Number_of_elements	1	number of address elements to follow (called addresses)
Address	5	called party address
…	…	…
Address	5	called party address
Behaviour_on_incoming call	1	expected behaviour of the target ST
Length	1	Length (in number of quartets) of the subaddress to transfer
subaddress	SUBADDRESS_MAXLENGTH	subaddress

Information element description:

AG_identifier characterizes the AG through which the call is routed.

Authorized values for call priority are ROUTINE_PRIO, FLASH_PRIO, EMERGENCY_PRIO

The number of address elements is limited to 4 called party RFSI addresses.

Length of subaddress must be set to zero if there is no subaddress. Subaddress may be used only for a call to a PABX or another DC.

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5.8.22 DCS_REMOTE_CALL_CLEARING

Direction: DAC ⇦ DCS

Short description: This PDU shall be sent to request the remote clearing of a private call.

Table 46: DCS_REMOTE_CALL_CLEARING

Information element	Length	comment
Codop	2	
AG_identifier	ID_LENGTH	
address	5	Address of the calling party

Information element description:

The address information element points out the calling party in the call to be cleared

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5.8.23 DCS_REMOTE_PTT_REQ

Direction: DAC ⇦ DCS

Short description: This PDU shall be sent to force transmission on voice circuit on a distant ST, during a private individual call.

Table 47: DCS_REMOTE_PTT_REQ

Information element	Length	Comment
Codop	2	
AG_identifier	ID_LENGTH	
Address	5	
Transmission_duration	1	
Target_ST_mode	1	

Address refers to the ST expected to transmit; it shall be the address of the other talking party ST.

If Transmission_duration_is set to NSIG_TRANSMISSION_DURATION, transmission duration is set to the anti-gossip time-out.

Target_ST_mode allows to control the state of the target ST.

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5.8.24 DCS_SCAN_RESUME

Direction: DAC ⇦ DCS

Short description: This PDU shall be sent to search another on-going communication in a scanning sequence, i.e. skip the currently listened communication and resume scanning. In a priority scanning service, the prioritary communication shall not be skipped, so that DCS_SCAN_RESUME shall not be used while participating to the prioritary communication.

Table 48: DCS_SCAN_RESUME

Information element	Length	comment
Codop	2	
AG_identifier	ID_LENGTH	
Call_reference	1	

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5.8.25 DAC_SIGNALLING_IND

Direction: DAC ⇨ DCS

Short description: This PDU shall indicate the request by a terminal to establish a communication. Either it is a private communication and communication didn't succeed in establishment because of a lack of resources (AG), or the terminal is in an emergency situation and wants to establish a communication with a dispatcher.

Table 49: DAC_SIGNALLING_IND

Information element	Length	Comment
Codop	2	
AH_identifier	ID_LENGTH	
Signal_code	1	
Length	1	
Signal_info	1	
cell_identifier	ID_LENGTH	Location of the sending terminal
address	5	Address of the sending terminal
call_priority	1	
address	5	Address of the called terminal
length	1	length (in number of quartets of the called terminal)
subaddress	SUBADRESS_MAXLENGTH	called subaddress

Information element description:

Signal_info gives more information for routing the message inside DC.

For the following values of signal code, the PDU signals a request from a terminal to establish an emergency communication which has to be acknowledged by the DCS:

SIGNAL_ECH_SETUP_REQ
SIGNAL_CRISIS_SETUP_REQ
SIGNAL_DISPATCHER_EMERGENCY_CALL

In these cases ;
- the information elements Call_priority, address and subaddress of the called terminal ARE NOT significant,
- the information element cell_identifier IS significant.

For the following values of signal code, the PDU signals that an emergency communication is going to be established by the network:

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SIGNAL_ECH_SETUP_IND
SIGNAL_CRISIS_SETUP_IND

In this case ;
- the information elements Call_priority and address of the called terminal ARE significant,
- called terminal subaddress may be significant. If not, length is set to 0 value.
- the information element cell_identifier IS NOT significant.

For the following values of signal code, the PDU signals that a terminal has requested for a private communication establishment which failed because of a lack of resources (All AG were busy) :

SIGNAL_DISPATCHER_CALL_FAILURE_IND

In this case ;
- the information elements Call_priority and address of the called terminal ARE significant,
- called terminal subaddress may be significant. If not, length is set to 0 value.
- the information element cell_identifier IS NOT significant.

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5.8.26 DCS_TONE

Direction: DAC ⇦ DCS

Short description: This PDU shall request the AG to generate a tone.

Table 50: DCS_TONE

Information element	Length	Comment
Codop	2	
AG_identifier	ID_LENGTH	
Tone_type	1	

A Tone_type value is reserved to request to stop to generate a tone.

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5.8.27 DCS_TRANSFER

Direction: DAC ⇦ DCS

Short description: This PDU shall be sent to request a transfer an on-going call from the AG to another terminal. The priority of the transfer is implicitely that of the call

Table 51: DCS_TRANSFER

Information element	Length	comment
Codop	2	
AG_identifier	ID_LENGTH	
Call_reference	1	
address	5	address of the terminal to which the transfer is made
Length	1	length (in number of quartets) of the subadress to transfer
subaddress	SUBADDRESS_MAXLENGTH	subaddress

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5.8.28 DCS_WITHDRAWAL

Direction: DAC ⇦ DCS

Short description: This PDU shall be sent to the AG for its withdrawal from a private call.

Table 52: DCS _WITHDRAWAL

Information element	Length	
Codop	2	
AG_identifier	ID_LENGTH	
Call_reference	1	

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5.9 Data services

5.9.1 DAC_STATUS_IND

Direction: DAC ⇨ DCS

Short description: This PDU shall indicate the receipt of a SMS

Table 53: DAC _STATUS_IND

Information element	Length	Comment
Codop	2	
AH_identifier	ID_LENGTH	
Status_code	1	User information
Length	1	
Status_info	1	
reserved	ID_LENGTH	
address	5	Address of the sending terminal
SMS_application	1	identification of SMS application
call _priority	1	SMS priority
message_length	2	Length of the message text
message_text	value of message length	text of the message

Message_length is set to 0 if it corresponds to an SMS_application of predefined status. In this case, status code shall be significant.

Otherwise (SMS application authorizing freetext), a text message shall follow message length. In this case status code shall not be significant.

Priority for SMS reception may be routine, urgent or flash.

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5.9.2 DAC_STATUS_CONF

Direction: DAC ⇨ DCS

Short description: This PDU shall indicate the positive or negative confirmation of the emission of a SMS to TETRAPOL SwMI.

Table 54: DAC _STATUS_CONF

Information element	Length	Comment
Codop	2	
AG_identifier	ID_LENGTH	
Message reference	2	
result	1	result of the emission
cause	1	
cause type	1	
family cause	1	synthetic cause of error

Message reference has got the same value as in the request for sending SMS (message DCS_STATUS_REQ).

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5.9.3 DCS_STATUS_REQ

Direction: DAC ⇦ DCS

Short description: This PDU shall be used to request a transmission of SMS to TETRAPOL system

Table 55: DCS _STATUS_REQ

Information element	Length	Comment
Codop	2	
AG_identifier	ID_LENGTH	
Status_code	1	User information
Status_info	1	
message_reference	2	
network_organization	1	
address	5	Explicit or implicit address of the receiver
OG_identifier	ID_LENGTH	OG of the receiver
functional address	1	Functional Address of the receiver
SMS_application	1	identification of SMS application
call_priority	1	SMS priority for emission
SMS_encryption	1	
message_length	2	length of the message
message_text	value of message length	text of the message

Erreur ! Pas de séquence spécifié. Message reference may take any value initialized by the DCS. The same message reference shall be present in DAC_STATUS_CONF message sent by TETRAPOL in response to DCS_STATUS_REQ message.

If message length is set to zero value, SMS application corresponds to predefined status, and status code and status info will be taken into account.

If message_length is different from zero value, SMS application authorizes text message, and status code and status info will be ignored.

Fields network organization, address, OG identifier, functional address are used to address the SMS to the subscribers inside TETRAPOL system.

Only one of the three addressing capabilities shall be used at a time:

- explicit or implicit addressing: address field shall be set, otherwise a non significant value shall be set
- OG addressing: OG identifier shall be set, otherwise a non significant value shall be set
- Functional addressing: Network organization of the sender of the SMS, and functional_address shall be set. Otherwise, non significant values shall be set.

A reduced set of characters may be used inside TETRAPOL system for the text of the messages. It is DCS responsability to guaranty that the text sent only includes these characters.

SMS priority may be routine, urgent or flash

SMS encryption indicates if encryption is mandatory or optional to send the SMS.

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5.10 Call advertising

5.10.1 DAC_AG_ACTIVATION_IND

Direction: DAC ⇨ DCS

Short description: This PDU shall indicate the beginning or the end of an activation of an on-going group communication through a designated access gate. This message is sent when the corresponding group communication has been selected as the default one by the AG.

This message shall not be mistaken with DAC_AH_ACTIVATION_IND which is used when no access gate has selected the group communication.

Upon receipt of the PDU at the beginning of an activation, the DCS is informed that network resources have been allocated for the purpose of building a circuit voice path for the duration of the activation of the communication.
Upon receipt of the PDU at the end of an activation, the DCS is informed that network resources have been deallocated for the communication.

this PDU is also used when the DCS requests to transmit speech for an unactive on-going group communication.The DCS is then informed by this PDU whether the transmission request and the implicitely associated activation request have succeeded or failed (for an AG that has selected the corresponding group communication as its default one)

Table 56: DAC _AG_ACTIVATION_IND

Information element	Length	comment
Codop	2	
AG_identifier	ID_LENGTH	
Call_reference	1	
Info_activation	1	
Call_type	1	
Activation_mode	1	
MOCH/COV_identifier	ID_LENGTH	
OG_identifier	ID_LENGTH	Activating OG for talkgroup/group call
Cell_identifier	ID_LENGTH	
Encryption_state	1	
Manual_key_modifier_index	1	

Information element description:

AG_identifier identifies the access gate involved in the activation of the communication. Speech items may flow through this access gate for the indicated group communication from the beginning of the activation untill the end of the activation.

Call_reference shall be allocated by the access gate or by the DAC.

Info_activation describes the related activation being performed, i.e. start or end of activation, or indicates the cause why the activation failed.

Call_type describes the related group communication for which the activation through the access gate applies:

- TALKGROUP_TYPE for talkgroup/group call,
- MOCH_TYPE for multisite open channel, talkgroup merging service, broadcast open channel

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- ECH_TYPE for emergency open channel

- Either MOCH_TYPE or TALKGROUP_TYPE applies for scanning services.

Activation_mode applies to a begin of activation only, i.e. when Info_activation= INFO_ACTIVATION_START. When Call_type is MOCH_TYPE, Activation_mode is either MOCH_ACTIVATION or BROADCAST_ACTIVATION.
When Call_type is ECH_TYPE, Activation_mode is MOCH_ACTIVATION.
When Call_type is TALKGROUPTYPE, Activation_mode is either INTERNAL_ACTIVATION or EXTERNAL_ACTIVATION.

MOCH/COV_identifier, applies to group communications including multisite open channel, broadcast open channel, talkgroup/group call. It is not significant for an emergency open channel. So it is:

- a MOCH identifier for a MOCH

- a Broadcast call identifier for a broadcast call (broadcast calls behave as MOCH)

- a COV identifier for a talkgroup/group call

- Non significant for an ECH

Cell_identifier applies to an emergency open channel only and identifies the cell where there is a terminal in emergency situation and where the emergency open channel is activated. This is non relevant for other type of calls.

OG_identifier shall be set to ALL_OG for multisite open channel, broadcast open channel and emergency open channel, and is the OG of the mission for talkgroup/group call.

Encryption_state indicates whether clear speech, network encryption or manual keying applies in the network up to the access gate, and is significant at the beginning of activation only, i.e. when Info_activation= INFO_ACTIVATION_START.

Manual_key_modifier_index is significant if manual ciphering applies.

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5.10.2 DAC_AH_ACTIVATION_IND

Direction: DAC ⇨ DCS

Short description: This PDU shall indicate the activation of a group communication in the routing direction identified with an AH or the end of its activation. In order to participate to the group communication, the DCS has to select an Ag that owns this OG.

Table 57: DAC _AH_ACTIVATION_IND

Information element	Length	
Codop	2	
AH_identifier	ID_LENGTH	
Info_activation	1	
Call_type	1	
Activation_mode	1	
MOCH/COV_identifier	ID_LENGTH	
OG_identifier	2	activating OG
Cell_identifier	ID_LENGTH	applies to ECH only
Encryption_state	1	
Manual.key_modifier_index	1	

Information element description:

AH_identifier indicates the AH that received the activation.

Info_activation describes the related activation being performed: begin or end of activation.

Call_type, Activation_mode describe the related group communication.

Activation_mode applies to a begin of activation

MOCH/COV_identifier, applies to MOCH, broadcast call, group call or talkgroup.

Cell_identifier applies to an ECH, in which case MOCH/COV_identifier is not significant.

Activating OG shall be set to ALL_OG for MOCH, broadcast call and ECH.This is the OG of the mission for talkgroup and group call.

Encryption state indicate whether clear speech, network encryption or manual keying applies, and is significant if Info_Activation = ACTIVATION_START

Manual_key_modifier_index is significant if manual keying applies

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5.11 Voice traffic signalling

5.11.1 DAC_PTT_REQUEST_IND

Direction: DAC ⇨ DCS

Short description: This PDU shall indicate a PTT request on an AG.

Table 58: DAC_PTT_REQUEST_IND

Information element	Length	
Codop	2	
AG_identifier	ID_LENGTH	

Information element description:

AG_identifier identifies the related Access Gate.

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5.11.2 DAC_PTT_RELEASE_IND

Direction: DAC ⇨ DCS

Short description: This PDU shall indicate a PTT release on an AG.

Table 59: DAC_PTT_RELEASE_IND

Information element	Length	
Codop	2	
AG_identifier	ID_LENGTH	

Information element description:

AG_identifier identifies the related Access Gate.

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5.11.3 DAC_TALKING_PARTY_ID

Direction: DAC ⇨ DCS

Short description: This PDU indicates that speech reception is detected by the access gate and may provide a talking party identification. It applies when speech is transmitted from the SwMI to the DC. Transmission of a talking party address is not guaranteed. The talking party address is transmitted once at maximum and is not repeated until the speech transmission stops.

Table 60: DAC_TALKING_PARTY_ID

Information element	Length	comment
Codop	2	
AG_identifier	ID_LENGTH	
Info_speech_RD	1	
address	5	talking party address
Filler	4	
inhibit_address_display	1	Yes or no

Information element description:

Info_speech_RD indicates the beginning or the end of speech reception or whether a talking party address is provided. :

- When the speech reception starts due to push-to-talk request from a participant party, info_speech_RD=BEGIN_RECEIPT.
- When the speechreception stops due to a push-to-talk release from a participant, info_speech_RD=END_RECEIPT.
- Inbetween, a talking party identification may be available. info_speech=TPI

The address of the talking party is significant if Info_speech_RD = TPI. The address provided is in the RFSI individual addressing plan.

Filler is a reserved field when info = TPI, BEGIN_RECEIPT or END_, its value is not significant (and filled with 0x00)..

When the address is provided (info_speech_RD = TPI) , inhibit_address_display indicates whether the address should be displayed or not to the operator inside the DC. If "No" value is set, this means that it has been requested that the system terminal address is not displayed inside TETRAPOL system.

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5.11.4 DAC_TRANSMIT_IND

Direction: DAC ⇨ DCS

Short description: This PDU indicates that speech is transmitted by the access. It applies when speech is transmitted from the DC to the SwMI. It indicates begin and end of transmission. The end of transmission can be due to the anti-talkative feature.

Table 61: DAC_TRANSMIT_IND

Information element	Length	comment
Codop	2	
AG_identifier	ID_LENGTH	
Info_speech_TI	1	

Information element description:

Info_speech_TI indicates the beginning or the end of speech transmission.

- When the speech transmission starts, info_speech_TI =BEGIN_TRANSMIT.
- When the speech transmission stops due to a push-to-talk release, info_speech_TI=END_TRANSMIT.
- When the anti-talkative timer times-out, speech transmission ceases with info_speech_TI=END_TOO_LONG_TRANSMIT.

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6. Interpretation and coding of information elements

For each information element, the purpose, length in byte and associated values are provided.

6.1 Dimensionning parameters

The following parameters are dimensionning parameters for the interface at R6.I3 and R6.I1 reference points.

MOCH_MAXNB	0x2E
ECH_MAXNB	0x0B
TALKGROUP_MAXNB	10
OG_MAXNB	10
OG2_MAXNB	5
SUBADDRESS_MAXLENGTH	15
CALL_PER_SCAN_MAXNB	6
CAUSE_LENGTH	1
ID_LENGTH	2
Timeout delay for detection of protocol error	20 seconds

T100:time out for keep alive mechanism

T101: up to the DAC implementation

T102: up to the DCS implementation

6.2 Coding of information elements

6.2.1 Action

Purpose: Describes the action requested by a DCS

Length: 1

Values:

DEACTIVATE	0x00
ACTIVATE	0x01

6.2.2 Activation_mode

Purpose: This element defines how the communication is activated depending on the type of group communication. It differentiates between an open channel mode, a broadcast mode, a mode for a talkgroup/internal call to a group and a mode for an external call to a group.
.
For the activation of a multisite open channel, a talkgroup merging service, an emergency open channel or a crisis open channel, MOCH_ACTIVATION applies. Parties that own a related participation OG could participate upon selecting the communication.

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For the activation of a broadcast open channel, BROADCAST_ACTIVATION applies. Parties that own a related participation OG should participate upon such an activation unless there is some interaction with another communication.
When a talkgroup is activated with only group members participating, INTERNAL_ACTIVATION applies.
When a non-group-member activates a talkgroup while setting up a call to a talkgroup, EXTERNAL_ACTIVATION applies.

Length: 1

Values: Same as on the Air Interface, with a combination of the following bitmap masks

MOCH_ACTIVATION	0x00 for multisite open channel
INTERNAL_ACTIVATION	0x01 for internal call to a group by a group member
BROADCAST_ACTIVATION	0x02 for broadcast call
EXTERNAL_ACTIVATION	0x03 for external call to a group by a non-group member
NSIG_ACTIVATION	0xFF when non-significant

6.2.3 Address

Purpose: An individual address shall identify a potentiallly forwarded-to terminal, a calling party, a called party, a terminal registration originator, a transferred-to terminal.

Length: 5

Values:

Format of addresses in TETRAPOL addressing plan:

- always include 9 digits BCD encoded between 0 and 9 with 2 digits per byte
- each digit is coded from 0b0000 to 0b1001
- Most significant quartet of the first byte is non significant
- Corresponds to RFSI address of TETRAPOL addressing plan

0 0 0 0	R1
R2	R3
F	S1
S2	I1
I2	I3

- Non significant address values is 0xFFFFFFFFFF

6.2.4 AG_identifier

Purpose: Address that uniquely identifies an access gate controlled by a DAC

Length: ID_LENGTH

Values: Any values statically defined for each implementation of the DAC, as configured in the access gate.

NSIG_AG_IDENTIFIER	0xFFFF

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6.2.5 AG_state

Purpose: Access gate state.

AG_OFF	0x00
AG_NOT_REGISTERED	0x01
AG_SELF_REGISTRED	0x02
AG_REGISTERED	0x03
AG_DISABLED	0x10
AG_IDLE	0x20
AG_AVAILABLE	0x30
AG_BUSY	0x40

6.2.6 AG_type

Purpose: radio connection or line connection to SwMI

Length: 1

Values:

LINE	0x01
RADIO	0x00
UNKNOWN	0xFF

6.2.7 AH_identifier

Purpose: Shall uniquely identify a line connected or radio connected "base station" to the dispatch centre.

Length: ID_LENGTH

Values: Any values statically defined for each implementation of the DAC,

NSIG_AH_IDENTIFIER	0xFFFF

6.2.8 AH_State

Purpose: Normal or fallback mode state of the access handler, handling a set of access gates, as provided by the system to the DAC.

Length: 1

Values:

NORMAL_MODE	0x01
FB_MODE1	0x02
FB_MODE31	0x03

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FB_MODE32	0x04
FB_MODE2	0x05
UNKNOWN_MODE	0xFF

6.2.9 AH_type

Purpose: Type of cell, radio connected or line connected

Length: 1

Values:

RADIO_CONNECTED_AH	0x00
LINE_CONNECTED_AH	0x01

6.2.10 Alias_string

Purpose: Alphanumeric string;

Length: variable

Values: 8bit ANSI characters.

6.2.11 Behaviour_on_incoming_call

Purpose: Defines the expected called behaviour, at the reception of the incoming call.

Length: 1

Values: Behaviour_on_incoming_call is a bitmap mask. The use of the bits is:

bit 7 to bit 3 :	0 (unused)
bit 2 :	1: NO_DISPLAY_CALLER_ID
	0: DISPLAY_CALLER_ID
bit 1 :	1: NO_RING_ON_INCOMING_CALL
	0: RING_ON_INCOMING_CALL
bit 0 :	1: AUTOMATIC_INCOMING_CALL_ANSWER
	0: MANUAL_INCOMING_CALL_ANSWER

The only combinations of values of bits 0 and 1 accepted by the ST are (MANUAL_INCOMING_CALL_ANSWER, RING_ON_INCOMING_CALL) and (AUTOMATIC_INCOMING _CALL_ANSWER, NO_RING_ON_INCOMING_CALL).

6.2.12 Boolean

Purpose: Boolean information element

Length: 1

Values:

FALSE, REFUSAL	0x00
TRUE, ACCEPTATION	0x01

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6.2.13 Boolean_bitmap

Purpose: boolean bitmap information element;

bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
reserved	reserved	reserved	reserved	reserved	Activation based trunking	PABX call	Dispatch position call

In the bitmap, a 1 indicates that the corresponding information is true, 0 otherwise.

Length: 1

6.2.14 Call_attribute

Purpose: Attributes of a Call (group communications)

Information element	Length	comment
Call_type	1	
MOCH/COV_identifier	ID_LENGTH	
Participation_OG_identifier	ID_LENGTH	Participation OG
Cell_identifier	ID_LENGTH	

Length: 1+ 3*ID_LENGTH

6.2.15 Call_priority

Purpose: External call priority

Information elements: Call_priority, MOCH_Call_priority;

Length: 1

Values:

NSIG_PRIO	00000000b
ROUTINE_PRIO	00000010b
URGENT_PRIO	00000100b
FLASH_PRIO	00000110b
BROADCAST_PRIO	00001000b
CRISIS_PRIO	00001010b
EMERGENCY_PRIO	00001100b

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6.2.16 Call_reference

Purpose: Call reference for transactions between DAC and DCS, valid on R6 interface only, as allocated by an AG or the DAC. The same call_reference shall be used while an AG is participating to a communication.

Length:1

Values: any

NSIG_CALL_REF	0x00

6.2.17 Call_type

Purpose: Type of TETRAPOL communication
When provided from the DAC to the DCS, the Call_type for multisite open channels, talkgroup merging service, broadcast open channels and emergency open channels is MOCHTYPE.
When provided from the DAC to the DCS, the Call_type for a scanning service, either sequential listening service or priority scanning service, is the Call_type of the actual scanned communication, either MOCHTYPE or TALKGROUPTYPE.

Length: 1

Values:

PRIVATE_CALL_TYPE	0x00
PABX_CALL_TYPE	0x01
MOCH_TYPE	0x02
ECH_TYPE	0x03
BROADCAST_TYPE	0x04
DISPATCH_POSITION_CALL_TYPE	0x0F
TALKGROUP_TYPE	0x20
SEQUENTIAL_LISTENING_SCAN_TYPE	0x21
PRIORITY_SCAN_TYPE	0x22
NSIG_CALL_TYPE	0xFF

all other values are reserved.

6.2.18 Call_type_bitmap

Purpose: Restriction of rights to use a set of services identified with types of TETRAPOL call. (this is used for trunk configuration)

When set, a bit information indicates that the service is allowed . 0 indicates that the service is forbidden.

Length: 1

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bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
setup/release	outgoing	incoming	SMS	talkgroup	ECH	MOCH/BROADCAST	private call

6.2.19 Cause

Purpose: Cause, reset cause.

Length: CAUSE_LENGTH.

Values: the values must be set in correspondance with the according cause_type. This defines error causes internal to TETRAPOL system. The detail of the values is defined in specific TETRAPOL documents. Refer to family cause field to get a family cause.

6.2.20 Cause_type

Purpose: type of cause, either internal to the access gate, originated from the network or the DAC itself.

Length: 1

Values:

PROTOCOL_CAUSE	0x00
AG_CAUSE	0x01
NETWORK_CAUSE	0x02
DAC_CAUSE	0x10

6.2.21 Cell_identifier

Purpose: Shall uniquely identify identify a base station handling a single cell or identify a simulcast cell connected to a RSW in a regional network

Length: ID_LENGTH

byte 1	RSW_id (switch id)
byte 2	BS_id (base station id)

Values: As provided by the AG as follows

Cell_NSIG	0xFFFF

6.2.22 Codop

Purpose: code of operation of messages between DAC and DCS

Length: 2

Values:

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DAC_MSG DCS_MSG	7900 DAC_MSG+0X30
DAC_AG_ACTIVATION_IND	DAC_MSG+0x08
DAC_EMERGENCY_NOTIFICATION	DAC_MSG+0x09
DAC_SIGNALLING_IND	DAC_MSG+0x0A
DAC_STATUS_CONF	DAC_MSG+0x0B
DAC_INCOMING_SETUP	DAC_MSG+0x0D
DAC_ALERTING	DAC_MSG+0x0E
DAC_CONNECT	DAC_MSG+0x0F
DAC_END	DAC_MSG+0x11
reserved	DAC_MSG+0x12
reserved	DAC_MSG+0x13
DAC_DEFAULT_CALL_IND	DAC_MSG+0x14
reserved	DAC_MSG+0x15
DAC_CIPHERING_MODE	DAC_MSG+0x19
DAC_CALL_REFERENCE	DAC_MSG+0x1A
DAC_TALKING_PARTY_ID	DAC_MSG+0x1C
DAC_CONFIGURATION_IND	DAC_MSG+0x1E
DAC_SORTED_LIST_IND	DAC_MSG+0x1F
DAC_AH_ACTIVATION_IND	DAC_MSG+0x1D
DAC_SORTED_LIST_ACK	DAC_MSG+0x20
DAC_PTT_REQUEST_IND	DAC_MSG+0x21
DAC_PTT_RELEASE_IND	DAC_MSG+0x22
DAC_TRANSMIT_IND	DAC_MSG+0x23
DAC_FORWARD_STATE	DAC_MSG+0x24
DAC_STATUS_IND	DAC_MSG+0x25
DAC_CONFIGURATION_ACK	DAC_MSG+0x27
reserved	DAC_MSG+0x28
DAC_CRISIS_NOTIFICATION	DAC_MSG+0x29
DAC_INTERFACE_IND	DAC_MSG+0x30
DCS_OUTGOING_SETUP	DCS_MSG+0x08
DCS_CALL_ANSWER	DCS_MSG+0x09
DCS_WITHDRAWAL	DCS_MSG+0x0A
DCS_MOCH_SETUP	DCS_MSG+0x0B
DCS_MOCH_RELEASE	DCS_MSG+0x0C
DCS_INTRUSION	DCS_MSG+0x0D
DCS_REMOTE_CALL_CLEARING	DCS_MSG+0x0E
DCS_TRANSFER	DCS_MSG+0x0F
DCS_ECH_SETUP	DCS_MSG+0x10
DCS_ECH_RELEASE	DCS_MSG+0x11
DCS_DEFAULT_CALL_ENTER	DCS_MSG+0x12
DCS_DEFAULT_CALL_RESP	DCS_MSG+0x13
DCS_DEFAULT_CALL_WITHDRAWAL	DCS_MSG+0x14
DCS_SET_MANUAL_KEY	DCS_MSG+0x15
DCS_USE_MANUAL_KEY	DCS_MSG+0x16
DCS_MODIFY_DEFAULT_CALL	DCS_MSG+0x17
DCS_SCAN_RESUME	DCS_MSG+0x18
DCS_FALLBACK_MOCH_ENTER	DCS_MSG+0x19
DCS_CONFIGURATION_UPDATE_REQ	DCS_MSG+0x1A
DCS_STATUS_REQ	DCS_MSG+0x1B
DSC_CONFIGURATION_IND	DCS_MSG+0x1D
DCS_SORTED_LIST_IND	DCS_MSG+0x1E
DCS_EMERGENCY_SETUP_ACK	DCS_MSG+0x1F
DCS_REMOTE_PTT_REQ	DCS_MSG+0x20
DCS_PTT_PRIORITY_CHANGE_REQ	DCS_MSG+0x21
DCS_TONE	DCS_MSG+0x22
reserved	DCS_MSG+0x23
reserved	DCS_MSG+0x24
DCS_CONFIGURATION_REQ	DCS_MSG+0x25
DCS_SORTED_LIST_REQ	DCS_MSG+0x26
DCS_FORWARD_REQ	DCS_MSG+0x27
DCS_CONFIG	DCS_MSG+0x28

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DCS_INTERFACE_REQ	DCS_MSG+0x30
DCS_AG_RESET	DCS_MSG+0x31

6.2.23 Config_type

Purpose: Defines the element of configuration requested by DCS

Length: 1

Values:

The element of configuration shall be encoded in TV or TLV format. The most significant bit of Config_type shall differentiate the two formats:

- if MSB Config_type = 0 the element shall be encoded in TV format and shall use one octet.

- if MSB Config_type = 1 the element shall be encoded in TLV format and the next octet shall therefore include the length except in case of CONFIG_TYPE_NSIGN that is reserved value.

CONFIG_TYPE_MONITORING	0x00
CONFIG_TYPE_INCOMING_CALLS	0x01
CONFIG_TYPE_DATA_BEHAVIOUR	0x02
CONFIG_TYPE_NSIGN	0xFF

6.2.24 Country code

Purpose: Indicates the country code of the network.

Length: 1

Values: same values as defined over the Air Interface.

COUNTRY_CODE_NS 0x00

Other values reserved.

6.2.25 COV_identifier

Purpose: Identify a coverage.
A coverage is characterized with a set of radio cells plus line-access base stations.

Length: ID_LENGTH

Values: As defined by the network.

NSIG_COV 0xFFFF

6.2.26 DAC_identifier

Purpose: Identifier of DAC object in the configuration,

Length: ID_LENGTH

Values: Any

NSIG_DAC_IDENTIFIER 0xFFFF

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6.2.27 Data_behaviour

Purpose: Management of the data applications

Length: 8 bits (bitmap)

Values:

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Unsued	Unsued	Unsued	Unsued	Unsued	Unsued	Unsued	Data implicit addressing

Bit 0 is set to 0 if AG is not to be candidate at a data implicit addressing.

6.2.28 DC_Organization

Purpose: A DC-organization consists of a set of trunks. The DC-organization serves for administrative purposes in the dispatch center. A consistency must be assumed with organizations defined in TETRAPOL.

Length: 1

Values:

any values

6.2.29 Encryption_state

Purpose: Encryption state of a communication in the network up to the access gate

Length: 1

Values:

CLEAR_SPEECH 0x00

NETWORK_ENCRYPTION 0x01

MANUAL_ENCRYPTION 0x02

6.2.30 family_cause

Purpose: Family_cause of error. This cause is a regrouping and transcription of internal cause managed by the TETRAPOL system.

Length: 1

Values:

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family_cause	label	Comment
- 00 -	call over	No error. Normal cause of end of a transaction
- 01 -	forward processed	for forward request
- 02 -	forward canceled	for forward cancel request
- 03 -	transfer accepted	for transfer request
	SwMI error causes	Error causes. Request is rejected and/or abandoned
- 40 -	network failure	
- 41 -	network overload	lack of resources in SwMI
- 42 -	remote link failure	error detected on called terminal link to SwMI
- 43 -	link failure	error detected on AG link to SwMI
- 44 -	lost station	link to LABS is lost
- 45 -	distant preempted	distant terminal preempted by an incoming call
- 46 -	no_answer	all terminals reject the call (call later)
- 47 -	unknown number	composed address unknown in adressing plan
- 48 -	not registered	requesting AG not registered
- 49 -	forbidden service	service permanently forbidden
- 4A -	refused service	conditions for service are not fulfilled
- 4B -	called terminal busy	
- 4C -	already forwarded	double forwarding request
- 4D -	open channel already setup	for MOCH, EMOCH, Broadcast call, ECH
- 4E -	maximum OG exceeded	for broadcast call
- 4F -	roaming station	release because of change of registering station
- 50 -	priority message	preemption of ongoing service because of data message
- 51 -	priority incoming	preemption of ongoing service because of incoming voice communication
- 52 -	priority application	preemption of ongoing service because of network application
- 53 -	notified call	failure to setup an individual call to an operator with notification of the operator
- 54 -	Exceptional problem	Improbable combinations of events that causes failure
- 55 -	Temporary problem	Service temporarily unavailable
- 56 -	Bad parameter	Incorrect request to SwMI
	DAC error causes	
- 81 -	Request not supported	
- 82 -	invalid sort ID	
- 83 -	Invalid configuration	
- 84 -	Protocol error	
- 85 -	Defectuous AG (AG link off)	
- 86 -	bad parameter value for DAC	
- 87 -	Call not supported	
- 88 -	Access right error	
- 89 -	Unkown ID	
	AG error causes	
- A0 -	AG busy	AG is busy in an ongoing service
- A1 -	bad parameter value for AG	
- A2 -	forbidden service for AG	

6.2.31 Forward_state

Purpose: Forward state of an access gate

Length: 1

Values:

NOT_FORWARDED	0
FORWARDED	1
UNKNOWN	0xFF

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6.2.32 Functional address

Purpose: Functional address in TETRAPOL addressing plan

Length: 1

Values:

Authorised values from 0 to 0x1F

NSIG_FUNCT_ADDRESS 0xFF

6.2.33 incoming_calls

Purpose: Incoming calls to be accepted by an AG

Length: 8 bits (bitmap)

Values:

bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
unused	unused	unused	unused	unused	Unused	unused	private calls

Bits are set to 1 if calls are to be accepted

Bits are set to 0 if calls are not to be accepted

6.2.34 Info_activation

Purpose: Information on an activation of a group communication.
At the beginning of an activation of a communication, INFO_ACTIVATION_START shall be indicated. At the end of an activation, INFO_ACTIVATION_END shall be indicated. Other values refer to failed activations.

Length: 1

Values:

INFO_ACTIVATION_START	0x00
INFO_ACTIVATION_END	0x01
INFO_CHANNEL_BUSY	0x02
INFO_UNKNOWN_CALL	0x03
INFO_NO_CHANNEL_AVAILABLE	0x04
INFO_TIMEOUT_PENDING_ACTIVATION	0x05

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6.2.35 Info_speech_RD

Purpose: Information on speech receive state.
When the speech reception starts, BEGIN_RECEIPT applies. When the speech reception stops, END_RECEIPT applies. Inbetween, a talking party identification (TPI) may be available.

Length: 1

Values:

END_RECEIPT	0
BEGIN_RECEIPT	1
TPI	3

6.2.36 Info_speech_TI

Purpose: Information on speech transmission state.
When the speech transmission starts, BEGIN_TRANSMIT applies. When the speech transmission stops, END_TRANSMIT or END_TOO_LONG_TRANSMIT applies. When the anti-gossip timer times-out, speech transmission ceases with END_TOO_LONG_TRANSMIT.

Length: 1

Values:

END_TRANSMIT	0
BEGIN_TRANSMIT	1
END_TOO_LONG_TRANSMIT	2 -- anti-gossip timeout
DISCREET_TRANSMISSION_END	3
DISCREET_TRANSMISSION_BEGIN	4

6.2.37 inhibit_address display

Purpose: Indicates whether the RFSI address of a TETRAPOL system terminal should be displayed to the operators or not

Length: 1

Values:

ST_ADDRESS_DISPLAYED	0x00
ST_ADDRESS_NOT_DISPLAYED	0x01

6.2.38 Interface_version

Purpose: R6-I3 DAC interface version.

Length: 1

Values:

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VERSION1	0x01
VERSION2	0x02
VERSION3	0x03

6.2.39 Intrusion_type

Purpose: type of intrusion on a call.

Length: 1

Values:

PRIVATE_CALL_INTRUSION	0x0B

6.2.40 Length

Purpose: Octet length or quartet length.

Length: 1

Values: Context dependent.

6.2.41 Manual_key_modifier

Purpose: Key modifier for a manual keying.

Length: 4

Values: Any

6.2.42 Manual_key_modifier_index

Purpose: Manual key modifier index.

Length: 1

Values: significant values between MANUAL_KEY_MIN and MANUAL_KEY_MAX.

NON_SIGNIFICANT_KEY	0xFF
MANUAL_KEY_MIN	0
MANUAL_KEY_MAX	9

6.2.43 Message_length

Purpose: length of message in ASCII text

Length: 2

Values: 0 to 1472

6.2.44 Message_reference

Purpose: Reference of a data message

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Length: 2

Values: Any. Same value in request and reply.

6.2.45 Message_text

Purpose: message in ASCII text

Length: defined in message length field

Values:

A reduced set of characters may be displayed inside TETRAPOL (tbd)

6.2.46 MOCH/COV_identifier

Purpose: MOCH identifier for MOCH or shared coverage identifier for a talkgroup communication.
A coverage is characterized with a set of radio cells, either single cells or multicast cells, plus line-access base stations.
An multisite open channel or a broadcast open channel or a crisis open channel uses a dedicated coverage, whereas shared coverage may be used by several communications, including talkgroups, simultaneously. Group calls do not require to indicate a significant coverage identifier.
MOCH/COV_identifier does not apply to an emergency open channel, whose coverage is identified with the cell identifier where the terminal in emergency situation is located. For an emergency open channel, MOCH/COV_identifier is not significant.

Length: ID_LENGTH

Values: As defined by the network management upon defining the coverage

NSIG_COV 0xFFFF

6.2.47 Monitoring

Purpose: Monitoring indicates flows of datas transmitted to the DCS for system monitoring and call advertising.

Length: 1

Values:

bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
reserved	reserved	reserved	reserved	activation	system monitoring	operational signalling	emergency

When a bit is set, the corresponding flow of information is spontaneously transmitted to the DCS.

The flows referenced above correspond to the following PDUs:

Emergency :

DAC_CRISIS_NOTIFICATION
DAC_EMERGENCY_NOTIFICATION

Status

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DAC_SIGNALLING_IND

System monitoring

DAC_SORTED_LIST_IND

Activation

DAC_AH_ACTIVATION_IND

6.2.48 Monitoring_DESIGNATION

Purpose: Designation of a radio AG for monitoring

Length: 1

Values:

FALSE	0x00	AG is not used for monitoring
TRUE	0x01	AG is used for monitoring

6.2.49 Network_organization

Purpose: Organization identifier declared in the TETRAPOL system.

Length: 1

Values: 0x00h to 0xFEh;

NSIG_NETWORK_ORG 0xFF

6.2.50 Number_of_elements

Purpose: Number of elements in a list.

Length: 2

Values: Allowed range of values is context dependent, 0-255 is default range of values.

6.2.51 Object attribute

Purpose: This element gives the attributes of an object according to the corresponding object class. This is used in sorted list messages.

Length: variable (depending on the object class)

We provide here, each possible object attribute according to the corresponding object class.

6.2.51.1 Talkgroup object attribute (Object_class=TALKGROUP_CLASS)

Short description: This element, defined by a couple (OG, COV), seen by the AG on the Air Interface, is associated with the state of a call where applicable. It may be used as an element in DAC_SORTED_LIST or DCS_SORTED_LIST

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Table 62: Talkgroup_attribute

Information element	Length	
OG_identifier	2	OG of the talkgroup
MOCH/COV_identifier	ID_LENGTH	Coverage of the talkgroup
reserved	1	

Information element description:

OG, COV are the attributes of a talkgroup

6.2.51.2 Coverage object attribute (Object_class = COV_CLASS)

Short description: A COV element provides the attributes of a coverage related to an AH. It may be used as an element in DAC_SORTED_LIST or DCS_SORTED_LIST.

Table 63: COV_attribute

Information element	Length	
Reserved	1	
COV_identifier	ID_LENGTH	
reserved	1	

Information element description:

COV_identifier identifies the coverage.

6.2.51.3 Operational group Object attribute (Object_class = OG_CLASS)

Short description: This element is a 2-octet operational group. It may be used as an element in DAC_SORTED_LIST or DCS_SORTED_LIST.

Information element	Length	comment
OG_identifier	ID_LENGTH	

6.2.51.4 MOCH Object attribute (Object_class = MOCH_CLASS)

Short description: This element provides attributes of a MOCH within the coverage of the DC. The attributes include MOCH identifier, priority, OG. It may be used as an element in DAC_SORTED_LIST or DCS_SORTED_LIST.

Table 64: MOCH_attribute

Information element	Length	
MOCH/COV_identifier	ID_LENGTH	
Call_priority	1	
OG_identifier	2	Establishment OG
reserved	1	
reserved	1	
Number_of_elements	1	Number of OG
OG_identifier	2	
...	...	...
OG_identifier	2	

Information element description:

MOCH/COV_identifier, Call_priority, establishment OG, Number_of_OG, OG_list are attributes of a MOCH.

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The list of OG shall include simple (not composed) OG.

The number of OG in the list shall not exceed OG_MAXNB for A MOCH, and OG2_MAXNB for a BOCH or an EMOCH.

Establishment.OG may be set non-significant, i.e. 0XFFFF

6.2.51.5 ECH object attribute (object_class = ECH_CLASS)

Short description: This element indicates the attributes of an emergency open channels (for a trunk of AG). It provides the identification of the cell where the ECH has been initiated. It may be used as an element in DAC_SORTED_LIST or DCS_SORTED_LIST

Table 65: ECH_attribute

Information element	Length	
Reserved	1	
Cell_identifier	ID_LENGTH	
reserved	1	

6.2.52 Object_class

Purpose: Class of an object (AG, TRUNK...) of the DAC. Used to give the type of an object in a list such as in SORTED_LIST and CONFIGURATION messages.

Length: 1

Values:

NSIG_CLASS	0x01
AG_CLASS	0x02
TRUNK_CLASS	0x03
ORGANIZATION_CLASS	0x04
RESERVED	0x05
CALL_TYPE_CLASS	0x06
OG_CLASS	0x07
RESERVED	0x08
RESERVED	0x09
AH_CLASS	0x0A
PRIVATE_CALL_CLASS	0x0B
MOCH_CLASS	0x0C
ECH_CLASS	0x0D
TALKGROUP_CLASS	0x0E
DAC_CLASS	0x0F

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COV_CLASS 0x10

6.2.53 Object_configuration_attribute

Purpose: This element gives the attributes of configuration for an object according to the corresponding object class. This is used in configuration messages.

Length: variable (depending on the object class)

We provide here, each possible configuration object attribute according to the corresponding object class.

6.2.53.1 AG configuration attribute (Object_class= AG_CLASS)

Short description: The AG attribute element provides configuration parameters that may be read by the DCS .

Table 66: AG_configuration attribute

Information element	Length	comment
AG_type	1	Radio or line connected
AG_identifier	ID_LENGTH	
Forward_state	1	
reserved	1	
AG_state	1	
Working mode	1	
Address	5	RFSI Address of the AG

Information element description:

Ag_type is either LCT_AG or RT_AG or NSIG_AG.

6.2.53.2 Trunk configuration attribute (Object_class = TRUNK_CLASS)

Short description: The Trunk attribute element provides configuration parameters that may be read by the DCS

Table 67: Trunk_configuration attribute

Information element	Length	comment
Trunk_identifier	ID_LENGTH	
AH_identifier	ID_LENGTH	cell identifier
Call_type_Bitmap	1	Call type restrictions
Partitionning	1	
Alias length	1	
Alias_string	variable	alias for the trunk

6.2.53.3 DC_organization configuration attribute (Object_class= ORGANIZATION_CLASS)

Short description: The DC_organization attribute element provides configuration parameters that may be read by the DCS

Table 68: DC_organization_configuration attribute

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Information element	Length	comment
Organization_identifier	ID_LENGTH	
OG_source	1	
Alias_length	1	
Alias_string	variable	alias of the DC_organization

6.2.53.4 DAC configuration attribute (Object_class= DAC_CLASS)

Short description: The DAC attribute element provides configuration parameters that may be read by the DCS

Table 69: DAC_configuration attribute

Information element	Length	comment
Dac_identifier	ID_LENGTH	
Alias_length	1	
Alias_string	variable	Alias of the DAC

6.2.53.5 AH configuration attribute (Object_class = CELL_CLASS)

Short description: The AH attribute element provides configuration parameters that may be read by the DCS

Table 70: AH_configuration attribute

Information element	Length	comment
AH_identifier	ID_LENGTH	
Regional_network_identifier	1	
Cell_identifier	ID_LENGTH	
AH state	1	
Country code	1	
System_id	1	
R of Regional_network_identifier	ID_LENGTH	
reserved	1	
Working_mode	1	monitoring mode
Monitoring	1	
reserved	ID_LENGTH	
Alias_Length	1	
Alias_string	variable	alias of the cell
AH_type	1	Radio or line connected

6.2.54 OG_identifier

Purpose: Operational group identifier.
ALL_OG shall be used to refer to all terminals in the system.

Length: 2

Values: As defined in the external addressing plan for operational groups.

Authorised values are between 0 and 3499. Values ALL_OG and NSIG_OG are also authorised.

ALL_OG 0x0FFF

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NSIG_OG 0xFFFF

6.2.55 OG_source

Purpose: DC_organization attribute for operational group downloading from the AG, from the OMC, external source (ie DCS)

Length: 8 bits (bitmap)

Values:

bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
reserved	reserved	reserved	reserved	reserved	External source	OMC source	AG_source

6.2.56 Organisation_identifier

Purpose: DC_organisation identifier,

Length: ID_LENGTH

Values: Any

NSIG_DC_ORGANISATION_IDENTIFIER 0xFFFF

6.2.57 PTT_priority

Purpose: new expected PTT priority

Length: 1

Values:

PTT_PRIORITY_MIN 0x00

PTT_PRIORITY_MAX 0x0F

PTT_PRIORITY_NULL 0x00

PTT_PRIORITY_NORMAL 0x01

6.2.58 Reference_Type

Purpose: Type of a call reference

Length: 1

Values:

CURRENT_REF 0

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NEW_REF	1

6.2.59 R of Regional network identifier

Purpose: identifier of a regional network in the individual addressing plan

Length: ID_LENGTH

Values: 000 to 999 BCD coded in the lower quartets as defined in the TETRAPOL addessing plan.

6.2.60 Regional_network_identifier

Purpose: Compressed Identifier of a regional network used embedded in a cell_identifier.

Length: 1

Values: From 0x00 to 0xFF with 0xFF being non significant.

6.2.61 Result

Purpose: Result of status emission

Length: boolean

Values:

STATUS_SENT	TRUE
STATUS_NOT_SENT	FALSE

6.2.62 Partitionning

Purpose: Partitionning criterion of the interface

Length: 1

Values:

NO_PARTITIONNING	0x00
TRUNK	0x01
AG	0x02

6.2.63 Signal_code

Purpose: Signal code.

Length: 1

Values:

SIGNAL_EMERGENCY	0xC0
SIGNAL_DISPATCHER_CALLBACK	0xC1
SIGNAL_ECH_SETUP_REQ	0xD4
SIGNAL_ECH_SETUP_IND	0xD5
SIGNAL_CRISIS_CALL_SETUP_REQ	0xD6

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SIGNAL_CRISIS_CALL_SETUP_IND	0xD7
SIGNAL_DISPATCHER_EMERGENCY_CALL	0xD8
SIGNAL_DISPATCHER_CALL_FAILURE_IND	0xD9

Other values reserved.

6.2.64 Signal_info

Purpose: Signal information;

Length: 1

Value: Consistent values of this information element depend on the value of the information element Signal_code:

For the following values of Signal_code:

SIGNAL_EMERGENCY,
SIGNAL_DISPATCHER_CALLBACK,

Signal_info is set to :

SIGNAL_INFO_NSIG	0x00

For the following values of Signal_code:

SIGNAL_ECH_SETUP_REQ
SIGNAL_ECH_SETUP_IND
SIGNAL_CRISIS_CALL_SETUP_REQ
SIGNAL_CRISIS_CALL_SETUP_IND
SIGNAL_DISPATCHER_EMERGENCY_CALL
SIGNAL_DISPATCHER_CALL_FAILURE_IND

Signal_info equals the network_organization of the status sender.

6.2.65 SMS_application

Purpose: identification of SMS application

Length: 1

Values:

SMS_applications consistent with those defined inside TETRAPOL

Authorized values from 0 to 15.

SMS_APPLICATION_NSIG	0xFF

6.2.66 SMS_encryption

Purpose: Encryption mode of SMS

Length: 1

Values:

SMS_OPTIONAL_ENCRYPTION	0x00
SMS_MANDATORY_ENCRYPTION	0x01

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6.2.67 Sort_identifier

Purpose: Sort indentifier in a list of OG, MOCH, talkgroups, ECH

Length: ID_LENGTH

Values:

NSIG_IDENTIFIER	0xFFFF

6.2.68 Sort_class,

Purpose: Type of sort in a list of OG, MOCH, talkgroups, ECH

Length: 1

Values: The values are the same as the ones of Object_class (see Object_class)

6.2.69 Status_code

Purpose: Status_code.

Length: 1

Values: The values and their meaning are defined by the application

Status code values are between 0 and 0xBF

Other values reserved.

6.2.70 Status_info

Purpose: Status information;

Length: 1

Value: Status codes as defined by the application.

6.2.71 Status_type

Purpose: Status type

Length: 1

Values:

TERMINAL_STATUS_TYPE	0x00
DISPATCHER_STATUS_TYPE	0x01

6.2.72 Subaddress

Purpose: subaddress for a PABX call.

Length: SUBADDRESS_MAXLENGTH (lenght in quartets).

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Values: as defined in the addressing plan. A subaddress is BCD encoded. If there is an odd number of digits, the LSB quartet of the last byte is non significant.

6.2.73 Target_ST_mode

Purpose: Defines other informations about the state of the target ST, during a forced transmission on voice circuit.

Length: 1

Values: Target_ST_mode is a bitmap mask. The use of the bits is :

bit 7 to bit 1 :	0 (reserved)
bit 0 :	1: TARGET_ST_KEYBOARD_NOT_LOCKED
	0: TARGET_ST_KEYBOARD_LOCKED

6.2.74 TI state

Purpose: Speech transmit indication state.

Length: 1

Values:

TI_DEACT	0x00
TI_ACT	0x01

6.2.75 Tone_type

Purpose: Type of tone

Length: 1

Values:

RING_TONE	0x00
EMERGENCY_RING_TONE	0x01
PROCEEDING_TONE	0x02
BUSY_TONE	0x03
END_TONE	0x0A

6.2.76 Transmission_duration

Purpose: indicates the duration during which the target ST of a DCS_REMOTE_PTT_REQUEST PDU is expected to transmit on voice circuit.

Length: 1

Values:

NSIG_TRANSMISSION_DURATION	0X00
4_SECOND_TRANSMISSION_DURATION	0x01
8_SECOND_TRANSMISSION_DURATION	0x02
12_SECOND_TRANSMISSION_DURATION	0x03
16_SECOND_TRANSMISSION_DURATION	0x04
20_SECOND_TRANSMISSION_DURATION	0x05
24_SECOND_TRANSMISSION_DURATION	0x06

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28_SECOND_TRANSMISSION_DURATION	0x07

6.2.77 Trunk_identifier

Purpose: Trunk of access gate identifier,

Length: ID_LENGTH

Values: Any

NSIG_TRUNK_IDENTIFIER	0xFFFF

6.2.78 Working_mode

Purpose: Working mode of the access gate in order to receive information broadcast from the SwMI

The AG working mode is made either by the DCS per AG or by the DAC on behalf of the DCS, if the DAC working mode attribute is configured so.

Length: 1

Values:

TRAFFIC+MONITORING	0x03
TRAFFIC_ONLY	0x00
MONITORING_ONLY (AG does not supports calls),	0x02
DAC_SELECTED_MONITORING	0x10
DCS_SELECTED_MONITORING	0x20
ALL_AG_MONITORING	0x30

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7. History

Document history		
Date	Status	Comment
20/08/1996	Version 0.0.1	Split from early version of PAS Part 5-2 for digital dispatch centres
30/09/1996	Version 0.1.0	Version not released
25/04/1997	Version 0.1.1	Features for both digital and analog dispatch centres and Part 5.5 split from Part 5.4
30/05/1997	Version 1.0.2	§5.2.50 Status info: restricted to 1-bytestatus codes; short datagram on a different flow
26/06/97	Version 1.0.2	TETRAPOL Forum approved
16/07/97	Version 1.0.3	DAC_STATUS_IND: status_data simplified, status_type moved out of standardized features
09/12/97	Vesion 1.0.4	* Further explanations about the usage of several fields in some messages * Editorial aspects: §4.1 coding rule, §4.2.1.5 Filler, §4.2.2.5 ActivationOG §5.2.20 DAC_AG_ACTIVATION_IND, §5.2.26 MISSION_CLASS, §5.2.6 Unknown §4.5.2.3.2 Call_type_bitmap, §4.5.2.3.7 AhState, §4.5.2.3.7 AhState, §5.2.18 Cellidentifer * Modifications: §5.1 CAUSE_LENGTH=1 * New items
18/02/98	Version 1.0.5	Field comments taken into account
15/04/98	Version 1.0.6	New items removed; backward+forward compatibility aspects added PICS modified
27/04/98	version 1.0.7	simplification of notations
5/6/98	version 1.0.8	Evolution after meeting
30/06/98	version 1.1.0	Approuval after meeting new messages added: DAC_PTT_REQUEST_IND DAC_PTT_RELEASE_IND
26/08/98	version 1.1.1	editorial aspect: coding rule 5.2.15, 5.2.7

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11/02/99	version 1.1.2	removal of PDUs DCS_CONFIGURATION_SUBMIT, DCS_CONFIGURATION_COMMIT, DAC_CONFIGURATION_COMMIT_ACK DCS_CONFIGURATION_IND flow of status split between PDU DAC_STATUS_IND and DAC_SIGNALLING_IND (new message)
24/08/98	version 1.2.0	version 2 of the interface: new messages added:
28/09/98	version 1.2.1	approval after meeting
	version 1.2.2	
06/01/99	version 1.3.0	new messages for data flow new message CONFIGURATION_UPDATE
24/03/99	version 1.3.1	evolution after meeting
06/08/99	Version 1.3.2	Minor changes (call_type, codop fields)
04/02/2000	Version 1.3.3	No MOCH setup in clear mode Reservation of radio AG inhibition of TPI display Transfer of RFSI address of the AG SMS reference for emission Sub address for outgoing private call Keep alive mechanism + minor changes
17/04/2000	Version 2.0.0	TETRAPOL Working Group Approval.

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