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TETRAPOL FORUM

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Contents

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   Dispatch Centre interface

Part 6   Line Connected Terminal interface

Part 7   Codec

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Part 12   Network Management Centre interface

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Part 15   Gateway to External Data Terminal

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Part 17   Guide to TETRAPOL features

Part 18   Base station to Radioswitch interface

Part 19   Stand Alone Dispatch Position interface

1. Scope

The purpose of this part is to describe the services available from TETRAPOL at the interface to the Dispatch Centre. The Services available to DC users are derived from the services available at the interface, complemented by services local to the DC. The word "services" is for all facilities available from TETRAPOL, including as well voice and data teleservices/supplementary services as other services like, e.g., information on status of the TETRAPOL network. Services local to the dispatch centre are out of the scope of this document.

Examples:

- local calls between dispatchers (i.e. calls between dispatchers of the same DC) are out of the scope of the document;
- the supplementary service "broker's call" is not available at the interface and is out of the scope of this document, though it may be available to dispatchers.

The MMI for dispatchers is out of the scope of this document.

The description of the protocol at reference point R6 defined in PAS 0001-1-1: "TETRAPOL General Network Design, Reference Model" [1] is in PAS 0001-5-2 [2].

2. 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. For dated references, subsequent amendments to or revisions of any of these publications apply to this PAS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

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

[2]   PAS 0001-5-2: " Call Related protocol design".

[3]   PAS 0001-5-4: "Service Control Protocol Design"

[4]   PAS 0001-5-5: "Service Control Messages"

3. Definitions and abbreviations

3.1   Definitions

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

LineAccess Base Station : Unit permitting the connection of several TETRAPOL Line Connected Terminals to a radio switch

Operational Group: Group of TETRAPOL users sharing a certain right to setup or to participate to a multisite open channel or to participate to a talkgroup.

3.2   Abbreviations

For the purposes of this PAS, the following abbreviations apply:

BN	Base Network
BS	Base Station
DC	Dispatch Centre
LABS	Line Access Base Station
MOCH	Multisite Open Channel
NMC	Network Management Centre
OG	Operational Group
OMC	Operation and Maintenance Centre

PAS   Public Available Specification
PMR   Private Mobile Radiocommunications
PTT   Press To Talk
RSW   Radio Switch
ST   System Terminal

4. Reference model
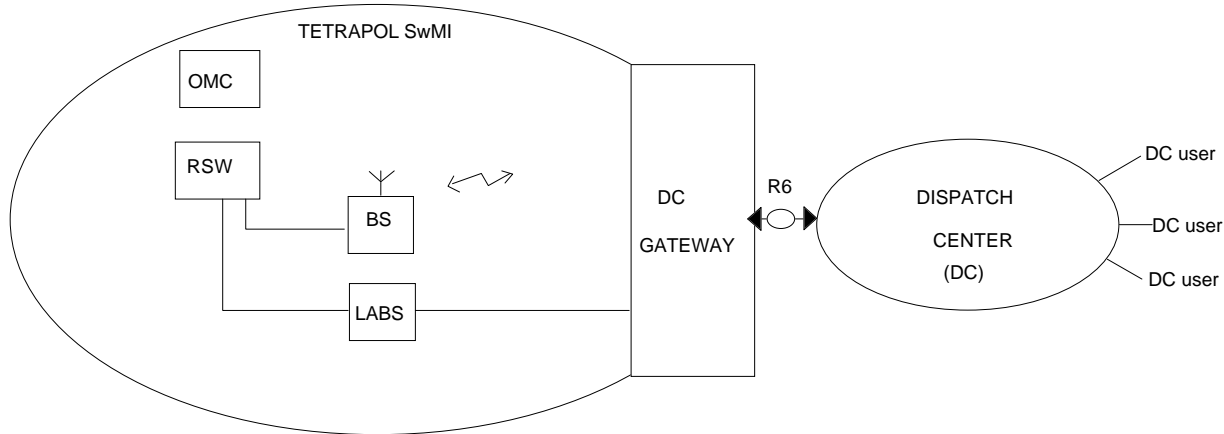
Figure 1: Reference model

Through the TETRAPOL Dispatch Centre gateway, the Dispatch Centre is connected to:

-        one or several base stations (note 1);
-        one or several lineaccess base stations;
-        one or several radio switches;
-        one or several operation and maintenance centres;
         NOTE 1:   connection to the BS is functionally equivalent to the connection of the LABS and can be used:

                -        instead of LABS connection in case of small DC's; in this case, there will probably be no OMC
                         connection, resulting in reduced facilities;

                -        as a complement to LABS connection, in order to provide minimum fallback services in case
                         of failure of LABS or wire links from LABS to DC.

all of those elements contribute to offer TETRAPOL services at the interface to DC.

Description of the gateway itself, as well as of the dispatch centre, is out of the scope of this document.

From TETRAPOL Point of View, DC users are considered as users of an external network.

5. Voice services

5.1 Multisite open channel

5.1.1 Basic service

5.1.1.1 Purpose

The multisite open channel is a half duplex speech service permitting communication between several
TETRAPOL users located in a predefined coverage area attached to this multisite open channel.
Through the external interface from TETRAPOL to DC, DC users have the possibility to participate to
TETRAPOL MOCH.

The MOCH permits communication between several users identified by their OG.

5.1.1.2 Coverage area

The coverage area is defined by a list of TETRAPOL BS's and TETRAPOL LABS's (Line Access Base Station). Participation of Dispatch Centre to a multisite open channel requires the Dispatch Centre being included in the coverage, i.e. being connected to an LABS or a BS defined in the coverage area.

An identifier is associated to each multisite open channel.

5.1.1.3 Multisite open channel setup

Setup may be requested by an authorised dispatcher or by an authorised TETRAPOL user.

When requesting setup, DC transmits following parameters to TETRAPOL:

- multisite open channel identifier;
- clear/cipphered mode
- list of groups (OG's) to be included in the MOCH (notes 2 and 3)
- priority.

DC is advised of the successful setup (Note 1) of every multisite open channels including DC in it's coverage.

Setup is independent of participation, i.e. a DC user can set up an MOCH even if no DC user is to participate in this MOCH.

NOTE 1 : setup is considered successful even if the MOCH has been set up under a part only of it's possible coverage.

NOTE 2 : if no list of OG's is given, a default list of OG's, defined et OMC, is taken into account at setup.

NOTE 3 : default list of OG's, defined et OMC, cannot be overriden by dispatcher in case of multi BN MOCH (see[1])

5.1.1.4 Participation to multisite open channel

DC may select any established (i.e. successfully setup) multisite open channel including DC in it's coverage to participate to it.

DC must provide to TETRAPOL the identifier of the multisite open channel he wants to participate in.

5.1.1.5 Multisite open channel release

Multisite open channel may be released by a dispatcher or TETRAPOL user.

When requesting release, DC transmits following parameters to TETRAPOL:

- multisite open channel identifier

DC is advised of the release of every multisite open channels including DC in it's coverage.

5.1.2 Supplementary services for MOCH

5.1.2.1 Call waiting

Not applicable

5.1.2.2 Calling party identification

Not applicable

5.1.2.3 Called party identification

Not applicable

5.1.2.4 Talking party identification

Talking party identification applies for both speech transmit directions:

-       when TETRAPOL transmits speech signal to DC, it provides together the talking party identity of
        the TETRAPOL user currently speaking;

5.1.2.5 Call transfer

Not applicable

5.1.2.6 Intrusion

Not supported

5.1.2.7 Discreet listening

-       For multisite open channel including DC in it's coverage, when DC enters a multisite open
channel,   other participants are not advised, thus discreet listening is possible.

-       For multisite open channel that doesn't include DC in it's coverage, discreet listening is not
possible.

5.1.2.8 Ambience listening

 A dispather participating in a MOCH can select a ST participating to the MOCH and enforce it to
transmitting state.

5.1.2.9 Include call

Not supported

5.1.2.10 Call forwarding

Not applicable

5.1.2.11 Access control

For radio terminals, access control to MOCH is based on OG's (Operational Groups), each MOCH
having a number of OG's attached to it.

At DC interface, access control facilities are as follows:

-       resources constituting the voice interface to TETRAPOL can be split by TETRAPOL configuration
        into several subsets (trunks);
-       access control to MOCH from a trunk is fixed by a set of OG's attached to that trunk;
-       if DC tries to participate to a MOCH, it chooses one of the subsets (trunks); TETRAPOL checks
consistency between the MOCH identifier provided by DC and OG's attached to the chosen trunk;if none
of the OG's attached to the trunk is also attached to the requested MOCH, participation is denied.

DC must know which MOCH is reachable through which trunk.

5.1.2.12 Call me back

Not applicable

5.1.2.13 Priority call

A dispatcher has the possibility to define a priority for multisite open channel setup. This priority is taken into account by TETRAPOL.

Furthermore, together with the list of established MOCH's, (see section "information on group communications"), the priority of each MOCH is provided.

5.1.2.14 Preemptive priority call

We are dealing here with the problem of premption of resources of the DC gateway (speech channels). We have to consider premption by DC and preemption by TETRAPOL.

For the preemption by DC, if DC needs to preempt a busy resource, it has to release an established call on the DC to TETRAPOLgateway. There is no difference between normal release or release because of preemption

There is no preemption of resources of the DC gateway by TETRAPOL.

5.1.2.15 Activation

Participants can speak into a multisite open channel only if it is in the active state. Activation may be requested by any participant (TETRAPOL user or dispatcher); a participant requests activation by pressing the PTT button. Activation becomes effective after TETRAPOL has assigned the necessary radio resources. The multisite open channel remains active at least as long as there is voice activity on it.

A DC user can request activation only for a multisite open channel he is connected to (i.e. DC is connected to the multisite open channel, and DC user is connected, possibly together with other DC users, to the corresponding interface channel).

Activation is notified by TETRAPOL to DC

5.1.2.16 Push To Talk handling

When a DC user wants to speak into a multisite open channel, a Push To Talk command is transmitted to TETRAPOL.

On line connections, PTT commands from DC are taken into account inside TETRAPOL with higher (preemptive) priority against commands from ordinary TETRAPOL users.

For each speech channel on which a call between TETRAPOL and DC is established, information is sent by TETRAPOL to DC to indicate:

- speech being transmitted from TETRAPOL to DC (receive indication)or (exclusively);
- speech being transmitted from DC to TETRAPOL (transmit indication).

Since voice services at DC interface are half duplex, only one indication can be active at a time (either transmit or receive)

5.1.2.17 Dynamic grouping

OMC(s) own data defining TETRAPOL operational groups. Dynamic grouping from DC is possible by modifying OG's if through access to OMC (see section "access to TETRAPOL operation data base").

> NOTE 1 :   The OMC's own two types of OG's :
> - internal OG's : a list of ST's is associated at OMC to each internal OG ; internal OG's are automatically distributed/withdrawn after each modification at OMC
> - external OG's : the list of terminals associated to external OG's is not known at OMC ; distribution/withdrawal of external OG's is handled by an entity external to TETRAPOL (e.g. by an external application computer)
> dynamic grouping only applies to internal OG's

5.1.2.18 Group merging

Not applicable

To merge several MOCHs owing each one or several OGs, it is possible however to set up an MOCH, owing all the OG's of all the merged MOCHs.

TETRAPOL users which were participants to the merged MOCHs do not automatically enter the merging MOCH (this is the reason why it is not a true merging); they have to select the merging MOCH for participation.

A DC user wanting to merge MOCHs has to:

-       setup a merging MOCH; (this merging MOCH is handled as a quite separate communication, with it's own parameters, like priority, independant of the MOCH to be merged)
-       invite the users of the merged MOCH's to join the merging MOCH.

5.1.2.19 Scanning

 A DC user has the possibility to select several MOCH's to be scanned. The corresponding speech signal shall be available at DC interface.

Each time the scanning algorithm selects an MOCH for listening, the corresponding MOCH identifier is sent to DC.

A DC user has the possibility to send a skip command to enforce the scanning algorithm leaving the currently listened to MOCH

5.2 Individual call

5.2.1 Basic service

5.2.1.1 Purpose

The individual call establishes a half-duplex speech connection from a calling party to a called party. At least one party is a TETRAPOL user.

5.2.1.2 Call setup

In case of a call from TETRAPOL user to DC user, TETRAPOL establishes a call to DC Following parameters are transmitted to DC:

-       calling party identity;
-       called party identity;
-       priority of the call.

The called party identity is used by DC to route the call inside DC.

In case of a call from DC user to TETRAPOL user, DC establishes a call to TETRAPOL. Following parameters are transmitted to TETRAPOL:

-       called party identity;
-       priority of the call

In case of an individual call inside TETRAPOL, the DC is not involved in call setup, but some supplementary services may be activated from DC.

5.2.1.3 Call release

The call may be released by either party.

5.2.2 Supplementary services for individual call

5.2.2.1 Call waiting

Not supported

5.2.2.2 Calling party identification

The calling party identity is available to Dispatch Centre.

5.2.2.3 Called party identification

Not supported

5.2.2.4 Talking party identification

Same as MOCH.

5.2.2.5 Call transfer

A call from TETRAPOL to DC may be transferred to :

- another TETRAPOL user.
- a PABX

5.2.2.6 Intrusion

A dispatcher has the possibility to select an ongoing call between two TETRAPOL subscribers to intrude it.

5.2.2.7 Discreet listening

Discreet listening is equivalent to an intrusion without PTT activation.

5.2.2.8 Ambience listening

A dispatcher has the possibility to activate the ambiance listening facility. This may be done either at call setup or on an established call.

5.2.2.9 Include call

not supported

5.2.2.10 call forwarding

not supported

5.2.2.11 Barring of calls

Each system (TETRAPOL on one side, DC on the other side) has its own call barring possibilities.

Each system receiving an incoming call that cannot be established because of call barring rejects the call.

5.2.2.12 Call me back

A TETRAPOL user has the possibility to send a call me back information to DC for notice to a dispatcher or collection of dispatchers (see status services).

5.2.2.13 Priority call

In case of a call from DC to TETRAPOL, the priority transmitted from DC to TETRAPOL is taken into account for call setup.

In case of a call from TETRAPOL to DC, the priority of the call is transmitted to DC.

5.2.2.14 Preemptive priority call

5.2.2.15 Same as MOCHPush To Talk handling

Same as MOCH

5.2.2.16 Call clearing

A dispatcher has the possibility to select an ongoing call between two TETRAPOL subscribers and to release the call. It is recommanded, but not mandatory, that the dispatcher intrudes the call before releasing it.

5.2.2.17 Call on hold

Not supported

5.3 Multi-Party call

5.3.1 Basic service

5.3.1.1 Purpose

The multi-party call is a half duplex speech service permitting communication between a calling party and up to four called parties.

5.3.1.2 Call setup

In case of a call issued by a TETRAPOL user involving the DC, if a TETRAPOL user wants to setup a multiparty call including a DC, it includes, in the list of called parties addresses, the address of the access to DC. He has no possibility to address any particular DC user. The address of the DC access can appear only once in the list of called parties addresses.

TETRAPOL establishes a call to DC. Following parameters are transmitted to DC:

-       calling party identity;
-       priority of the call.

In case of a call issued by a DC user, DC establishes a call to TETRAPOL. Following parameters are transmitted to TETRAPOL:

-       calling party identity;
-       list of TETRAPOL called party identities;
-       priority of the call.

In case of a call involving only TETRAPOL users, the DC is not involved in call setup, but some supplementary services may be activated from DC.

5.3.1.3 Call release

The call can be released by the calling party ; it is released also when all called parties have left the call

5.3.2 Supplementary services for multi-party call

5.3.2.1 Call waiting

Not supported

5.3.2.2 Calling party identification

Same as individual call

5.3.2.3 Called party identification

Not supported

5.3.2.4 Talking party identification

Same as Multisite open channel

5.3.2.5 Call transfer

Not supported

5.3.2.6 Intrusion

Same as individual call.

5.3.2.7 Discreet listening

Same as individual call.

5.3.2.8 Ambience listening

not applicable

5.3.2.9 Include call

Not supported

5.3.2.10 Call forwarding

Not supported

5.3.2.11 Barring of calls

Same as individual call.

5.3.2.12 Call me back

Not applicable.

5.3.2.13 Priority call

Same as individual call.

5.3.2.14 Preemptive priority call

Same as individual call.

5.3.2.15 Push To Talk handling

Same as MOCH

5.3.2.16 Call clearing

Same as individual call

5.3.2.17 Call on hold

not supported

5.4 Emergency open channel

5.4.1 Basic service

5.4.1.1 Purpose

The emergency open channel is a speech service established with the highest priority and enabling communication between several TETRAPOL users on one hand, one or several dispatchers on the other hand

5.4.1.2 Call setup

There are two possible ways to setup an emergency open channel:

-        the emergency open channel is established automatically by TETRAPOL when a TETRAPOL user makes an emergency call;
or
-        the emergency open channel is established by a dispatcher for any emergency situation (for instance upon receiving an emergency status from a TETRAPOL user.).

Note : When a TETRAPOL user makes an emergency call, an emergency status is sent to relevant dispatchers ; additionally, automatic setup of an emergency open channel is performed or not ,according to the whishes of the organization the originator of the emergency call belongs to.

5.4.1.3 Call Release

The emergency open channel may be released:

-        by a dispatcher;
-        by an authorised TETRAPOL user.

5.4.2 Supplementary services

5.4.2.1 Call waiting

Not applicable

5.4.2.2 Calling party identification

DC is included in the coverage of all emergency open channels; In case of automatic setup of the emergency open channel, the identity of the TETRAPOL user having requested the emergency open channel is broadcast over all the coverage and thus transmitted to the Dispatch Centre.

If the emergency open channel is setup by a dispatcher, he has the possibility to give an identifier to be broadcast over the coverage (for instance, after receiving an emergency status, he can give in the identifier of the originator of the emergency status).

5.4.2.3 Called party identification

Not applicable.

5.4.2.4 Talking party identification

Same as multisite open channel.

5.4.2.5 Call transfer

not applicable.

5.4.2.6 Intrusion

not supported.

5.4.2.7 Discreet listening

- when DC enters an emergency open channel, other participants are not advised, thus discreet listening is possible.

5.4.2.8 Ambience listening

A dispatcher participating to the emergency open channel can enforce the ST which originated the emergency call to transmitting state.

5.4.2.9 Include call

Not applicable.

5.4.2.10 Call forwarding

Not applicable.

5.4.2.11 Access control

Access control does not apply to emergency open channel. OG's are not taken into account for participation to emergency open channel.

5.4.2.12 Call me back

Not applicable.

5.4.2.13 Priority call

The priority of the emergency open channel is fixed to the highest possible value.

5.4.2.14 Preemptive priority call

same as MOCH.

5.4.2.15 Activation

Same as multisite open channel.

5.5 Broadcast call

5.5.1 Basic service

5.5.1.1 Purpose

The broadcast call permits a dispatcher to send a voice message to several groups of TETRAPOL users with high priority

A broadcast call consists of an MOCH setup with a priority level « broadcast »

5.5.1.2 Coverage area

See MOCH.

5.5.1.3 Call setup

To setup a broadcast call, the dispatcher :

- selects the OG's of the groups to which a voice message is to be broadcast

- selects an MOCH with a convenient coverage (i.e. a coverage corresponding to the area under which a message is to be broadcast)

- issues a broadcast command, corresponding to the setup of an MOCH with broadcast priority

The corresponding parameters are sent to TETRAPOL over the DC gateway. DC is advised of the setup of the call

5.5.1.4 Participation

For outgoing calls, (broadcast call established from DC), the dispatcher who sets up the broadcast call has to enter the corresponding MOCH to participate to it.

For incoming calls (broadcast call established from outside DC, and including DC in its coverage), there are two possible ways to participate :

- DC is advised of the setup of any broadcast call including DC in its coverage, through the list of established group communications (see section on information on group communications). It is possible for a dispatcher to select the broadcast call to participate in.

- if a talkgroup scanning is programmed on a channel of the DC gateway and if one of the programmed groups is included in the broadcast call, then this channel participates to the broadcast call.

5.5.1.5 Call release

The broadcast call can be released by any authorized dispatcher. (note 1)

> NOTE 1: standard procedure is that the broadcast call is released by the dispatcher which setup the call.

5.5.2 Supplementary services for broadcast call

5.5.2.1 Call waiting

Not applicable.

5.5.2.2 Calling party identification

Not applicable.

5.5.2.3 Called party identification

Not applicable.

5.5.2.4 Talking party identification

Same as MOCH.

5.5.2.5 Call transfer

Not applicable.

5.5.2.6 Intrusion

Not supported.

5.5.2.7 Discreet listening

Same as MOCH.

5.5.2.8 Ambience listening

Not applicable.

5.5.2.9 Include call

Not supported.

5.5.2.10 Call forwarding

Not applicable.

5.5.2.11 Access control

Same as MOCH.

5.5.2.12 Call me back

Not applicable.

5.5.2.13 Priority call

Not applicable.

5.5.2.14 Preemptive priority call

Same as MOCH.

5.5.2.15 Activation

Same as MOCH.

5.5.2.16 Push To Talk handling

Same as MOCH.

5.5.2.17 Dynamic grouping

Not applicable

5.5.2.18 Group merging

Not applicable

5.5.2.19 Scanning

Not applicable.

5.6 Talkgroups

5.6.1 Basic service

5.6.1.1 Purpose

The talkgroup communication is a half duplex speech service permitting communication between several TETRAPOL users located in a predefined coverage area attached to this talkgroup. Through the external interface from TETRAPOL to DC, DC users have the possibility to participate to TETRAPOL talkgroups.

There is no setup nor release for a talkgroup communication. A talkgroup can be used any time. In order for a talkgroup to be used, following conditions are necessary :

- the talkgroup must be declared in TETRAPOL operation data base (declaration of an OG an a coverage area)
- the voice circuit set corresponding to the coverage area must be put in operation

5.6.1.2 Coverage area

See MOCH.

5.6.1.3 Participation to talkgroup

DC may select any talkgroup including DC in it's coverage to participate to it.

DC must provide to TETRAPOL the identifier of the talkgroup he wants to participate in.

5.6.2 Supplementary services for talkgroups

5.6.2.1 Call waiting

Not applicable.

5.6.2.2 Calling party identification

Not applicable.

5.6.2.3 Called party identification

Not applicable.

5.6.2.4 Talking party identification

Same as MOCH.

5.6.2.5 Call transfer

Not applicable.

5.6.2.6 Intrusion

Not supported.

5.6.2.7 Discreet listening

Same as MOCH.

5.6.2.8 Ambience listening

. A dispatcher participating in a talkgroup can select a ST participating to the talkgroup and enforce it to transmitting state.

5.6.2.9 Include call

Not supported.

5.6.2.10 Call forwarding

Not applicable.

5.6.2.11 Access control

Same as MOCH. There is, however, a single OG attached to each talkgroup.

5.6.2.12 Call me back

Not applicable.

5.6.2.13 Priority call

When joining a talkgroup, DC transmits a priority parameter to TETRAPOL. This priority parameter is taken into account when the talkgroup is activated from DC.

5.6.2.14 Preemptive priority call

Same as MOCH.

5.6.2.15 Activation

Same as MOCH.

5.6.2.16 Push To Talk handling

Same as MOCH.

5.6.2.17 Dynamic grouping

Same as MOCH.

5.6.2.18 Group merging

Merging several talkgroups consists in setting up a communication to which all members of the merged talkgroups can participate.

Merging is done by setting up an MOCH owing the OG's of the groups to be merged.

To merge several talkgroups owing each one OG, the dispatcher :

- selects the OG's of the groups to be merged

- selects an MOCH with a convenient coverage (i.e. a coverage corresponding to the area under which groups are to be merged)

- issues a merge command (corresponding to the setup of an MOCH with the appropriate OG's)

A merging communication is setup, owing the OG's of all the merged talkgroups.

5.6.2.19 Scanning

. A DC user has the possibility to select several talkgroups to be scanned. The corresponding speech signal shall be available at DC interface.

Each time the scanning algorithm selects a talkgroup for listening, the corresponding talkgroup identifier is sent to DC.

A DC user has the possibility to send a skip command to enforce the scanning algorithm leaving the currently listened to talkgroup

5.7   Group call

5.7.1 Basic service

5.7.1.1 Purpose

The group call is a half duplex speech service permitting communication between several TETRAPOL users located in a predefined coverage area attached to this group. The group call permits to setup a call of limited duration towards a talkgroup. Through the external interface from TETRAPOL to DC, DC users have the possibility to setup group calls and to participate to group calls.

For a dispatcher to issue/participate to a groupcall, DC must be included in the coverage of the corresponding talkgroup.

5.7.1.2 Coverage area

See MOCH.

5.7.1.3 Call setup

Setup of a group call can be requested by a TETRAPOL user or of an external system connected to TETRAPOL, for instance from DC.

For a dispatcher, issuing a group call is similar to participating to the talkgroup to which he wants to issue a group call.

To issue a group call, a dispatcher selects, for participation, the talkgroup to which he wants to issue a group call ; the group call is setup when he presses PTT.

> NOTE 1 :   ST's are configured to work in talkgroup mode or in group call mode on an organisation by organisation basis. According to this configuration, activation of a group from DC results either in a talkgroup activation or in a group call (see [1] for more details on group call)

5.7.1.4 Participation to group call

For outgoing calls, (group call established from DC), the dispatcher who sets up the group call participes to the call, since he has to select the talkgroup to which he issues a group call..

For incoming calls (group call established from outside DC, and including DC in its coverage), there are two possible ways to participate :

- DC is advised of the setup of any group call including DC in its coverage, through the list of established group communications (see section on information on group communications). It is the possible for a dispatcher to select the group call to participate in.

- if a talkgroup scanning is programmed on a channel of the DC gateway and if the called group is included in the list of scanned groups, this group becomes candidate to be selected by the scanning algorithm. The corresponding speech signal is sent to DC.

5.7.1.5 call release

The group call can be released by the calling party or by a dispatcher participating to the group call.

5.7.2 Supplementary services for group calls

5.7.2.1 Call waiting

Not applicable.

5.7.2.2 Calling party identification

Not applicable

5.7.2.3 Called party identification

Not applicable.

5.7.2.4 Talking party identification

Same as MOCH.

5.7.2.5 Call transfer

Not applicable.

5.7.2.6 Intrusion

Not supported.

5.7.2.7 Discreet listening

Same as MOCH.

5.7.2.8 Ambience listening

Same as talkgroup.

5.7.2.9 Include call

Not supported.

5.7.2.10 Call forwarding

Not applicable.

5.7.2.11 Access control

For participating to a group call established from outside DC, the same rules as for MOCH apply.

5.7.2.12 Call me back

Not applicable.

5.7.2.13 Priority call

In case of a call from DC to TETRAPOL, the priority transmitted from DC to TETRAPOL is taken into account for call setup.

5.7.2.14 Preemptive priority call

same as MOCH

5.7.2.15 Activation

Same as MOCH.

5.7.2.16 Push To Talk handling

Same as MOCH.

5.7.2.17 Dynamic grouping

Same as MOCH.

5.7.2.18 Group merging

Not applicable

It is not possible to merge ongoing group calls. Merging applies only to the talkgroups.

5.7.2.19 Scanning

Same as Talk groups

6. Data services

6.1 Scope

Only status services are available at reference point R6. Other data services are made available to dispatchers through one or several TETRAPOL dedicated data access points :

R2 : access to UDT
R8 : access to X 400
R10 : access to EDT
R15 : access to TCP/IP

6.2 Status services

6.2.1 Basic service

6.2.1.1 Presentation

The status service enables transmission of very short messages:

- from mobile to DC;
- from DC to mobile(s).

The meaning of the information contained in the status message is generally user defined.

Some values are reserved for system use (e.g. for performing a call me back function).

6.2.1.2 Status from mobile to DC

A status from mobile to DC includes:

- information part;
- calling party identity.

The status is routed to DC by the TETRAPOL SwMI ; The status carries no called party identity, so it is not possible to send a status to a particular DC user.

There are two particular status's reserved for system use, corresponding to:

- call me back status, in order to request a DC user to call back the TETRAPOL user having sent the status;
- emergency status.

6.2.1.3 Status from DC to mobile(s)

A status from DC to mobile is delivered to TETRAPOL including:

- information part;
- called party identity.

6.2.2 Supplementary services

6.2.2.1 Calling party location

Status from mobile to dispatcher may be complemented with the mobile's location (identity of the radio cell he is located in).

7.   Monitoring information from TETRAPOL system

Monitoring information provided to DC by the TETRAPOL system includes :

- monitoring of terminals
- monitoring of communications
- monitoring of network

7.1 Monitoring of terminals

For the terminals supervised by DC, following information is provided :

- terminal location (identity of BS where the terminal is registered)
- on/off state
- identity of the group (OG) selected by the terminal

7.2 Monitoring of communications

7.2.1 Monitoring of private communications

An overview of ongoing private communications is periodically sent to DC. For each private communication, following information is provided :

- identity and location of calling party
- identity and location of called party (ies)
- type of call (PABX, other)
- time of call setup

7.2.2 Monitoring of group communications

TETRAPOL delivers following information on group communications:

- list of established group communications;
- activity signalling for group communications;
- list of voice circuits sets available for talkgroups and group calls.

7.2.2.1 List of established group communications

Following information is made available at DC interface:

- list of established MOCH's including DC in their coverage, together with the priority of each MOCH, and the OG's attached to the MOCH;
- list of established emergency open channels including DC in their coverage.
- list of broadcast calls including DC in their coverage

7.2.2.2 Activity signalling for group communications

Activity signalling applies to following group communications:

- MOCH;
- emergency open channel;
  Broadcast calls
- talkgroups.
- Group calls

Activity on those group communications is signalled by TETRAPOL to DC, independent of whether DC participates to the communication or not, provided DC is included in the coverage of the communication.

For each of those group communications, begining and end of activity are noticed to DC. Information provided together with activity indication are :

for MOCH :   type of call and identifier of MOCH, priority, clear/ciphered mode,
                         activating OG
for emergency open channel : type of call and identifier of emergency open channel, activating OG
for broadcast call :   type of call, identifier of MOCH,priority, clear/ciphered mode, activating
                         OG
 for talkgroups :   type of call and OG , clear/ciphered mode, activating OG
for group calls :   type of call , OG of called group, clear/ciphered mode, call originated
                              from inside/outside group, call reference, activating OG

7.2.2.3 List of voice circuit sets available for talkgroups

The list of voice circuit sets including DC in their coverage is made available at DC interface.

7.3 Monitoring of network

DC is advised of major alarms on base stations

8. Access to TETRAPOL operation data base

8.1 General

Access to TETRAPOL operation data base from dispatch positions is possible for authorised dispatchers. TETRAPOL operation data is located in OMC's data bases.

Dispatchers have access to service related data only, not to network related data.

8.2 Access to OMC data bases

An authorised dispatcher may access an OMC data base for query or modification of operation data.

Data accessible to dispatchers may include:

-       TETRAPOL subscriber characteristics;
-       TETRAPOL addresses;
-       definition of coverage for MOCH;
-       Operational Groups.

Operations available to dispatchers include :

operation on groups : (OG's)
-       listing characteristics of existing groups
-       modifying the list of members of existing groups
-        creating new groups
-       deleting created groups

operations on system terminals :
-        temporary disabling of system terminals

operations related to coverage areas :
-       listing characteristics of existing voice circuit sets
-        listing characteristics of existing MOCH's

9. History

<table>
<tr><th colspan="3">Document history</th></tr>
<tr><th>Date</th><th>Status</th><th>Comment</th></tr>
<tr><td>06 June 1996</td><td>First Version</td><td>Version 0.0.1</td></tr>
<tr><td>03 July 1996</td><td>Corrections editorial</td><td>Version 0.0.2</td></tr>
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<tr><td>30 January 1998</td><td>TETRAPOL Forum acceptance</td><td>Version 1.0.0</td></tr>
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