Telecommunications and Information Exchange Between Systems

ISO/IEC JTC 1/SC 6

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Title: DoC for 2nd FCD ballot of ISO/IEC 16512-3 RMCP-3 (X.603.2)

Source: SC 6/WG 7 Meeting (Barcelona, January 2010)

Status: This document is a DoC on UK comments in N14038, SoV on 2nd FCD ballot RMCP-3 (ITU-T X.603.2 | ISO/IEC 16512-3) which was discussed in January 2010 Barcelona ISO/IEC JTC 1/SC 6/WG 7 & ITU-T Q.15/11 Joint Meeting.

1	2	3	4	5	6	7
MB[1]	**Clause/ Subclause/ Annex/Figure/Table** (e.g. 3.1, Table 2)	**Paragraph/ List item/ Note/** (e.g. Note 2)	**Type of com-ment**[2]	**Comment (justification for change)**	**Proposed change**	**Secretariat observations** on each comment submitted
GB 0			ge	<u>UK vote of disapproval</u> We note that significant changes have been proposed in IISO/IEC 16512-2/PDAM 2 and we consider that these changes should also be incorporated in ISO/IEC 16512-3. Our vote of disapproval is based on the following UK comments: **GB 7**. Reconsideration of the content of the AUTH control; **GB 17** Redefinition of the ROOTPATH control; **GB 18 and 19.** Redefinition of the COMMAND control to cover SI_COMMAND and RP_COMMAND **GB 21** Lack of specification of the format of the Data Profile. A figure showing an example of a profile needs to be added.		
GB 1	1		te	<u>Scope</u> The RMCP-3 topology has undergone significant development since the publication of ISO/IEC 16512-1.	Delete the following sentence: 'The RPCP topology and service scenario described in this specification follows the definition of the RPCP framework without any modification'.	Agreed. Sentence is deleted
GB 2	3.1		ed, te	<u>Definitions. Terms defined elsewhere</u> Many of the definitions in 3.1 have been taken from X.603|16512-1 but in places the wording has been modified. This could lead to duplications and contradictions and should be avoided. The ISO Directives state: 'If the concept is used in several documents, it should be defined in the most general of those documents, or in an independent terminology standard. The other	Proposed replacement text, together with minor corrections to the terms defined in 16512-3, is indicated below. *Note that both a CoreMA and an Edge MA are individual MAs and not groups of MAs. Also that a CoreMA by definition is not part of the edge domain.*	Agreed Made revision as proposed. Changed referenced definition as defined in the referenced document.

1	2	3	4	5	6	7
MB[1]	**Clause/ Subclause/ Annex/Figure/Table** (e.g. 3.1, Table 2)	**Paragraph/ List item/ Note/** (e.g. Note 2)	**Type of com-ment[2]**	**Comment (justification for change)**	**Proposed change**	**Secretariat observations** on each comment submitted
				documents should then refer to this standard, without repeating the definition of the concept. When the repetition of a definition is necessary, an informative reference shall be made to the document from which it is reproduced.' We consider that the definitions in 3.1 are sufficiently close to those in ITU-T Rec. X.603 | ISO/IEC 16512-1 or ITU-T Rec. X.603.1 | ISO/IEC 16512-2 to be used in this standard and that these definitions should be referenced from this standard.		

3   Definitions

3.1   Terms defined elsewhere

This recommendation | International Standard uses the following terms defined in ITU-T Rec. 603 | ISO/IEC 16512-1:

   3.1.1   IP multicast;

   3.1.2   Multicast;

   3.1.3   Multicast agent (MA);

   3.1.4   N-plex;

   3.1.5   Parent multicast agent (PMA);

   3.1.6   RMCP session;

   3.1.7   Sender multicast agent (SMA);

   3.1.8   Simplex.

This Recommendation | International Standard uses the following terms defined in ITU-T Rec. 603.1 | ISO/IEC 16512-2:

   3.1.9   Child multicast agent (CMA);

   3.1.10   Relayed multicast (RMCP);

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MB[1]	**Clause/ Subclause/ Annex/Figure/Table** (e.g. 3.1, Table 2)	**Paragraph/ List item/ Note/** (e.g. Note 2)	**Type of com-ment[2]**	**Comment (justification for change)**	**Proposed change**	**Secretariat observations** on each comment submitted

3.1.11 Relayed multicast protocol (RMCP);

3.1.12 Receiver multicast agent (RMA);

3.1.13 Session manager (SM).

3.2 Terms defined in this Recommendation | International Standard

For the purposes of this Recommendation | International Standard, the following definitions apply:

3.2.1 Core domain: The top-level domain consisting of group of CoreMAs and the SM.

3.2.2 Core multicast agent (CoreMA): ~~Group of MAs that configures~~ An MA that helps to configure the RMCP-3 core domain.

3.2.3 CoreRing: A ring topology consisting of CoreMAs and the SM in the core domain.

3.2.4 Edge domain: The bottom-level domain consisting of a group of EdgeMAs.

3.2.5 Edge multicast agent (EdgeMA): ~~MAs that configures~~ An MA that helps to configure the RMCP-3 edge domain.

3.2.6 EdgeTree: A tree topology consisting of EdgeMAs and a single CoreMA as ~~a~~ its root node ~~in the edge domain~~.

3.2.7 Head multicast agent (HMA): The head of the MAs inside ~~the~~ a local multicast area which relays multicast data to ~~the~~ its local multicast area.

3.2.8 RMCP-3 Hybrid Tree: A mixed topology with the CoreRing and EdgeTrees.

| **GB 3** | All | | te | <u>Terminology for messages, controls and sub-controls</u> WG 7 in its Tokyo meeting decided on the following usages for 16512-2:   'control' in place of 'control data'; and   'sub-control' in place of 'sub-control data' | Throughout the standard   Use 'control' in place of 'control data'.   Use 'sub-control' in place of 'sub-control data'.   Use 'message' in place of 'control message'. | Agreed Made replacement as proposed. |

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MB[1]	**Clause/ Subclause/ Annex/Figure/Table** (e.g. 3.1, Table 2)	**Paragraph/ List item/ Note/** (e.g. Note 2)	**Type of com-ment**[2]	**Comment (justification for change)**	**Proposed change**	**Secretariat observations** on each comment submitted
				We consider that this usage should be adopted in 16512-3. We also consider that 'message' should be used in place of 'control message' Rationale: 1. The use of 'control' in control message could be confused with 'control' in the sense of a component of the message. 2. 16512-3 does not specify any particular data delivery mechanism, so that an RMCP-3 message can only refer to a control message, as distinct from a data message.		
GB 4	6.5	Figure 7	te	Mesh topography. Figure 7 illustrates a data delivery model with a full mesh topography. The remainder of the standard ignores this configuration and gives the impression that the ring topography is the only structure. I suggest: Figure 7 shows an example of a ~~the~~ data delivery model where …. Figure 8 shows an example of a ~~the~~ data delivery model using the CoreRing ….	This is just a comment and we are not necessarily proposing a change of text.	Agreed Made changes to proposed text.
GB 5	6.5	Figure 8	te	Relation of SM to data delivery model The SM takes no part on data delivery. The SM is not shown in Figure 7 for a mesh topology but the SM is included in Figure 8 for a ring topology. We consider that the SM should not be included the delivery model and that Figure 8 should illustrate logical connections only. This will avoid the invention of algorithms explaining why the SM takes no part in the	Replace Figure 8 with the figure below in which the SM has been removed.	Agreed Revised the current figure to apply to proposed changes.

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MB[1]	Clause/ Subclause/ Annex/Figure/Table (e.g. 3.1, Table 2)	Paragraph/ List item/ Note/ (e.g. Note 2)	Type of com- ment[2]	Comment (justification for change)	Proposed change	Secretariat observations on each comment submitted

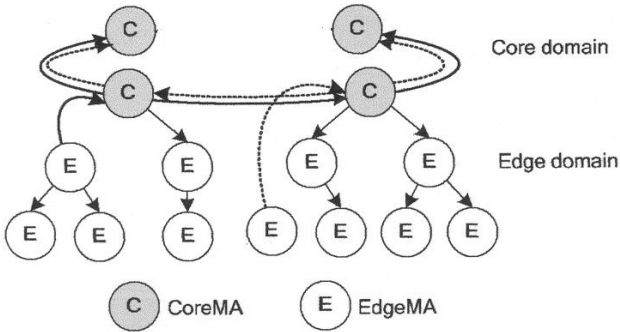|				delivery mechanism. A note (not part of the specification) stating that the ring connections are the same physical connections as used for the RMCP-3 control messages.		
GB 6	6.6	Table 1	ed	Order of messages It is important to demonstrate a consistent approach to the drafting of the standard. We consider that any listing of messages should be in the same order wherever they occur. We also suggest that the ordering of VHB and HHB messages should be reversed. It is more logical to think of HHB messages being created by the SM and the heartbeat is then passed on the edge trees.	Reorder Table 1 to be consistent with the order of message specifications and with Table 2.	Agreed. Changed the ordering in table 2.

Figure 8 – RMCP-3 data delivery model with ring-linked core-domain

1	2	3	4	5	6	7
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GB 7	7.3.1 7.3.2.1 7.3.4.1 7.3.4.2 8.3.1.2 8.3.2.2 8.3.5.2 8.3.6.2 8.3.7.2 8.3.16.2 8.4.3 9.3.1		te, ge	Authentication

We note that authentication has been withdrawn from the basic RMCP-2 protocol on the grounds that it was not sufficiently defined and in 16512-2 and that its proposed use in basic RMCP-2 was not compatible when used in conjunction with secure RMCP-2 (16512-2/Amd.1).

7.3.1 states that the decision rule for authentication and authorization is defined in the initial stage of RMCP-3 services. We cannot find this decision rule in the FCD text.

Furthermore, although 7.3.2.1.a) states the need for an authentication mechanism, this is not specified in the Recommendation.

The AUTH control defined in 16512-3 has the same structure (but not the same field names) as the AUTH_ALG control in the revised text of 16512-2/Amd.1. Both are based on a choice of Hash/MAC algorithms (HMAC-SHA1 | HMAC-MD5 | MD5).

The meaning for the AUTH control in the table in clause 8 is described as 'authentication information for verifying the sender'. The AUTH control provides no information beyond the identification of a Hash/MAC algorithm.

The identification one of these algorithms may be necessary for authentication but we doubt that it is sufficient for successful authentication. | Either remove authentication form the standard or provide a more adequate specification of the procedure for authentication.

If the latter is chosen, the control type should be aligned with the AUTH_ALG control in 16512-2/Amd.1.

We are not in a position to provide replacement text. | Agreed

Removed every AUTH parts.

(Not in text) |
| GB 8 | 7.3.4.1.a | | ed | Korean characters | Translation required | Agreed

It was an MS word problem. it is removed.

(Not in text) |

Template for comments and secretariat observations

Date:	Document: **ISO/**

1	2	3	4	5	6	7
MB[1]	**Clause/ Subclause/ Annex/Figure/Table** (e.g. 3.1, Table 2)	**Paragraph/ List item/ Note/** (e.g. Note 2)	**Type of com- ment**[2]	**Comment (justification for change)**	**Proposed change**	**Secretariat observations** on each comment submitted

GB 9	8.2		te	Control data format The field size should be related to the need for multiple control types, not vice versa. The number of control types is of concern only to the writers of the standard. There are less than 16 control types in this protocol and we cannot envisage a case where 256 control types will be needed.	Delete: Since the control type field is 1-byte long , the maximum number of unique control types is limited to 256 cases.	Agreed. Deleted as proposed.
GB 10	8.3.1.1.g) 8.3.2.1.g) 8.3.3.1.g) 8.3.4.1.g) 8.3.5.1.g) 8.3.6.1.g) 8.3.7.1.g) 8.3.8.1.g) 8.3.9.1.g) 8.3.10.1.g) 8.3.11.1.g) 8.3.12.1.g) 8.3.13.1.g) 8.3.14.1.g) 8.3.15.1.g) 8.3.161.g) 8.3.17.1.g)		ed, te	Reference to controls in the specification of message formats We consider that the sub-clause in the message formats dealing with reference to control types should be amalgamated with item g) *Control data.* Rationale: The control data consists solely of controls and sub-controls.	The suggested form for the Control Data field (item g) for all RMCP-3 in indicated below. The tables referring to the specific controls should have a title and table number which is referenced in the text. We have added a reference column to the table as we consider that reference should be made to individual controls in all cases (i.e. not a general reference to 8.4). This rearrangement eliminates the sub-clause numbering for message formats (e.g 8.3.2.1 and 8.3.2.2 are not required for the SUBSANS message in 8.3.2.	Agreed. Changed every table as proposed.

Proposed format for item g) in the message formats

Note that this specific example relates to the SUBSANS message.

    g)   *Control data.* The valid control types that may be used in the SUBSANS message are listed in Table XX.

Template for comments and secretariat observations					Date:	Document: **ISO/**

1	2	3	4	5	6	7
MB[1]	**Clause/ Subclause/ Annex/Figure/Table** (e.g. 3.1, Table 2)	**Paragraph/ List item/ Note/** (e.g. Note 2)	**Type of com- ment[2]**	**Comment (justification for change)**	**Proposed change**	**Secretariat observations** on each comment submitted

Table XX. Control types that may be used in the SUBSANS message.

Control type	Meaning	M/O	Reference
RESULT	The result of the subscription request.	M	See 8.4.4
NEIGHBORLIST	A list of MAIDs for performing the neighbor discovery	M	See 8.4.5
DATAPROFILE	A description of the requirements for forwarding data.	O	See 8.4.2
AUTH	Authentication information for verifying the sender.	O	See 8.4.3

GB 11	8.4.1		ed	Ordering of sub-controls We suggest that the sub-controls in 8.4.1 be listed in order of the sub-control codes. Rationale: Consistency with listing in tables.	Order 8.4.1.2 to 8.4.1.16 so that the sub-controls are listed in code order.	Agreed: No action required. Sub-controls are already in order. Controls are ordered in the output document of Jan 2010 meeting.
GB 12	8.4.1.2		ed	Renaming of SI_POS_BW sub-control We suggest that this sub-control be renamed as SI_POSS_BW. Rationale: For English speakers this gives a more intuitive understanding of the acronym. It also aligns with the naming in 16512-2/Amd.2	Rename SI_POS_BW as SI_POSS_BW	Agreed. Changed SI_POS_BW to SI_POSS_BW.
GB 13	8.4.1.3		te	Deletion of SI_IP sub-control This sub-control has been deleted from 16512-2/Amd.1 as there was no need to request the IP address from the local host in the COMMAND control as this information could be deduced from its MAID. The sub-control should also be removed from 16512-3.	Delete 8.4.1.3 and remove its coding from Table 5	Agreed. Removed SI_IP.
GB 14	8.4.1.5 8.4.1. 8	Figure 68 Figure 71	te	Addition of control type fields to sub-control figures	Replace figures 68, 71,72,73,74,75 and 76 as shown below.	Agreed

Template for comments and secretariat observations

| | | | | | Date: | Document: **ISO/** |

1	2	3	4	5	6	7
MB[1]	Clause/ Subclause/ Annex/Figure/Table (e.g. 3.1, Table 2)	Paragraph/ List item/ Note/ (e.g. Note 2)	Type of com- ment[2]	Comment (justification for change)	Proposed change	Secretariat observations on each comment submitted
	8.4.1.9 8.4.1.10 8.4.1.11 8.4.1.12 8.4.1.13	Figure 72 Figure 73 Figure 74 Figure 75 Figure 76		For consistency with the other figures in 8.4.1 and to ensure that the sub-control is preceded by a control type we propose to replace these figures as indicated below. The value of the length field for the sub-control needs to be changed from 0x04 to 0x06 in order to ensure that the overall length of the control plus the sub-control is a multiple of four bytes.	Change the value for the length of the sub-control from 0x04 to 0x06 in the corresponding sub-clauses.	Changed format as proposed.

0	8	16	24	31
Control type (SYSINFO)	Length (0x02)	Sub-control type (SI_DELAY)	Length (0x06)	
Delay (in seconds)				
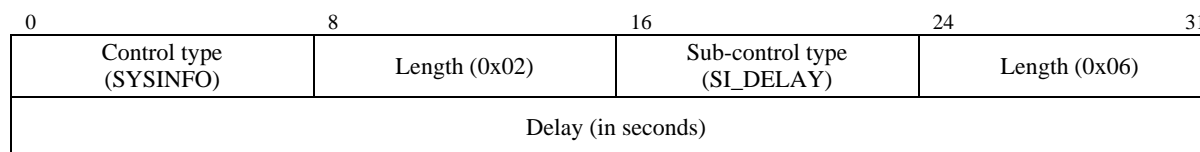
Figure 68 – Format of the SI_DELAY sub-control

0	8	16	24	31
Control type (SYSINFO)	Length (0x02)	Sub-control type (SI_SND_BW)	Length (0x06)	
Bandwidth (in Mbps)				
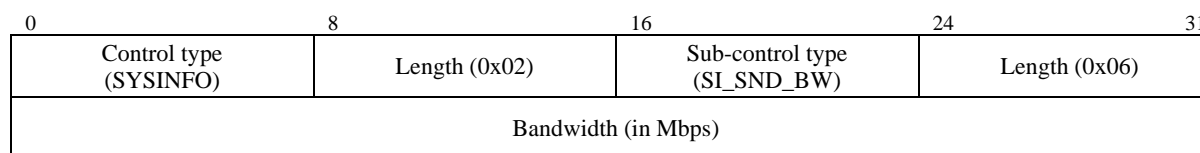
Figure 71 – Format of the SI_SND_BW sub-control

0	8	16	24	31
Control type (SYSINFO)	Length (0x02)	Sub-control type (SI_SND_PACKET)	Length (0x06)	
Number of packets				
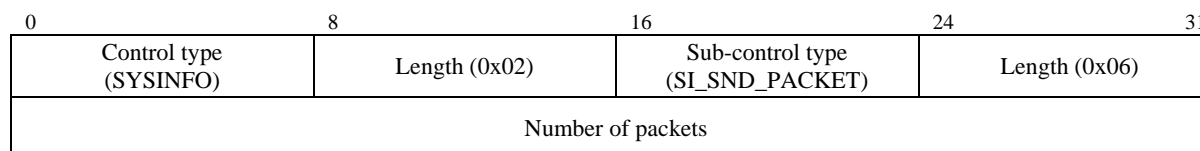
Figure 72 – Format of the SI_SND_PACKET sub-control

1	2	3	4	5	6	7
MB[1]	**Clause/ Subclause/ Annex/Figure/Table** (e.g. 3.1, Table 2)	**Paragraph/ List item/ Note/** (e.g. Note 2)	**Type of com- ment[2]**	**Comment (justification for change)**	**Proposed change**	**Secretariat observations** on each comment submitted

Control type (SYSINFO)	Length (0x02)	Sub-control type (SI_SND BYTES)	Length (0x06)
Number of bytes			

0 — 8 — 16 — 24 — 31

Figure 73 – Format of the SI_SND BYTES sub-control

Control type (SYSINFO)	Length (0x02)	Sub-control type (SI_RCV_BW)	Length (0x06)
Bandwidth (in Mbps)			

0 — 8 — 16 — 24 — 31
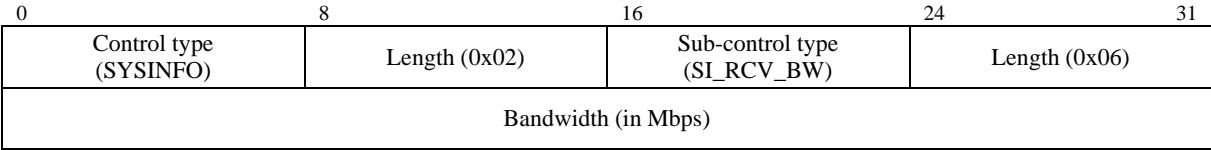
Figure 74 – Format of the SI_RCV_BW sub-control

Control type (SYSINFO)	Length (0x02)	Sub-control type (SI_RCV_PACKET)	Length (0x06)
Number of packets			

0 — 8 — 16 — 24 — 31
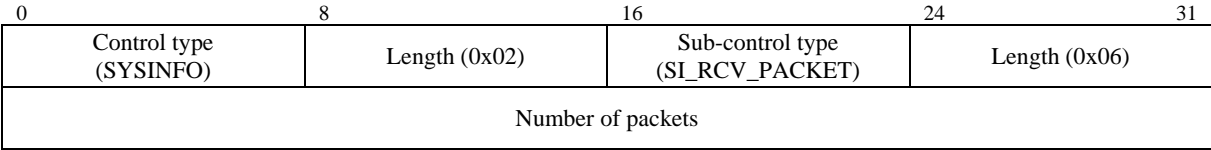
Figure 75 – Format of the SI_RCV_PACKET sub-control

Control type (SYSINFO)	Length (0x02)	Sub-control type (SI_RCV_BYTES)	Length (0x06)

0 — 8 — 16 — 24 — 31
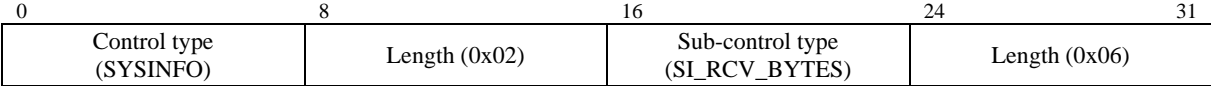
Figure 76 – Format of the SI_RCV_BYTES sub-control

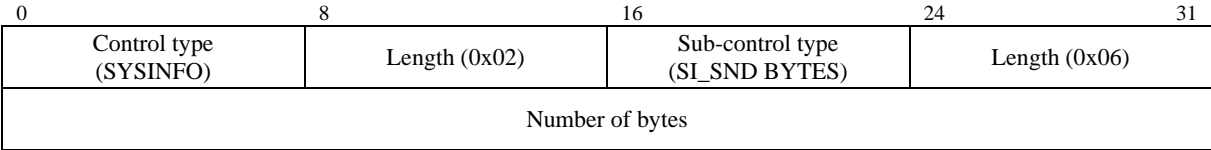| 1	2	3	4	5	6	7
MB[1]	Clause/ Subclause/ Annex/Figure/Table (e.g. 3.1, Table 2)	Paragraph/ List item/ Note/ (e.g. Note 2)	Type of com- ment[2]	Comment (justification for change)	Proposed change	Secretariat observations on each comment submitted
GB 15	8.4.2 9.5	Table 18	te	Format of data profile 8.4.2.1.b) Length The 8-bit field size defines a maximum length for the data profile of 253 bytes. It is not clear whether a profile could exceed this maximum. If so, the length field could easily be extended to 16 bytes. If not, the explanation of the maximum length profile is superfluous and should be deleted. 8.4.2.1.c) Data Profile does not define the format of the data profile field. It does not state that it is a text field and the statement that 'it follows SDL-like encoding scheme' is an inadequate definition. 8.4.2.1.d) Padding. This should refer to a length of a multiple of four bytes. List of profile parameters Table 18 (in 9.5, Data profile) lists parameters for use in the data profile and the text in 9.5 indicates that it is in text-mode. There is no indication of how it is to be formatted so that the relevant values can be extracted. We consider it to be essential that an example profile such as that in Figure 84 of the published X.603.1 | 16512-2 should be added to accompany Table 18. References need to be given for TCP, UDP, SCTP and	Add a figure following Table 18 in 9.5 to illustrate the format of a data profile. Add further permissible parameters to Table 18 We are not in a position to provide text to cover these comments. They require discussion before a decision can be made on content.	Agreed With inclusion of a sentence describing DATAPROFILE describes single profile. Agreed. Changed text as in N 14053 Agreed. Changed text as in N 14053 Agreed. Changed text and tables as in N 14053

1	2	3	4	5	6	7
MB[1]	**Clause/ Subclause/ Annex/Figure/Table** (e.g. 3.1, Table 2)	**Paragraph/ List item/ Note/** (e.g. Note 2)	**Type of com- ment**[2]	**Comment (justification for change)**	**Proposed change**	**Secretariat observations** on each comment submitted
				added to the References clause.		
				We note that no parameters for encapsulation are given in Table 18 [these parameters, e.g. IP-IP, UDP, TCP] should be listed Table18]		
				We do not approve of the reference to Annex A or Annex B in this context as these are only informative parts of the standard		
				Extensions		Agreed. Extensions removed
				We cannot approve the statement that additional parameters can be defined. It is not clear whether this means that they can be defined in a future edition of the standard or whether the Session Administrator can define them. We consider that additional parameters should be defined in the standard so that there is a common understanding of them that can be understood by users who have not participated in the drafting of the standard.		
GB 16	8.4.5	Figure 83	te, ed	NEIGHBORLIST control	Replace 8.4.5 with the text below	Agreed
				The NL_MAID sub-control type is superfluous and its equivalent has been deleted from 16512-2/Amd.2.		Changed as proposed.
				We propose revisions eliminating NL_MAID from the text and the figure.		
				If there is a likelihood of the number of MAIDS exceeding 255 the size of the Number of MAIDs field should be increased to 2 bytes.		

1	2	3	4	5	6	7
MB[1]	**Clause/ Subclause/ Annex/Figure/Table** (e.g. 3.1, Table 2)	**Paragraph/ List item/ Note/** (e.g. Note 2)	**Type of com- ment[2]**	**Comment (justification for change)**	**Proposed change**	**Secretariat observations** on each comment submitted

16512-2/Amd.2 (in N 14140) has already eliminated the NL-MAID sub-control and our comment GB 16 was meant to align with this. If you are thinking of copying Figure 48 of Amd.2, I think you should delete the Length field which now denotes the full length of the NEIGHBORLIST control. If the Length field is retained, the maximum number of MAIDs is (256 – 40)/8 = 31 [2040 bytes are required for 255 Maids of 8 byte lengths each].

Have another look at the proposed solution in our original ballot comments below. It is the same as the Amendment 2 NEIGHBORLIST but without the length field.

If you want to be able to have more than 255 MAIDs, the Number of MAIDs field can be increased easily to 16-bits.

8.4.5 NEIGHBORLIST control

When a subscription is successful, the SM sends a list of the MAIDs of active CoreMAs back to the subscriber. This list may then be used as bootstrap information by the subscriber.

Figure 83. NEIGHBORLIST control

The format of the NEIGHBORLIST control is shown in Figure 83. The description of each list is as follows:

a) Control type – This field denotes the NEIGHBORLIST control type. Its value shall be set to 0x04 (see Table 4)

b) Reserved – This field is reserved for future use. Its value shall be set to 0x00.

1	2	3	4	5	6	7
MB[1]	**Clause/ Subclause/ Annex/Figure/Table** (e.g. 3.1, Table 2)	**Paragraph/ List item/ Note/** (e.g. Note 2)	**Type of com-ment[2]**	**Comment (justification for change)**	**Proposed change**	**Secretariat observations** on each comment submitted

c) Number of MAIDs – This field shall be set to the number of MAIDs listed in the NEIGHBORLIST control.

d) MAIDs – The fields MAID 1 to MAID n shall contain the MAIDs of the active CoreMAs.

| **GB 17** | 8.4.6 | | Te | ROOTPATH control

The existing text does not clearly indicate that RP_XXX refers to six possible RP sub-controls and that it is not a sub-control in its own right.

We propose revised text that defines the sub-controls in terms of rootpath elements. This gets over the problem that the number of nodes is not the same as the number of hops (there is always one more node than the number of hops) | Replace 8.4.6 with the text below | Agreed.

Made replacement as proposed. |

Proposed replacement text for the ROOTPATH control

8.4.6   ROOTPATH control

8.4.6.1 The ROOTPATH control is used to prevent loops and to solve triangular the problem. The probed MA shall include its root path by using the ROOTPATH control.

The format of the ROOTPATH control is shown in Figure 85. The description of each field and its value are as follows:

a) *Control type* – This field denotes the ROOTPATH control. Its value shall be set to 0x07 (see Table 4).

b) *Length* – This field shall be set to the length in bytes of the ROOTPATH control. Its value shall be set to 0x02.

c) *Rootpath information.* This information is included in the sub-control defined in 8.4.6.2

| 0 | 8 | 16 | n-1 |

1	2	3	4	5	6	7
MB[1]	**Clause/ Subclause/ Annex/Figure/Table** (e.g. 3.1, Table 2)	**Paragraph/ List item/ Note/** (e.g. Note 2)	**Type of com-ment[2]**	**Comment (justification for change)**	**Proposed change**	**Secretariat observations** on each comment submitted

Control type (ROOTPATH)	Length (2)	Sub-control data

Figure 85 – ROOTPATH control

8.4.6.2 The general format of the RP_XXX sub-control is shown in Figure 85. RP_XXX stands for one of the appropriate ROOTPATH types from the first six ROOTPATH types listed in Table 6 (see note). These ROOTPATH types represent different combinations of fields for MAIDs, bandwidth and delay. If the ROOTPATH type indicates that any of the MAIDs, bandwidth or delay fields are not needed, these fields shall not be present in the ROOTPATH control. The length of the rootpath element, in bytes, for each of the ROOTPATH types is indicated in Table 6.

NOTE – RP_PSEUDO is a special ROOTPATH type used to indicate a pseudo HB message used in network partitioning, detection and recovery (see 6.2.5.3.b and 7.3.16) and applies only the RP_COMMAND for the HB message.

1	2	3	4	5	6	7
MB[1]	**Clause/ Subclause/ Annex/Figure/Table** (e.g. 3.1, Table 2)	**Paragraph/ List item/ Note/** (e.g. Note 2)	**Type of com- ment**[2]	**Comment (justification for change)**	**Proposed change**	**Secretariat observations** on each comment submitted

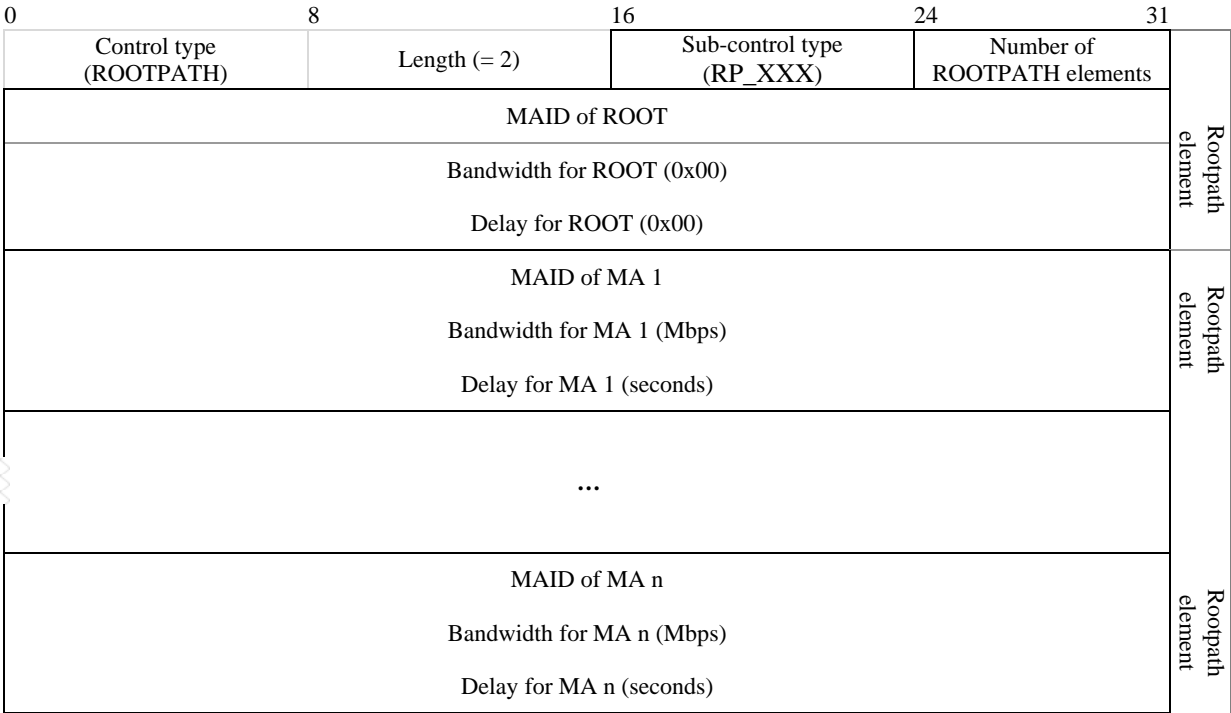| 0	8	16	24	31	
Control type (ROOTPATH)	Length (= 2)	Sub-control type (RP_XXX)	Number of ROOTPATH elements		
MAID of ROOT					Rootpath element
Bandwidth for ROOT (0x00)					
Delay for ROOT (0x00)					
MAID of MA 1					Rootpath element
Bandwidth for MA 1 (Mbps)					
Delay for MA 1 (seconds)					
...					
MAID of MA n					Rootpath element
Bandwidth for MA n (Mbps)					
Delay for MA n (seconds)					

Figure 86 – General format for RP_XXX sub-control.

RP_XXX stands for one of the first six ROOTPATH types listed in Table 6. The description of each field of the RP_XXX sub-control is as follows:

a) *Sub-control type*. This field denotes the RP_XXX sub-control. Its value shall be set to one of the first six code values in Table 7

1	2	3	4	5	6	7
MB[1]	**Clause/ Subclause/ Annex/Figure/Table** (e.g. 3.1, Table 2)	**Paragraph/ List item/ Note/** (e.g. Note 2)	**Type of com-ment**[2]	**Comment (justification for change)**	**Proposed change**	**Secretariat observations** on each comment submitted

b) *Number of ROOTPATH elements*. This field shall be set to the number of rootpath elements in the RP_XXX message

c) *MAID*. For each element in the ROOTPATH, listed in order from the ROOT, this field if present shall be set to the MAID corresponding to that element.

d) *Bandwidth*. For each element in the ROOTPATH, listed in order from the ROOT, this field if present shall be set to the bandwidth, in Mbps, between the MA and its parent, as perceived by the MA. In the case of the ROOT element the value for the bandwidth shall be set to 0x00.

e) *Delay*. For each element in the ROOTPATH, listed in order from the ROOT, this field if present shall be set to the delay in seconds from the ROOT as perceived by the MA. In the case of the ROOT element the value for the bandwidth shall be set to 0x00.

NOTE – The values for the perceived bandwidth and delay for the ROOT node are set to 0x00 as the ROOTPATH is assumed to start at the ROOT.

| GB 18 | 8.4.9 | | | Command controls for SYSINFO

Analysis of SYSINFO sub-control types in ISO/IEC 16512-2/PDAM 4 (see 06N 13937) demonstrated the addition of command codes for individual sub-control types could give the same command control value for several different command components.

The same would apply to combinations in CFD 16512-3. This means that it is not possible for the recipient of the command to deconstruct the code into its individual components. | Add the proposed new text below.

This adds a separate table to clause 9 giving 16-bit codes that provide unique values for all combinations of the constituent code values

Note that this list has incorporated the changes proposed in UK comments GB d' and GB d" | Agreed.

Added proposed text |

Proposed new text:

Add the following text and table immediately after Table 6:

1	2	3	4	5	6	7
MB[1]	**Clause / Subclause/ Annex/Figure/Table** (e.g. 3.1, Table 2)	**Paragraph/ List item/ Note/** (e.g. Note 2)	**Type of com- ment[2]**	**Comment (justification for change)**	**Proposed change**	**Secretariat observations** on each comment submitted

Table 5A lists the command codes corresponding to the sub-controls for the SYSINFO control. Combinations of different sub-controls may be indicated by adding together the corresponding individual command codes.

NOTE – The 16-bit format column in Table 5A demonstrates how the command code values can be added to give unique combinations. The bit positions can be considered as representing individual sub-control types and the 1 or 0 values can be interpreted as presence or absence of these sub-control types.

Table 5A – SI_COMMAND codes for SYSINFO

Sub-control Type	Sub-control Code	Command Code	16-bit format
SI_UPTIME	0x12	0x00 01	0000 0000 0000 0001
SI_DELAY	0x13	0x00 02	0000 0000 0000 0010
SI_ROOM_CMA	0x14	0x00 04	0000 0000 0000 0100
SI_PROV_BW	0x15	0x00 08	0000 0000 0000 1000
SI_POSS_BW	0x25	0x00 10	0000 0000 0001 0000
SI_SND _BW	0x35	0x00 20	0000 0000 0010 0000
SI_SND_PACKET	0x36	0x00 40	0000 0000 0100 0000
SI_SND _BYTES	0x37	0x00 80	0000 0000 1000 0000
SI_RCV_BW	0x45	0x01 00	0000 0001 0000 0000
SI_RCV_PACKET	0x46	0x02 00	0000 0010 0000 0000
SI_RCV_BYTES	0x47	0x04 00	0000 0100 0000 0000
SI_REL_BYTES	0x57	0x08 00	0000 1000 0000 0000
SI_TREE_CONN	0x68	0x10 00	0001 0000 0000 0000
SI_TREE_MEMBER	0x69	0x08 00	0010 0000 0000 0000

NOTE – The sub-control code column has been added for cross reference to Table 5.

1	2	3	4	5	6	7
MB[1]	**Clause/ Subclause/ Annex/Figure/Table** (e.g. 3.1, Table 2)	**Paragraph/ List item/ Note/** (e.g. Note 2)	**Type of com- ment**[2]	**Comment (justification for change)**	**Proposed change**	**Secretariat observations** on each comment submitted

UK comment GB x proposes the deletion of the NL_MAID sub-control type from the NEIGHBORLIST control. If this comment is accepted, Table 6 will be deleted and the Table 5A above can be renumbered as Table 6 without affecting the rest of the standard.

| **GB 19** | 8.4.9 | | te | 16512-2/Amd.2 has identified a need for an RP_COMMAND control in its RELREQ message for a CMA to request rootpath information from its PMA. For example, whenever an MA connects to PMA during joining or parent switching procedure, the MA needs information on the *from_root path* of its new PMA for network diagnosis and loop detection.

Is an equivalent RP_COMMAND required for 16512-3? | If an RP_COMMAND is required add the following item to the table in 8.3.8.2 | Agreed.

Made revision as proposed. |

Control type	Meaning	M/O	Reference
RP_COMMAND	A request for rootpath information from a PMA	O	See 8.4.10

| **GB 20** | 9.2.3 | Table 4 | te | If an RP_COMMAND is required Table 4 will need to be modified.

The proposal below is based on control types for RP_COMMAND and SI_COMMAND and removal of AUTH control (see comment GB x) and is identical to the equivalent values in Table 4 of the review text for 16512-2/Amd.1.

If the AUTH control is not removed a different solution will be required. It is preferable that the codes values for both standards are kept the same. | | Agreed

Made revision as proposed. |

1	2	3	4	5	6	7
MB[1]	**Clause / Subclause/ Annex/Figure/Table** (e.g. 3.1, Table 2)	**Paragraph/ List item/ Note/** (e.g. Note 2)	**Type of com-ment[2]**	**Comment (justification for change)**	**Proposed change**	**Secretariat observations** on each comment submitted

Table 4 – RMCP-3 control data types

Current values		Proposed values if AUTH deleted and SI_ and RP_COMMANDs added	
Control type	**Code**		
AUTH	0x01		
		RP_COMMAND	0x01
COMMAND	0x02	SI_COMMAND	0x02
DATAPROFILE	0x03	DATAPROFILE	0x03
NEIGHBORLIST	0x04	NEIGHBORLIST	0x04
REASON	0x05	REASON	0x05
RESULT	0x06	RESULT	0x06
ROOTPATH	0x07	ROOTPATH	0x07
SYSINFO	0x08	SYSINFO	0x08
TIMESTAMP	0x09	TIMESTAMP	0x09

| **GB 21** | 9.5, A.2, B.1.5.2, B.2.6 | Tables 18, A.1, A.2, B1 and B.2 | te | Extra data profiles

Various examples of data profiles are described in Annexes A and B. They contain several parameters that are not included in Table 18.

If the data delivery schemes in these annexes are used, these profiles will need to appear in the RMCP-3 control protocol. These parameters should, therefore, be included in Table 18.

The parameters involved are listed below. | | Agreed:

The additional parameters in the informative annexes have not been included in Table 16 (now Table 31) |

Add the following figure after Table 18.

Date: Document: **ISO/**

1	2	3	4	5	6	7
MB[1]	**Clause/ Subclause/ Annex/Figure/Table** (e.g. 3.1, Table 2)	**Paragraph/ List item/ Note/** (e.g. Note 2)	**Type of com- ment[2]**	**Comment (justification for change)**	**Proposed change**	**Secretariat observations** on each comment submitted

Stream1: Protocol = UDP, Listen address = a.b.c.d:9898, Encapsulation= IP-IP,
Stream2: Protocol = UDP, Listen address = a.b.c.d:9899, Encapsulation= UDP
Stream3: Protocol = TCP, Listen address = a.b.c.d:9899, Encapsulation = TCP,
CurrentSeq=xxxx, BufferedSeq=yyyy, CurrentRcvdSeq=xxxx-1

Figure 92 – An example of a Data Profile

The following parameters and values appear in examples of profiles in Annexes A and B. They will need to be incorporated in DATAPROFILE controls in the RMCP-3 control protocol and Table 18 needs to be extended to incorporate these values.

Parameter	**Values**
Protocol	UDP	SCTP	TCP
Listening address	*IPv4 address: port number*
Data stream type	REALTIME	RELIABLE
Encapsulation	None	IP-IP	TCP
Local address	*IPv4 address: port number*
RMCP header	SOURCE_EDGEMA	APPENDIX B.2
ItemNum	*Number of streams that are received from different senders*
WantedSenderMAID	*Sender MAID*
WantedSeq	*Sequence number*

NOTES
1. This table is intended to highlight all the possible parameters and it is not intended that it should be included in this form in the standard.
2. The first four entries are common to most of the profiles. The remainder are only used in specific instances.
3. The data stream type does not appear in Table 18. This parameter need not be negotiable if it is defined by the session administrator during the establishment of the session.

1	2	3	4	5	6	7
MB[1]	**Clause/ Subclause/ Annex/Figure/Table** (e.g. 3.1, Table 2)	**Paragraph/ List item/ Note/** (e.g. Note 2)	**Type of com-ment[2]**	**Comment (justification for change)**	**Proposed change**	**Secretariat observations** on each comment submitted

4. We do not approve the use of the value 'APPENDIX B.2' as this is only an informative part of the standard.

| **GB 22** | B.2.5 | Figures B.16, B.17, B.18 and B.19 | te | <u>Extra RMCP-3 messages</u>

B.2.5 states that acknowledgement and requests for retransmission may be made through an RMCP-3 control message. They thus become part of the RMCP-3 protocol and the DACK and RETREQ messages and controls should be moved to the main body of the standard.

Additional entries will be required in Table 2 (message types) and Table 4 (control types)

The sub-control types for these messages are redundant and should be removed (see Figures below) | | The UK has withdrawn its suggestion that DACK and RETREQ controls be included in the main body of the text. |

0	8	16	24	31
Control type (DACK)	Length (0x04)	Sequence number		

Figure XX – Format of the DACK control

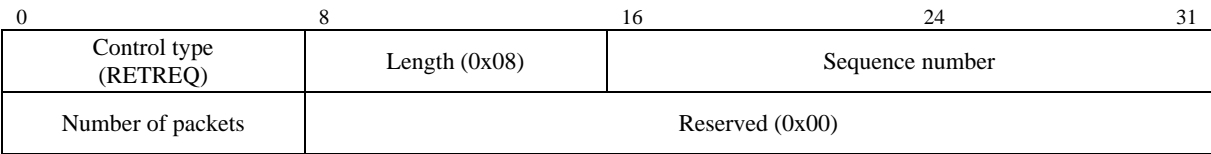| 0	8	16	24	31
Control type (RETREQ)	Length (0x08)	Sequence number		
Number of packets	Reserved (0x00)			

Figure XY – Format of the RETREQ control