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ITU-T RECOMMENDATION X.603.1(2007)/PDAM.2

**INFORMATION TECHNOLOGY –Relayed multicast protocol: Specification for
simplex group applications**

DRAFT AMENDMENT 2

Revision of sub-control data and code-value

Summary

This Amendment 2 of the Recommendation X.603.1 (2007) | ISO/IEC 16512-2 (2008) defines missing sub-control data and code-value in the Recommendation X.603.1 (2007) | ISO/IEC 16512-2 (2008).

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INTERNATIONAL STANDARD 16512-2:2008/PDAM2 ITU-T RECOMMENDATION X.603.1(2007)/Amd.2

INFORMATION TECHNOLOGY – Relayed multicast protocol: Specification for simplex group applications

AMENDMENT 2

Revision of sub-control data and code-value

1 Clause 2. Normative references

Following the first paragraph, re-order the existing references and add new subheadings as follows:

2.1 Identical Recommendations | International Standards

- ITU-T Recommendation X.603 (2004) | ISO/IEC 16512-1:2005, *Information technology – Relayed multicast protocol: Framework*

2.2 Additional References

- IETF RFC 1321 (1992), *The MD5 Message-Digest Algorithm*
- IETF RFC 2104 (1997), *HMAC: Keyed-Hashing for Message Authentication*

2 Modify AUTH Control Type in Clause 7.3.1.

Following SUBSREQ message format, clause 7.3.1 defines SYSINFO control type, DATAPROFILE control type, and AUTH control type which are in page 21. The AUTH control type includes AUTH sub-control data which is not needed and should be removed. Therefore, original AUTH control type definition part in page 23 must be replaced with newly defined AUTH control type definition part.

Remove the following AUTH control type in page 23:

AUTH

Authentication information can be delivered by using AUTH control. To support several types of authentication mechanism, extensive AUTH sub-control format is defined followed by 2-byte length AUTH control. The description of each field is as follows:

- Control type* – AUTH.
- Length* – The size of the AUTH control (should be two).
- Auth information* – It includes detailed AUTH information, and details are as follows:

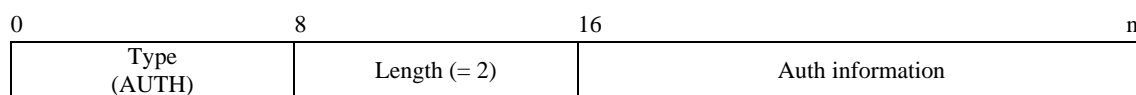


Figure 46 – AUTH control

Figure 47 shows sub-control data to deliver authentication information to be used. The description of each field is as follows:

- a) *Sub-control type* – It depends on the AUTH mechanism to be used.
- b) *Length* – It defines the size of the sub-control data.
- c) *Value* – It represents the control data.

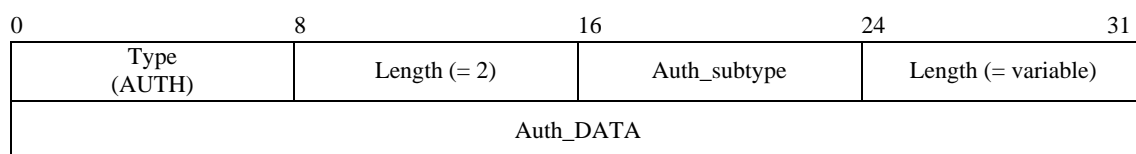


Figure 47 – AUTH sub-control

Replace with AUTH control type as follows in page 23:

AUTH

Authentication information is delivered using AUTH control data. The authentication algorithm used is defined in AUTH_ALG field. AUTH_ALG code is defined in Table 9.

- a) *Control type* – The type of control data (AUTH).
- b) *Length* – The length of control data (2).
- c) *AUTH_ALG* – The type of authentication algorithm used (defined in Table 9).
- d) *Reserved*

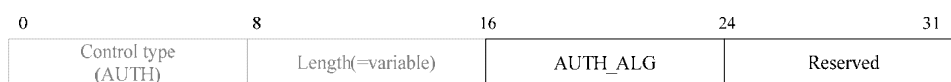


Figure 46 – AUTH control

Note that Figure 47 and its definitions are removed.

3 Modify Figure 62 and Figure 63 in Clause 7.3.7

Figure 62 and figure 63 defines CANDIDATEHMA control type and its sub-control type, but the figure shows C_HMA_LIST which is equivalent with the CANDIDATEHMA. Inconsistent name would be confusing to the readers. Thus, content in the figure and the title should be changed.

Replace Figure 62 with the following figure and title.

0	8	16	n
Control type (CANDIDATEHMA)	Length (= 2)	Candidate HMA information	

Figure 62 – CANDIDATEHMA control

Figure 63 defines NL_MAID sub-control that is used in CANDIDATEHMA, but the title indicates CANDIDATE HMA LIST which is not needed.

Replace Figure 63 with the following figure and title.

0	8	16	24	31
Control type (CANDIDATEHMA)	Length (=2)	Control Sub-type (NL_MAID)	# of NL	
MAID 1				
MAID 2				
...				
MAID n				

Figure 63 – NL_MAID sub-control for CANDIDATEHMA control

4 Modify Title of Figure 71 ~ Figure 76 in Clause 7.3.11

The titles of Figure 71 ~ 76 is inconsistent with its pertaining figures.

Change title of Figure 71 from:

Figure 71 – SYSINFO_ROOM_CMA sub-control data

To:

Figure 71 – SI_ROOM_CMA sub-control data

Change title of Figure 72 from:

Figure 72 – SYSINFO_PROVIDABLE_QOS sub-control data

To:

Figure 72 – SI_PROV_QOS sub-control data

Change title of Figure 74 from:

Figure 74 – STATE_PERCEIVED_QOS sub-control data

To:

Figure 74 – ST_PERCV_QOS sub-control data

Change title of Figure 75 from:

Figure 75 – TREE_CONNECTION sub-control data

To:

Figure 75 – TREE_CONN sub-control data

Change title of Figure 76 from:

Figure 76 – TREE_MEMBERSHIP sub-control data

To:

Figure 76 – TREE_MEMBER sub-control data

5 Remove SYSINFO_PERSIST_TIME subtype in Clause 7.3.11

SYSINFO_PERSIST_TIME subtype is identical to *UPTIME* in Clause 7.3.6.

Remove following in clause 7.3.11

Figure 73 shows the report on the system uptime from after the MA's join. The meanings of each field are as follows;

- (a) *Sub-control type* It defines type of sub-control to be used;
- (b) *Length* – It represents the size of the sub-control;
- (c) *Uptime after MA joins session* – It tells the past time from the MA's joining the session in seconds.

0	8	16	24	31
Option type (SYINFO)	Length (= 2)	Sysinfo_subtype (SI_PERSIST_TIME)	Length (= 6)	
Uptime after MA joins session (in sec)				

Figure 73 –SYSINFO_PERSIST_TIME control

6 Insert Missing Sub-control Data in Clause 7.3.11

SYSINFO control uses seven sub-control data in which the definitions are omitted. The definitions are accompanied

with figures of the pertaining data structure. The newly added figures have been numbered with 76 bis through 76 octies to avoid renumbering of successive figures in the standard.

Insert the following contents sub-control data immediately after Figure 76 in Clause 7.3.11.

The SI_DELAY sub-control data is shown in Figure 76 bis. It can be used to tell the delay as perceived by EdgeMA from root node of EdgeTree which the EdgeMA belongs. Each field has the following meaning and value:

- a) *Sub-control type* – SI_DELAY.
- b) *Length* – It denotes the length of sub-control data.
- c) *Delay* – It represents the delay as perceived by EdgeMA from root node of EdgeTree which the EdgeMA belongs (in seconds).

0	8	16	24	31
Sub-control type (SI_DELAY)	Length (0x04)	Delay (in seconds)		

Figure 76 bis – SI_DELAY sub-control data

The SI_SND_BW sub-control data is shown in Figure 76 ter. It provides the information about the total bandwidth consumed by MA to serve its CMAs. Each field has the following meaning and value:

- a) *Sub-control type* – SI_SND_BW.
- b) *Length* – It denotes the length of sub-control data.
- c) *Bandwidth* – It represents the total bandwidth consumed by MA to serve its CMAs (in Mbps).

0	8	16	24	31
Sub-control type (SI_SND_BW)	Length (0x04)	Bandwidth (in Mbps)		

Figure 76 ter – SI_SND_BW sub-control data

The SI_SND_PACKET sub-control data is shown in Figure 76 quater. It tells the total number of packets sent by MA from startup. Each field has the following meaning and value:

- a) *Sub-control type* – SI_SND_PACKET.
- b) *Length* – It denotes the length of sub-control data.
- c) *Number of packets* – It represents the total number of packets sent by the MA from startup.

0	8	16	24	31
Sub-control type (SI_SND_PACKET)	Length (0x04)	Number of packets		

Figure 76 quater – SI_SND_PACKET sub-control data

The SI_SND_BYTES sub-control data is shown in Figure 76 quinques. It can be used to tell the total number of bytes sent by MA from startup. Each field has the following meaning and value:

- a) *Sub-control type* – SI_SND_BYTES.
- b) *Length* – It denotes the length of sub-control data.
- c) *Number of bytes* – It represents the total number of bytes sent by the MA from startup.

0	8	16	24	31
Sub-control type (SI_SND_BYTES)	Length (0x04)	Number of bytes		

Figure 76 quinques – SI_SND_BYTES sub-control data

The SI_RCV_BW sub-control data is shown in Figure 76 sexies. It can be used to tell the bandwidth perceived by MA between its PMA. Each field has the following meaning and value:

- a) *Sub-control type* – SI_RCV_BW.
- b) *Length* – It denotes the length of sub-control data.
- c) *Bandwidth* – It represents the bandwidth perceived by MA between its PMA (in Mbps).

0	8	16	24	31
Sub-control type (SI_RCV_BW)	Length (0x04)	Bandwidth (in Mbps)		

Figure 76 sexies – SI_RCV_BW sub-control data

The SI_RCV_PACKET sub-control data is shown in Figure 76 septies. It tells the total number of packets received by MA from startup. Each field has the following meaning and value:

- a) *Sub-control type* – SI_RCV_PACKET.
- b) *Length* – It denotes the length of sub-control data.
- c) *Number of packets* – It represents the total number of packets received by MA from startup.

0	8	16	24	31
Sub-control type (SI_RCV_PACKET)	Length (0x04)	Number of packets		

Figure 76 septies – SI_RCV_PACKET sub-control data

The SI_RCV_BYTES sub-control data is shown in Figure 76 octies. It can be used to tell the total number of bytes received by MA from startup. Each field has the following meaning and value:

- a) *Sub-control type* – SI_RCV_BYTES.
- b) *Length* – It denotes the length of sub-control data.
- c) *Number of bytes* – It represents the number of bytes received by MA from startup.

0	8	16	24	31
Sub-control type (SI_RCV_BYTES)	Length (0x04)	Number of bytes		

Figure 76 octies – SI_RCV_BYTES sub-control data

7 Modify Table 3 of Clause 8.3.2

The result code defined in clause 8.3.2 should be 16-octet code; therefore, the length of the code should be changed from 32-bit to 16-bit.

Replace Table 3 with the following:

Table 3 – Result codes

Result Code	Meaning
0x10	OK
0x20	System Problem
0x30	Administrative Problem

8 Modify Table 4 of Clause 8.3.3

The code in table 4 in clause 8.3.3 should be 16-bit code; therefore, the length of the code should be changed from 32-bit to 16-bit.

Replace Table 4 with the following:

Table 4 – Command code for ROOTPATH

Type	Code	Meaning
RP_ID	0x11	The followed ROOTPATH contains only MAID of each hop
RP_BW	0x12	The followed ROOTPATH contains only bandwidth by each hop
RP_DL	0x14	The followed ROOTPATH contains only delay perceived by each hop
RP_ID_BW	0x13	The followed ROOTPATH contains MAID and bandwidth of each hop
RP_ID_DL	0x15	The followed ROOTPATH contains MAID and its delay of each hop
RP_ID_BW_DL	0x17	The followed ROOTPATH contains MAID, bandwidth and delay of each hop
RP_PSEUDO	0x10	The following ROOTPATH is a pseudo-ROOTPATH for fault recovery

9 Replace Clause 8.3.4

Clause 8.3.4 should define value related to SYSINFO control type which also covers values related to the RMCP-2 status. Thus, the whole text of Clause 8.3.4 should be changed along with the code in table 6 which should be 8-bit.

Replace Clause 8.3.4 with the following:

8.3.4 Values related to SYSINFO control data

A single control data may include zero or more sub-control data. This clause defines codes for RMCP-2 sub-control data.

SYSINFO control data is used for exchange information related to MA. Table 6 lists the sub-control types, its code, and meaning. The four most significant bits of the encoded code specify the category of the information. The lowest four bits specifies detailed items such as bandwidth, packets, and bytes.

Table 6 – Sub-control types for SYSINFO

Type	Code (8 bit)	Meaning
SI_PROV_QOS	0x10	Maximum incoming / outgoing bandwidth of MA's network interface card.
LOCAL_IP	0x11	IP address of MA.
UPTIME	0x12	Time of MA's uptime.
SI_DELAY	0x13	Status of delay as perceived by MA from ROOT.
SI_ROOM_CMA	0x14	The room for CMAs.
ST_PERCV_QOS	0x20	The QoS perceived by each MA

AVAILABLE_CMA	0x24	The number of available CMAs.
POSSIBLE_BW	0x25	The possible forwarding bandwidth that MA can afford.
SI_SND_BW	0x35	Total bandwidth consumed by PMA to serve its CMAs.
SI_SND_PACKET	0x36	Total number of packets sent by MA from startup.
SI_SND_BYTES	0x37	Total number of bytes sent by MA from startup.
SI_RCV_BW	0x45	Bandwidth perceived by MA between its PMA.
SI_RCV_PACKET	0x46	Number of packets received by MA from startup.
SI_RCV_BYTES	0x47	Number of bytes received by MA from startup.
TREE_CONN	0x68	PMA and CMA(s) of MA.
TREE_MEMBER	0x69	List of tree members.

10 Modify Table 7 of Clause 8.3.5

The code in table 7 in clause 8.3.5 should be 16-bit code; therefore, the length of the code should be changed from 32-bit to 16-bit.

Replace Table 7 with the following:

Table 7 – Leave reason code

Category	Code	Meaning
Leave	0x10	MA's Own leave
	0x11	SMA leave
Kick out	0x20	SM kick out
	0x21	PMA kick out
Parent switching	0x40	MA's parent switching

11 Modify Table 8 of Clause 8.3.6

The code in table 8 in clause 8.3.6 should be 16-bit code; therefore, the length of the code should be changed from 32-bit to 16-bit.

Replace Table 8 with the following:

Table 8 – Termination reason code

Category	Code	Meaning
Normal session termination	0xE0	Session is terminated normally
Abnormal session termination	0xF0	Session is terminated abnormally without reason
	0xF1	Session is terminated abnormally by user request

12 Insert New Clause 8.3.7

Clause 8.3.7 is needed with the modification of AUTH control data.

Add the following new clause:

8.3.7 Authentication algorithm

AUTH control data is used to specify the authentication algorithm to be used. Table 9 lists the possible authentication algorithms for RMCP-2 and their encoded value and reference.

Table 9 – Authentication algorithm for RMCP-2 (AUTH_ALG)

Type	Code	Reference
HMAC-SHA1	0x01	IETF RFC 2104
HMAC-MD5	0x02	IETF RFC 2104
MD5	0x03	IETF RFC 1321

13 Insert New Clause 8.3.8

Clause 8.3.8 is needed to define code value for NL_MAID with is omitted.

Add the following new clause:

8.3.8 Neighbor list and candidate HMA sub-control type

NEIGHBORLIST control data is used for describing information related to RMCP-2 neighbors. CANDIDATEHMA control data is used for giving candidate HMA information. Table 10 lists the possible sub-control data type which can be used for both control data and its encoded value and meaning.

Table 10 – Sub-control type (NEIGHBORLIST and CANDIDATEHMA)

Type	Code	Meaning
NL_MAID	0x01	List of MAs