



ATIS-0700004.a.2008 (S2017)

Supplement to ATIS-0700004: ATIS High Capacity-Spatial
Division Multiple Access (HC-SDMA) Radio Interface
Standard

AMERICAN NATIONAL STANDARD FOR TELECOMMUNICATIONS



As a leading technology and solutions development organization, ATIS brings together the top global ICT companies to advance the industry's most-pressing business priorities. Through ATIS committees and forums, nearly 200 companies address cloud services, device solutions, emergency services, M2M communications, cyber security, ehealth, network evolution, quality of service, billing support, operations, and more. These priorities follow a fast-track development lifecycle — from design and innovation through solutions that include standards, specifications, requirements, business use cases, software toolkits, and interoperability testing.

ATIS is accredited by the American National Standards Institute (ANSI). ATIS is the North American Organizational Partner for the 3rd Generation Partnership Project (3GPP), a founding Partner of oneM2M, a member and major U.S. contributor to the International Telecommunication Union (ITU) Radio and Telecommunications sectors, and a member of the Inter-American Telecommunication Commission (CITEL). For more information, visit < www.atis.org >.

AMERICAN NATIONAL STANDARD

Approval of an American National Standard requires review by ANSI that the requirements for due process, consensus, and other criteria for approval have been met by the standards developer.

Consensus is established when, in the judgment of the ANSI Board of Standards Review, substantial agreement has been reached by directly and materially affected interests. Substantial agreement means much more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that a concerted effort be made towards their resolution.

The use of American National Standards is completely voluntary; their existence does not in any respect preclude anyone, whether he has approved the standards or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standards.

The American National Standards Institute does not develop standards and will in no circumstances give an interpretation of any American National Standard. Moreover, no person shall have the right or authority to issue an interpretation of an American National Standard in the name of the American National Standards Institute. Requests for interpretations should be addressed to the secretariat or sponsor whose name appears on the title page of this standard.

CAUTION NOTICE: This American National Standard may be revised or withdrawn at any time. The procedures of the American National Standards Institute require that action be taken periodically to reaffirm, revise, or withdraw this standard. Purchasers of American National Standards may receive current information on all standards by calling or writing the American National Standards Institute.

Notice of Disclaimer & Limitation of Liability

The information provided in this document is directed solely to professionals who have the appropriate degree of experience to understand and interpret its contents in accordance with generally accepted engineering or other professional standards and applicable regulations. No recommendation as to products or vendors is made or should be implied.

NO REPRESENTATION OR WARRANTY IS MADE THAT THE INFORMATION IS TECHNICALLY ACCURATE OR SUFFICIENT OR CONFORMS TO ANY STATUTE, GOVERNMENTAL RULE OR REGULATION, AND FURTHER, NO REPRESENTATION OR WARRANTY IS MADE OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OR AGAINST INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS. ATIS SHALL NOT BE LIABLE, BEYOND THE AMOUNT OF ANY SUM RECEIVED IN PAYMENT BY ATIS FOR THIS DOCUMENT, AND IN NO EVENT SHALL ATIS BE LIABLE FOR LOST PROFITS OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES. ATIS EXPRESSLY ADVISES THAT ANY AND ALL USE OF OR RELIANCE UPON THE INFORMATION PROVIDED IN THIS DOCUMENT IS AT THE RISK OF THE USER.

<p>NOTE - The user's attention is called to the possibility that compliance with this standard may require use of an invention covered by patent rights. By publication of this standard, no position is taken with respect to whether use of an invention covered by patent rights will be required, and if any such use is required no position is taken regarding the validity of this claim or any patent rights in connection therewith. Please refer to [http://www.atis.org/legal/patentinfo.asp] to determine if any statement has been filed by a patent holder indicating a willingness to grant a license either without compensation or on reasonable and non-discriminatory terms and conditions to applicants desiring to obtain a license.</p>
--

ATIS-0700004.a.2008(R2013), *Supplement to ATIS-0700004: ATIS High Capacity-Spatial Division Multiple Access (HC-SDMA) Radio Interface Standard*

Is an American National Standard developed by the **Radio Access Networks (RAN)** Subcommittee under the **ATIS Wireless Technology and Systems Committee (WTSC)**.

Published by

Alliance for Telecommunications Industry Solutions
1200 G Street, NW, Suite 500
Washington, DC 20005

Copyright © 2013 by Alliance for Telecommunications Industry Solutions
All rights reserved.

No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without the prior written permission of the publisher. For information contact ATIS at 202.628.6380. ATIS is online at < <http://www.atis.org> >.

Printed in the United States of America.

American National Standard for Telecommunications

**SUPPLEMENT TO
ATIS HIGH CAPACITY-SPATIAL DIVISION MULTIPLE ACCESS
(HC-SDMA) RADIO INTERFACE STANDARD**

Secretariat

Alliance for Telecommunications Industry Solutions

Approved March 7, 2008

American National Standards Institute, Inc.

Abstract

This document contains necessary supplemental changes to ATIS-0700004.2007 to support transport of IP over PPP, IEEE802.2 LLC, IEEE802.3/Ethernet Payloads and Payload Header Suppression profiles over the HC-SDMA air interface.

FOREWORD

The information contained in this Foreword is not part of this American National Standard (ANS) and has not been processed in accordance with ANSI’s requirements for an ANS. As such, this Foreword may contain material that has not been subjected to public review or a consensus process. In addition, it does not contain requirements necessary for conformance to the Standard.

The Alliance for Telecommunication Industry Solutions (ATIS) serves the public through improved understanding between carriers, customers, and manufacturers. The Alliance for Telecommunication Industry Solutions (ATIS) serves the public through improved understanding between carriers, customers, and manufacturers. The Wireless Technologies and Systems Committee (WTSC) develops and recommends standards and technical reports related to wireless and/or mobile services and systems, including service descriptions and wireless technologies. WTSC develops and recommends positions on related subjects under consideration in other North American, regional and international standards bodies.

ANSI guidelines specify two categories of requirements: mandatory and recommendation. The mandatory requirements are designated by the word *shall* and recommendations by the word *should*. Where both a mandatory requirement and a recommendation are specified for the same criterion, the recommendation represents a goal currently identifiable as having distinct compatibility or performance advantages.

Suggestions for improvement of this document are welcome. They should be sent to the Alliance for Telecommunications Industry Solutions, WTSC Secretariat, 1200 G Street NW, Suite 500, Washington, DC 20005.

At the time it approved this document, WTSC, which is responsible for the development of this Standard, had the following members:

- D. Zelmer, WTSC Chair
- M. Younge, WTSC Vice-Chair
- Radhakrishna Canchi, Technical Editor
- C. Underkoffler, ATIS Chief Editor

Organization Represented	Name of Representative
Alcatel – Lucent	Ken Biholar Tim Pantalis (Alt.)
ArrayComm, Inc.	Joanne Wilson Mel Woinsky (Alt.)
AT&T	Don Zelmer Marc Grant (Alt)
C.S.I. Telecommunications	Michael S. Newman Thomas G. Croda (Alt.)
Cingular Wireless LLC	Don Zelmer Marc Grant (Alt.)
Department of Defense	Chris Fitzgerald
Ericsson Incorporated	Carl M. Coppage John M. Heinz (Alt.)
FBI ESTS	Marybeth Paglino Edward Ignacio (Alt)
Hewlett-Packard	Steve Mills
Intel Corporation	Tolis Papathanassiou Jayne Stancavage (Alt)
InterDigital Communications	Brian Kiernan Gil LaVean (Alt.)
Kineto Wireless	Mike Gallagher Rajeev Gupta (Alt)
Kyocera International	Dr. R. Canchi Terry Lingren (Alt)
LGE Mobile Research LLC	Soon Yil Kwon
Mavenir Systems	Brett Wallis
Motorola Inc.	Syed Husain
National Communications System	Carol-Lyn Taylor Nicholas Andre (Alt.)
National Telecom & Info Admin – NTIA	Tim Riley
Navini Networks	David Maez Sai Subramanian (Alt)

Organization Represented	Name of Representative
Nokia Siemens Networks	Amar Deol Mani Thyagarajan (Alt)
Nokia Siemens Telecommunications Inc.	Ed. Ehrlich Shou Gung (Alt)
Nortel	Amar Deol Ronald D. Ryan (Alt)
PSEP Canada	Sim Simanis Sean Pope (Alt)
Qualcomm Incorporated	Mark Epstein Ed Tiedemann (Alt.)
Qwest	Michael Fargano
Research In Motion	Atul Asthana Adrian Buckley
Rogers Wireless Inc.	Edward O’Leary Tak Wing Wan
SOMA Networks	Jonathan Jaeger
Sprint	Steve Olvia Ronald Ferguson (Alt)
SS8 Networks Inc.	Cemal Dikman Scott Coleman (Alt)
T-Mobile USA Inc.	Gary K. Jones Mark Younge (Alt.)
Telcordia Technologies	Jim Garrahan Cliff Halevi (Alt.)
Tellabs Operations, Inc.	Kevin Mooney William A. Walker (Alt.)
TruePosition, Inc.	Gustavo Pavon
Union Telephone Company	David Cotton, Jr.
Verizon Communications	Wendy Pugh J. Martin Carroll (Alt)

The Wireless Wideband Internet Access (WWINA) Subcommittee was responsible for the development of this document.

TABLE OF CONTENTS

1 CHANGES TO ATIS-0700004.2007	1
9.6 L4 PAYLOAD SUPPORT	1
9.6.1 Introduction.....	1
9.6.2 Protocols to Support Payload Type.....	1
9.6.2.1 Individual L4 Messages for Payload Type	2
9.6.2.1.1 Payload Type.....	2
9.6.2.1.2 Payload-Type Reject	5
9.6.3 Payload Header Suppression Profiles.....	6
9.6.3.1 PPP payload header suppression profile 0 (default) (PPP-PHSP 0).....	6
9.6.3.2 IEEE 802.2 LLC payload header suppression profile 0 (default) (LLC-PHSP 0).....	6
9.6.3.3 IEEE 802.3/Ethernet Payload Header Suppression Profile 0 (default) (Ether-PHSP 0).....	8

TABLE OF FIGURES

FIGURE 9.6-1: PAYLOAD TYPE MESSAGE FORMAT	4
FIGURE 9.6-2: PAYLOAD-TYPE REJECT MESSAGE FORMAT.....	5
FIGURE 9.6-3: L4-FLAG FIELD FORMAT FOR LLC PAYLOAD.....	6
FIGURE 9.6- 4: L4-FLAG FIELD FORMAT FOR ETHERNET PAYLOADS	8

TABLE OF TABLES

TABLE 9.6-1 L4 CONTROL MESSAGES	2
TABLE 9.6-2: L4 DATA PACKET PAYLOAD TYPE	3
TABLE 9.6-3: PAYLOAD-TYPE REJECT REASON.....	5
TABLE 9.6- 4: L4 DATA PAYLOAD -PPP SUPPRESSED HEADER FORMAT	6
TABLE 9.6-5: IEEE 802.2 LLC SUPPRESSED HEADER PROFILE 0 (DEFAULT)	7
TABLE 9.6-6: RELATION OF L4-FLAG PATTERNS AND PRESENCE OF HEADER FIELDS FOR IEEE802.2 LLC/SNAP PAYLOAD TYPE.....	8
TABLE 9.6-7: IEEE 802.3/ETHERNET SUPPRESSED HEADER PROFILE 0 (DEFAULT).....	9
TABLE 9.6- 8: RELATION OF L4-FLAG PATTERNS AND PRESENCE OF HEADER FIELDS FOR ETHERNET PAYLOAD TYPE.	10

American National Standard for Telecommunications –

Supplement to ATIS High Capacity-Spatial Division Multiple Access (HC-SDMA) Radio Interface Standard

1 CHANGES TO ATIS-0700004.2007

This section lists the changes to the specifications of the HC-SDMA (ATIS-0700004.2007) protocols to specify the definition and procedures for the transport of PPP, LLC/Ethernet payload over an HC-SDMA air interface.

Add the following references to clause 1.7:

ISO/IEC 8802-2, ANSI/IEEE Std 802.2, *Logical Link Control*.¹

ISO/IEC 8802-3, ANSI/IEEE Std 802.3, *CSMA/CD Access Method and Physical Layer Specifications*.¹

Add clause 9.6:

9.6 L4 Payload Support

9.6.1 Introduction

This section defines additional functionalities required to support different packet based protocols: PPP, IEEE802.LLC and Ethernet packet. For each Payload type, a payload header suppression profile (PHSP) shall be defined.

9.6.2 Protocols to Support Payload Type

When transfer of higher layer's L4 data across the air interface is considered, BS and UT perform payload negotiations (Payload type and corresponding Header Suppression Profile) soon after the successful establishment of an L3 session between BS and UT.

L4 payload type negotiation may be initiated either by BS or UT. Usually, a session is initiated by the UT, however, the data may not always be first available at the UT side for transmission. For example, in the case of handover, since the BS has the data to be transmitted first, a negotiation sequence is initiated by the BS. In either case, when L4 Payload Type is not mutually agreed by BS and UT, the Payload-type Reject message shall be sent with the Reject Reason.

A PHSP shall be specified for each L4 Payload Type and the BS and UT shall indicate it in L4 Payload Type message.

¹ This document is available from the International Organization for Standardization.
< <http://www.iso.ch/iso/en/prods-services/ISOstore/store.html> >.

9.6.2.1 Individual L4 Messages for Payload Type

The directionality of L4 AM messages between L4 peer components shall be as indicated in the Table 9.6-1: L4 Control Messages.

Table 9.6-1 L4 Control Messages

Message	Endpoints
Payload Type	UT L4 <---> BS L4
Payload-type Reject	UT L4 <---> BS L4

The individual L4 control messages are defined below.

9.6.2.1.1 Payload Type

Message ID: 16

TLVG: Payload type std

TLVG ID: 16

- ◆ IE: L4 data packet payload type, 16 bits

Description:

The payload type field shall indicate the type of L4 data packet for transporting over the HC-SDMA air interface. (See *Table 9.6-2: L4 data packet payload type*)

- ◆ IE: Payload header suppression profile, 8 bits

Description:

This *msb* of this field shall indicate whether Payload Header suppression is done. When this bit is set to 1, payload header suppression profile number is given by the following 7 bits. The default value of this field is 0.

Optional TLVG: IEEE 802.3 info

TLVG ID: 17

IE: source MAC address, 48bits

Description:

When the payload type is IEEE 802.3/Ethernet, this field is used to inform the sources MAC address to facilitate implicit transmission of Source MAC address.

Table 9.6-2: L4 data packet payload type

Value	Payload type	Header Suppression Profile
0	PPP	PPP-PHSP 0
1	802.2 LLC	LLC-PHSP 0
2	IEEE 802.3/Ethernet	Ether-PHSP 0
Others	Reserved	-

Payload Type												
msb	bits						lsb					
8	7	6	5	4	3	2	1					
0 0 0 1 0 0 0 0								Octet				
msg ID								0				
0 ext bit	TLVG length (assuming < 128 bytes)								1	mandatory TLVG		
0 0 0 1 0 0 0 0										Payload Type std		
TLVG ID								2				
L4 data packet payload type								3				
L4 data packet payload type								4				
PHSP Presence	PHSP Value (Shown present)								5			
0 ext bit	TLVG length (assuming < 128 bytes)								6	optional TLVG		
0 0 0 1 0 0 0 1										802.3 info		
TLVG ID								7				
source MAC address								8				
source MAC address								9				
source MAC address								10				
source MAC address								11				
source MAC address								12				
source MAC address								13				

Figure 9.6-1: Payload Type Message format

9.6.2.1.2 Payload-Type Reject

Message ID: 18

TLVG: Payload-Type reject std

TLVG ID: 18

IE: Payload-Type reject reason, 16 bits

Description:

This field is structure of bits and it shall indicate the reason(s) for rejecting the request for Payload type transport. The reason could be unsupported payload-type or header suppression profiles as defined in *Table 9.6-3: Payload-Type Reject reason*.

Table 9.6-3: Payload-Type Reject reason

Value	Session reject reason
Bit 0	Payload type not supported
Bit 1	Payload header suppression profile number not supported
Bit 215	Reserved

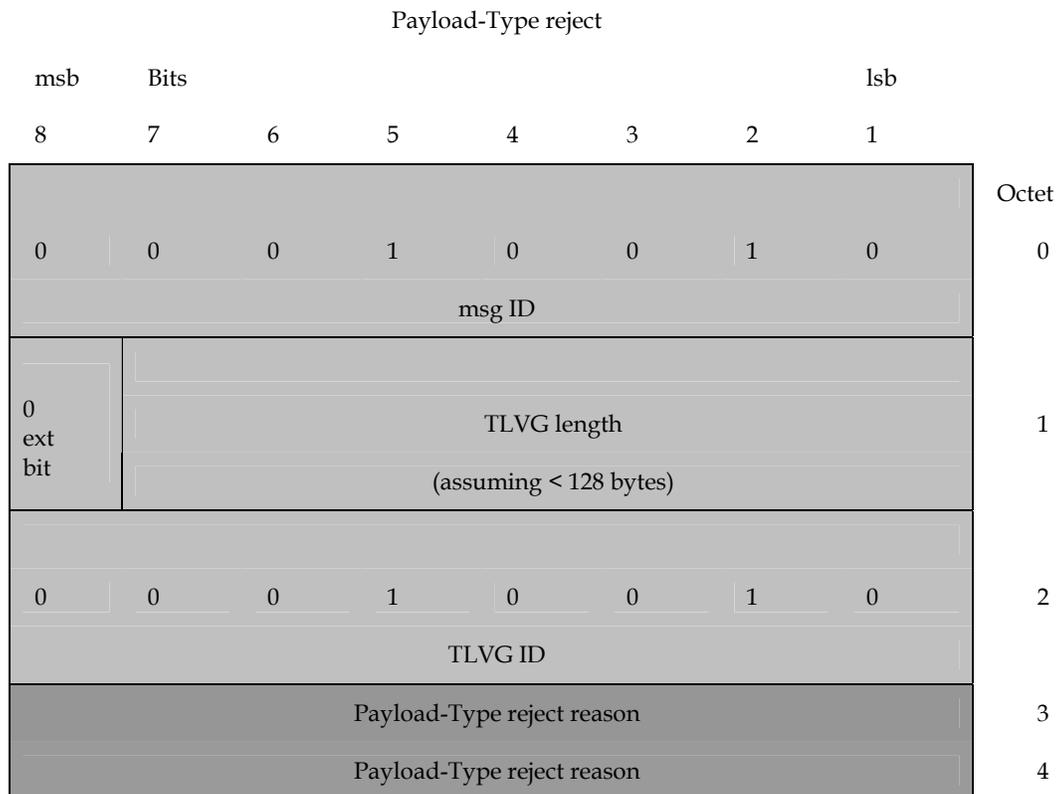


Figure 9.6-2: Payload-Type reject Message format

9.6.3 Payload Header Suppression Profiles

Payload header suppression profiles for the default value of the PHSP field in the Payload Type message shall be as defined in this section.

9.6.3.1 PPP payload header suppression profile 0 (default) (PPP-PHSP 0)

When the PPP payload and its header suppression are mutually agreed and PHSP number is 0, the L4 data payload shall carry only 2 octets of PPP header as defined in *Table 9.6-4: L4 data payload -PPP Suppressed header format*.

Table 9.6- 4: L4 data payload -PPP Suppressed header format

	FORMAT
Protocol	Length of this field is 2 octets. This field indicates a Protocol Type field of PPP layer header (RFC 1662, <i>PPP in HDLC-like Framing</i>).
TOTAL	2 octets.

When upper layer packet is reconstructed, an implicit data field values are replaced as defined in RFC 1662, *PPP in HDLC-like Framing*.

9.6.3.2 IEEE 802.2 LLC payload header suppression profile 0 (default) (LLC-PHSP 0)

When the IEEE 802.2 LLC payload and its header suppression are mutually agreed and the PHSP number is 0 in the Payload type message, the first octet of the suppressed header shall be the L4-Flag field as defined in *Figure 9.6-3: L4-Flag field format for LLC Payload*.

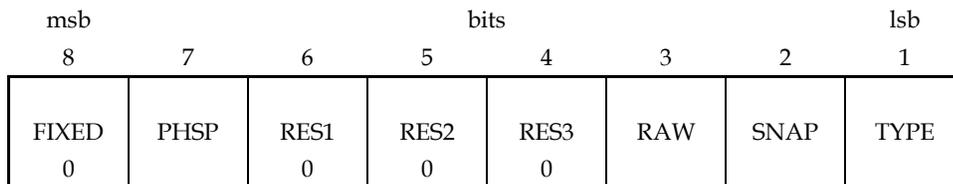


Figure 9.6-3: L4-Flag field format for LLC payload

The FIXED bit of L4-Flag field shall be 0 and RES1, RES2 and RES3 bits are reserved. If the LLC payload header is suppressed, the PHSP bit field is set to 1; otherwise it is reset to 0.

When the IEEE 802.2 LLC payload and its header suppression are mutually agreed, the L4 data payload shall carry header of variable length as defined in *Table 9.6-5: IEEE 802.2 LLC suppressed header profile 0*.

Table 9.6-5: IEEE 802.2 LLC suppressed header profile 0 (default)

Fields	FORMAT
L4-Flag	The length of this field is 1 octet. This field defines the header suppression and presence of header field for each packet type within LLC frame.
DSAP/SSAP	The length of this field is 2 octets as defined in [ISO/IEC 8802-2]. Table 9.6-6 defines whether this field shall be included in L4 packet header or not, based on the status of RAW, SNAP and Type flag bits in L4-Flag field.
CTRL	The length of this field is 1 octet as defined in [ISO/IEC 8802-2]. Table 9.6-6 defines whether this field shall be included in L4 packet header or not, based on the status of RAW, SNAP and Type flag bits in L4-Flag field.
Type	The length of this field is 2 octets as defined in [ISO/IEC 8802-2]. Table 9.6-6 defines whether this field shall be included in L4 packet header or not, based on the status of RAW, SNAP and Type flag bits in L4-Flag field.
Vendor ID	The length of this field is 3 octets as defined in [ISO/IEC 8802-2]. Table 9.6-6 defines whether this field shall be included in L4 packet header or not, based on the status of RAW, SNAP and Type flag bits in L4-Flag field.
TOTAL	Variable length (1 to 9 octets)

When the upper layer packet is reconstructed, the packet format is estimated by using information from the L4-Flag field of the suppressed header. Reconstructed upper layer header format types are as follows:

1. RAW packet header type
2. IEEE 802.2 LLC packet header type
3. IEEE 802.2 SNAP packet header type

Relations of flag patterns and estimated packet header types, and presence of header fields are defined by *Table 9.6-6: Relation of L4-flag patterns and presence of header fields for IEEE802.2 LLC/SNAP Payload type.*

Table 9.6-6: Relation of L4-flag patterns and presence of header fields for IEEE802.2 LLC/SNAP Payload type.

Patterns of flags			Packet Header types	Presences of fields in L4 Header			
RAW	SNAP	TYPE		DSAP/SSAP	CTRL	TYPE	Vendor ID
0	0	0	IEEE 802.2 LLC	Present	Present	-	-
0	0	1	Prohibited.	-	-	-	-
0	1	0	IEEE 802.2 SNAP (TYPE=IP and Vendor ID =000000h) ²	No	No	No	No
0	1	1	IEEE 802.2 SNAP (Vendor ID=000000h)	No	No	Present	No
1	0	0	Raw	-	-	-	-
1	0	1	Prohibited.	-	-	-	-
1	1	0	IEEE 802.2 SNAP(TYPE=IP) ²	No	No	No	Present
1	1	1	IEEE 802.2 SNAP	No	No	Present	Present

9.6.3.3 IEEE 802.3/Ethernet Payload Header Suppression Profile 0 (default) (Ether-PHSP 0)

When the IEEE 802.3/Ethernet payload and its header suppression are mutually agreed and the PHSP number is 0 in the Payload type message, the first octet of the suppressed header is always the L4-Flag field (see Figure 9.6-4: L4-Flag field format for Ethernet Payloads). The Flag field indicates the presence of other fields to follow (see Table 9.6-8: Relation of L4-flag patterns and presence of header fields for Ethernet Payload type).

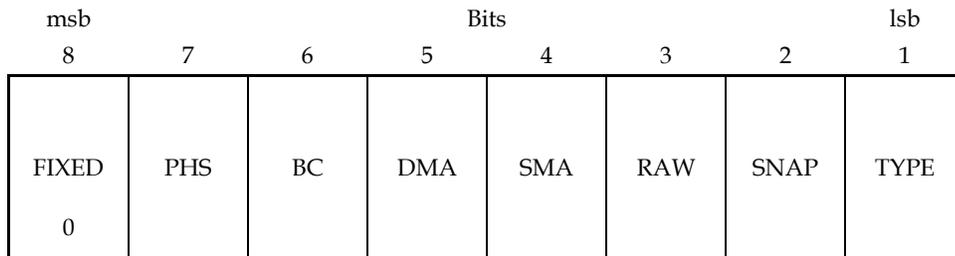


Figure 9.6- 4: L4-Flag field format for Ethernet Payloads

The FIXED bit of the L4-Flags field shall be 0.

When the Payload Header Suppression (PHS) bit is set to 1, the other bits of the Flag field are defined as in Table 9.6-7: IEEE 802.3/Ethernet suppressed header profile 0.

If a destination MAC address of Ethernet Payload is all FFh, the Broadcast (BC) bit of the L4-Flag field is set to 1; otherwise the BC bit shall be reset to 0.

² When the TYPE field in IEEE802.2 LLC header has the value 0800h, LLC Payload carries the IP.

In the IEEE 802.3/Ethernet payload header suppression default profile, the L4 data packet header has a variable length as defined in *Table 9.6-7: IEEE 802.3/Ethernet suppressed header profile 0*. The Destination and Source MAC address of the Ethernet Payload are transmitted implicitly.

Table 9.6-7: IEEE 802.3/Ethernet suppressed header profile 0 (default)

Fields	FORMAT
L4-Flag	The length of this field is 1 octet. This field defines the header suppression and presence of header field for each packet type within Ethernet frame.
Destination MAC address (DMA)	The length of this field is 6 octets as defined in [ISO/IEC 8802-3]. Table 9.6-8 defines whether this field shall be included in the L4 packet header or not, based on the status of the BC bit and the DMA flag bits in the L4-Flag field.
Source MAC address (SMA)	The length of this field is 6 octets as defined in [ISO/IEC 8802-2]. Table 9.6-8 defines whether this field shall be included in the L4 packet header or not, based on the status of SMA flag bits in the L4-Flag field.
DSAP/SSAP	The length of this field is 2 octets as defined in [ISO/IEC 8802-2]. Table 9.6-8 defines whether this field shall be included in the L4 packet header or not, based on the status of RAW, SNAP and Type flag bits in the L4-Flag field.
CTRL	The length of this field is 1 octet as defined in [ISO/IEC 8802-2]. Table 9.6-8 defines whether this field shall be included in the L4 packet header or not, based on the status of RAW, SNAP and Type flag bits in the L4-Flag field.
Type	Table 9.6-8 defines whether this field shall be included in the L4 packet header or not, based on the status of RAW, SNAP and Type flag bits in L4-Flag field. The length of this field is 1 octet as defined in [ISO/IEC 8802-3] or 2 octets as defined in [ISO/IEC 8802-2].
Vendor ID	The length of this field is 3 octets as defined in [ISO/IEC 8802-2]. Table 9.6-8 defines whether this field shall be included in the L4 packet header or not, based on the status of RAW, SNAP and Type flag bits in the L4-Flag field.
TOTAL	Variable length (1 to 21 Octets)

When the upper layer packet is reconstructed, the packet format is estimated with the help of the L4-Flag field (see Figure 9.6-4: L4-Flag field format for Ethernet Payloads) of the suppressed header. Reconstructed upper layer header format types are as follows:

1. Ethernet II packet header type
2. IEEE 802.3 Raw packet header type
3. IEEE 802.2 LLC packet header type
4. IEEE 802.2 SNAP packet header type

The relations of flag patterns and estimated packet header types, and presence of fields per each estimated packet type are defined by *Table 9.6-8: Relation of L4-flag patterns and presence of header fields for Ethernet Payload type.*

Table 9.6- 8: Relation of L4-flag patterns and presence of header fields for Ethernet Payload Type.

Patterns of flags			Estimated Packet Header types	Presences of fields in L4 Header			
RAW	SNAP	TYPE		DSAP/SSAP	CTRL	TYPE	Vendor ID
0	0	0	IEEE 802.2 LLC	Present	Present	-	-
0	0	1	Ethernet II	-	-	Present	-
0	1	0	IEEE 802.2 SNAP (TYPE=IP and Vendor ID =000000h) ²	No	No	No	No
0	1	1	IEEE 802.2 SNAP (Vendor ID=000000h)	No	No	Present	No
1	0	0	IEEE 802.3 Raw	-	-	-	-
1	0	1	Prohibited.	-	-	-	-
1	1	0	IEEE 802.2 SNAP(TYPE=IP) ²	No	No	No	Present
1	1	1	IEEE 802.2 SNAP	No	No	Present	Present