TECHNICAL REPORT

ISO/IEC TR 10735

First edition
1993-06-01

Information technology — Telecommunications and information exchange between systems — Standard Group MAC Addresses

Technologies de l'information — Télécommunications et échange d'information entre systèmes — Adresses MAC de groupe normalisées

Reference number
ISO/IEC TR 10735:1993(E)

Contents **Page**

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

The main task of technical committees is to prepare International Standards, but in exceptional circumstances a technical committee may propose the publication of a Technical Report of one of the following types:

— type 1, when the required support cannot be obtained for the publication of an International Standard, despite repeated efforts;

— type 2, when the subject is still under technical development or where for any other reason there is the future but not immediate possibility of an agreement on an International Standard;

— type 3, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example).

Technical Reports of types 1 and 2 are subject to review within three years of publication, to decide whether they can be transformed into International Standards. Technical Reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

ISO/IEC/TR 10735, which is a Technical Report of type 3, was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Sub-Committee SC 6, *Telecommunications and information exchange between systems*.

Introduction

The Standards for LANs generally comprise the physical layer, the medium access control (MAC) sublayer, and the logical link control (LLC) sublayer. In OSI terminology, the MAC and LLC sublayers are considered to be sublayers of the OSI Data Link layer. Both the MAC and LLC sublayers contain fields for addressing.

A Universally Administered Address Block has been allocated for the assignment of Group MAC Addresses for use in Standards. This Technical Report contains a description of the MAC addressing conventions, the criteria which will be used by ISO/IEC when considering a request for an assignment, and a record of assignments.

This Technical Report will be kept up to date by ISO/IEC JTC 1 as new assignments are made.

Information technology - Telecommunications and information exchange between systems - Standard Group MAC Addresses

1 Scope

This Technical Report provides:

a) A description of the binary and illustrative representation of ISO/IEC 8802 LAN MAC addresses.

b) A description of the sub-division of the Universally Administered Standard Group MAC Address Block into: ISO/IEC 10038 MAC Bridge Filtered MAC Group Addresses and Standard MAC Group Addresses.

c) The criteria for the manner in which new addresses are approved for entry into this TR.

d) A record of approved assignments from the Standard Group MAC Address Block and a record of Group MAC Addresses in use in standards which are not part of the Standard Group MAC Address Block, for example ISO/IEC 9542.

2 References

The following standards contain provisions which, through reference in this text, constitute provisions of this Technical Report. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this Technical Report are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO/IEC 8802-5:1992, *Information technology – Local and metropolitan area networks – Part 5: Token ring access method and physical layer specifications.*

ISO/IEC 9542:1988, *Information processing systems – Telecommunications and information exchange between systems – End system to Intermediate system routeing exchange protocol for use in conjunction with the Protocol for providing the connectionless-mode network service (ISO 8473).*

ISO/IEC 10038[1)], *Information technology – Telecommunications and information exchange between systems – Local Area Networks – Media access control (MAC) bridges.*

ISO/IEC 10039:1991, *Information technology – Open Systems Interconnection – Local Area Networks – Medium Access Control (MAC) service definition.*

1) To be published.

3 Abbreviations

The following abbreviations are used in this Technical Report

MAC	Medium Access Control
LAN	Local Area Network
LLC	Logical Link Control
ANSI	American National Standards Institute
IEEE	Institute of Electrical and Electronic Engineers

4 Binary and Illustrative Representation of LAN MAC Addresses

An illustrative (in hexadecimal) representation of LAN MAC addresses has been defined ISO/IEC 10039 and is used throughout this Technical Report.

Figure 1 illustrates an example of a 48-bit LAN MAC address in both binary and illustrative representations.

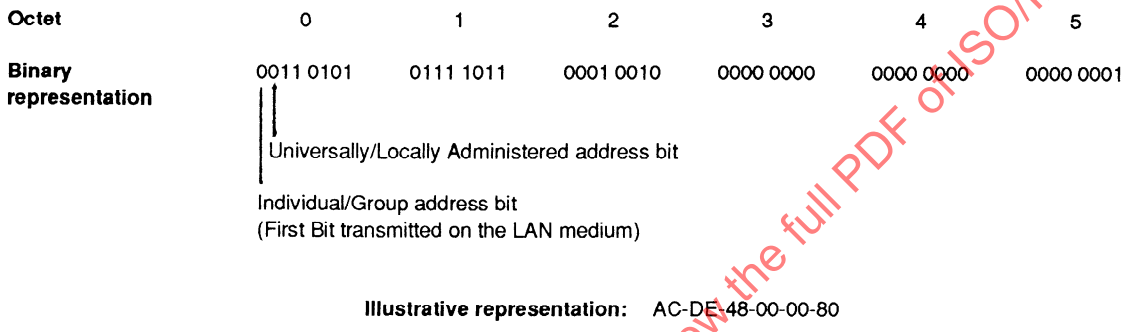

Figure 1 - Representation of LAN MAC Addresses

The 48-bit address (universal or local) is represented as a string of six octets. The octets are displayed from left to right, in the order that they are transmitted on the LAN medium, separated by hyphens. Each octet of the address is displayed as two hexadecimal digits. The bits within the octets are transmitted on the LAN medium from left to right. In the binary representation the first bit transmitted, of each octet, on the LAN medium is the least significant bit of that octet. The Individual/Group address bit is the least significant bit. The left-most bit of the binary representation (Individual/Group address bit) of a MAC address distinguishes individual from group addresses. The Universally/Locally administered address bit is the next bit following the Individual/Group address bit. The U/L bit indicates whether the MAC address has been universally or locally assigned.

For the previous example, the first octet transmitted is AC and the last octet transmitted is 80. The first bit transmitted is the low order bit of AC, a zero. The last bit transmitted is the high order bit of 80, a one.

5 Standard Group MAC Addresses

5.1 General

All MAC protocol data units contain addressing information. The addressing information consists of two fields: the destination MAC address and the source MAC address. Both of these address fields are 48-bit fields; the structure and semantics of the address field are defined in ISO/IEC 10039.

The following 48-Bit Universal Address Block has been allocated for use by standard protocols:

0X-80-C2-00-00-00 to 0X-80-C2-FF-FF-FF

where X has the hexadecimal value: 0 for individual addresses, and
1 for group addresses.

The group address block has been divided into two categories:

ISO/IEC 10038 MAC Bridge Filtered MAC Group Addresses: 01-80-C2-00-00-00 to 01-80-C2-00-00-0F; MAC frames which have a destination MAC address within this range are not relayed by MAC bridges conforming to ISO 10038, see table 1.

Standard MAC Group Addresses: 01-80-C2-00-00-10 to 01-80-C2-FF-FF-FF; MAC frames which have a destination MAC address within this range may be relayed by MAC bridges (ISO 10038), see table 2.

Prior to the allocation of a 48-Bit Universal Address for use by standard protocols the following two Group MAC Address values were assigned, in perpetuity to ISO, for use in ISO/IEC 9542, see table 3.

MAC Group Addresses used in ISO/IEC 9542:
09-00-2B-00-00-04 and 09-00-2B-00-00-05

Due to limitations in existing intermediate systems and end systems that implement ISO/IEC 8802-5 it is necessary to allocate several "functional addresses" that correspond to Standard Group MAC Addresses for use in ISO/IEC 9542 when operating on an ISO/IEC 8802-5 Local Area Network. Potential users of these addresses should be aware that, since these addresses are derived from the locally administered address space, there are no guarantees that the addresses will be used only for the listed purposes, see table 4.

Note: Functional Address is defined in ISO/IEC 8802-5.

Clause 6 contains all the reserved values that have been assigned together with additional information regarding the assignment.

5.2 Criteria for assignment of Standard Group MAC Addresses

5.2.1 General considerations

Unlike LLC reserved addresses Standard Group MAC Addresses are not a scarce resource. However, out of the range of Standard Group MAC Addresses only 16 addresses have been reserved that are not relayed by MAC Bridges (ISO 10038 MAC Bridge Filtered MAC Group Addresses) and therefore these 16 values are considered a scarce resource.

Assignment of Standard Group MAC Addresses are made in perpetuity.

A case-by-case review against the criteria for assignment is made before assignment of a Standard Group MAC Address to a standard protocol and inclusion of that assignment in clause 6.

5.2.2 Specific considerations

A need for a protocol to be assigned a reserved value and included in clause 6 is brought to the attention of ISO/IEC JTC1 by means of a submission to the appropriate sub-committee, currently SC6 WG1. Submissions can be made by members of the SC (that is, members as defined in ISO/IEC directives - currently designated P-, L-, O, and S members). A request for a reserved value must be accompanied by a copy of the protocol standard.

The proposed protocol should be one which:

is a standard published by a standards organization whose publications are made following consultation for its technical development and are generally available;

has a potentially large field of application.

Group MAC addresses for vendor specific proprietary protocols should be assigned out of the vendor's Universally Administered Address Block, for more information refer to ISO/IEC 10039.

6 Standard Group MAC Address assignments

6.1 ISO/IEC 10038 MAC Bridge Filtered MAC Group Addresses

Table 1 - ISO/IEC 10038 MAC Bridge Filtered MAC Group Addresses

Group MAC Address value	Organization using the value	Use being made of the value	Notes
01-80-C2-00-00-00	ISO/IEC JTC1 SC6	ISO/IEC 10038	1
01-80-C2-00-00-01	*unassigned*		
01-80-C2-00-00-02	*unassigned*		
01-80-C2-00-00-03	*unassigned*		
01-80-C2-00-00-04	*unassigned*		
01-80-C2-00-00-05	*unassigned*		
01-80-C2-00-00-06	*unassigned*		
01-80-C2-00-00-07	*unassigned*		
01-80-C2-00-00-08	*unassigned*		
01-80-C2-00-00-09	*unassigned*		
01-80-C2-00-00-0A	*unassigned*		
01-80-C2-00-00-0B	*unassigned*		
01-80-C2-00-00-0C	*unassigned*		
01-80-C2-00-00-0D	*unassigned*		
01-80-C2-00-00-0E	*unassigned*		
01-80-C2-00-00-0F	*unassigned*		

Notes:

1 - Used in ISO/IEC 10038 as the Bridge Group Address.

6.2 Standard MAC Group Addresses

Table 2 - Standard MAC Group Addresses

Group MAC Address value	Organization using the Value	Use being made of the value	Note
01-80-C2-00-00-10	ISO/IEC JTC1 SC6	ISO/IEC 10038	1
01-80-C2-00-00-11	ANSI	IEEE 802.1E	2
01-80-C2-00-00-12	ANSI	IEEE 802.1E	3
01-80-C2-00-00-13	*unassigned*		
01-80-C2-00-00-14	ISO/IEC JTC1 SC6	ISO/IEC 10589	4
01-80-C2-00-00-15	ISO/IEC JTC1 SC6	ISO/IEC 10589	5
01-80-C2-00-00-16	ISO/IEC JTC1 SC6	ISO/IEC 10030	10
01-80-C2-00-00-17	ISO/IEC JTC1 SC6	ISO/IEC 10030	11
01-80-C2-00-00-18	ANSI	IEEE 802.1B	12
01-80-C2-00-00-19	*unassigned*		
01-80-C2-00-00-1A	ANSI	IEEE 802.1B	13
01-80-C2-00-00-1B to 01-80-C2-00-00-FF	*unassigned*		
01-80-C2-00-01-00	ISO/IEC JTC1 SC25	ISO/IEC 9314-6	6
01-80-C2-00-01-01 to 01-80-C2-00-01-0F	ISO/IEC JTC1 SC25	reserved for SC25 use	7
01-80-C2-00-01-10	ISO/IEC JTC1 SC25	ISO/IEC 9314-6	8
01-80-C2-00-01-11 to 01-80-C2-00-01-1F	ISO/IEC JTC1 SC25	reserved for SC25 use	7
01-80-C2-00-01-20	ISO/IEC JTC1 SC25	ISO/IEC 9314-2	9
01-80-C2-00-01-21 to 01-80-C2-00-01-2F	ISO/IEC JTC1 SC25	reserved for SC25 use	7
01-80-C2-00-01-30	ISO/IEC JTC1 SC25	ISO/IEC 9314-6	14
01-80-C2-00-01-31 to 01-80-C2-00-01-FF	ISO/IEC JTC1 SC25	reserved for SC25 use	7
01-80-C2-00-02-00 to 01-80-C2-FF-FF-FF	*unassigned*		

Notes:

1 - Used in ISO/IEC 10038 as the All LANs Bridge Management Group Address.
2 - Used in IEEE 802.1E as the Load Server Generic Address
3 - Used in IEEE 802.1E as the Loadable Device Generic Address.
4 - Used in ISO/IEC 10589 as the All Level 1 Intermediate Systems Address.
5 - Used in ISO/IEC 10589 as the All Level 2 Intermediate Systems Address.
6 - Used in ISO/IEC 9314-6 FDDI SMT as the Ring Management Directed Beacon Multicast Address.
7 - Assigned to ISO/IEC JTC1 SC25 for future use.
8 - Used in ISO/IEC 9314-6 FDDI SMT as the Status Report Frame Status Report Protocol Multicast Address.
9 - Used in ISO/IEC 9314-2 FDDI MAC as the All FDDI Concentrator MACs.
10 - Used in ISO/IEC 10030 as the All CONs End Systems Address.
11 - Used in ISO/IEC 10030 as the All CONs SNARES Address.
12 - Used in IEEE 802.1B as the Generic Address for All Manager Stations.
13 - Used in IEEE 802.1B as the Generic Address for All Agent Stations.
14 - Used in ISO/IEC 9314-6 FDDI SMT as the Synchronous Bandwidth Allocation Address.

6.3 MAC Group Addresses used in ISO/IEC 9542

Table 3 - MAC Group Addresses used in ISO/IEC 9542

Group MAC Address value	Organization using the Value	Use being made of the value	Note
09-00-2B-00-00-04	ISO/IEC JTC1 SC6	ISO/IEC 9542	1
09-00-2B-00-00-05	ISO/IEC JTC1 SC6	ISO/IEC 9542	2

Notes:

1 - Used in ISO/IEC 9542 as the All End System Network Entities Address.
2 - Used in ISO/IEC 9542 as the All Intermediate System Network Entities Address.

6.4 Locally Administered MAC Group Addresses used by ISO/IEC 8802-5

Table 4 - Locally Administered MAC Group Addresses used by ISO/IEC 8802-5

Group MAC Address value	Organization using the Value	Use being made of the value	Note
03-00-00-00-02-00	ISO/IEC JTC1 SC6	ISO/IEC 9542	1
03-00-00-00-01-00	ISO/IEC JTC1 SC6	ISO/IEC 9542	2

Notes:

1 - Used in ISO/IEC 9542 as the All End System Network Entities Address.
2 - Used in ISO/IEC 9542 as the All Intermediate System Network Entities Address.

Potential users of these addresses are once again warned that, since these addresses are derived from the locally administered address space, there are no guarantees that the addresses will be used only for the listed purposes.