

TECHNICAL REPORT

ISO/IEC TR 11802-1

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Information technology — Telecommunications and information exchange between systems — Local and metropolitan area networks — Technical reports and guidelines —

Part 1:

The structure and coding of Logical Link
Control addresses in Local Area Networks

*Technologies de l'information — Télécommunications et échange
d'information entre systèmes — Réseaux locaux et métropolitains —
Rapports techniques et lignes directrices —*

*Partie 1: Structure et codage des adresses de contrôle de liaison logique
dans les réseaux locaux*



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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialised system for worldwide standardisation. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organisation to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organisations, 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 Technical Reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.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 11802-1, which is a Technical Report of type 3, was prepared by ISO/IEC JTC 1, *Information technology*, Subcommittee SC 6, *Telecommunications and information exchange between systems*.

This second edition cancels and replaces the first edition (ISO/IEC TR 11802-1:1995), which has been technically revised.

ISO/IEC 11802 consists of the following parts, under the general title *Information technology — Telecommunications and information exchange between systems — Local and metropolitan area networks — Technical reports and guidelines*:

- *Part 1: The structure and coding of Logical Link Control addresses in Local Area Networks* [Technical Report]
- *Part 2: Standard Group MAC Addresses* [Technical Report]
- *Part 4: Token ring access method and physical layer specifications — Fibre optic station attachment*

Introduction

The standards for LANs are generally comprised of 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.

This Technical Report contains a description of the LLC addresses, together with a list of those values in current use.

The addressing space in LLC is limited, and it is such that it is considered to be a scarce resource. It is therefore prudent to consume this resource in a considered and conservative manner. To this end this Technical Report indicates the kind of considerations which will be used by ISO/IEC when making the association between a particular LLC address value and use to which it is put. These considerations are intended to be sufficiently broad to allow a wide variety of LLC address uses to be recorded, and also sufficiently restrictive so that addresses values are not unwisely assigned.

This Technical Report will be kept up to date by ISO/IEC JTC 1 as new entries are added to the tables.

Information technology — Telecommunications and information exchange between systems — Local and metropolitan area networks — Technical reports and guidelines —

Part 1:

The structure and coding of Logical Link Control addresses in Local Area Networks

1. Scope

This Technical Report provides:

- a) a description of the ISO/IEC 8802-2 LLC addressing conventions,
- b) the consideration for the manner in which new LLC address uses are assigned an entry in this Technical Report, and
- c) a record, in the form of a table, of assigned uses of ISO/IEC 8802-2 LLC address values.

This Technical Report is for use by implementers to ascertain the value, or values, of LLC addresses that have been assigned for use in a particular circumstance.

It is outside the scope of this Technical Report to provide architectural judgements regarding the entities which are identified by particular address value(s).

2. References

ISO/IEC TR 9577: 1996, *Information technology - Protocol identification in the network layer*.

ISO/IEC 8802-2: 1994, *Information technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Specific requirements - Part 2: Logical link control*.

3. Abbreviations

The following abbreviations are used in this Technical Report.

DSAP	Destination Service Access Point
IEEE	Institute of Electrical and Electronics Engineers
LLC	Logical Link Control
PDU	Protocol Data Unit
SAP	Service Access Point
SNAP	Sub-Network Access Protocol
SSAP	Source Service Access Point
LSAP	Link Service Access Point

4. General considerations

4.1 Functions of LLC addresses

Logical Link Control (LLC) protocol data units contain addressing information. This addressing information consists of two fields; the Destination Service Access Point (DSAP) address field, and the Source Service Access Point (SSAP) address field. Each of these is an 8 bit field and each is made up of two components.

In the DSAP address field, the components are an *address type designation bit*, and seven bits of *actual address*. When the *address type designation bit* is set to '0', it denotes that the *actual address* is an individual address. When the *address type designation bit* is set to '1', it denotes that the DSAP *actual address* is a group address. This Technical Report considers and records the two types of *actual address* separately.

In the SSAP address field, the components are the *command/response identifier bit*, and seven bits of *actual address*. The *actual address* in the SSAP field is always an individual address.

Table 1 is a record of individual address values and is applicable to SSAP *actual addresses*, and DSAP individual *actual addresses*. Table 2 is a record of DSAP group *actual addresses*.

In the general case, an individual *actual address* identifies a protocol, or set of protocols, in the next higher layer. In OSI environments, the next higher layer is the Network Layer. In non-OSI environments, the next higher layer is dependent on the architecture in use.

There are certain exceptions to this general rule as discussed below.

NOTES

1. The terms in italics, namely; *address type designation bit*, *command/response identifier bit* and *actual address* are as defined in ISO/IEC 8802-2. See ISO/IEC 8802-2 clause 3.3.1.1 items (2), (3), and (4).
2. The format of LLC addresses is defined in ISO/IEC 8802-2. For information this is reproduced in Annex A.
3. An individual *actual address* value does not necessarily have any relationship with a group address of the same *actual address* value.

4.2 Binary and Hexadecimal representation of LLC addresses

4.2.1 Binary representation

The seven-bit LLC *actual address* value is conveyed in the eight-bit DSAP/SSAP fields and therefore can be represented in a sequence of eight binary digits. The least significant digit is shown to the left and the significance of the digits increases from left to right. The least significant digit of the sequence represents the *address type designation bit* of the DSAP address field and the *command/response identifier bit* of the SSAP address field, see figure A.1.

The following are the two permitted binary representations of an example individual *actual address*;

0111 1011
Z111 1011.

The following is the permitted binary representation of an example group *actual address*;

1101 0101.

4.2.2 Hexadecimal representation

The eight-bit binary representation of an *actual address* value may be represented as two hexadecimal digits encoding the value of the octet address field with the least significant bit set to 0 in the case of an individual address and the least significant bit set to 1 in the case of a group address.

The following is the permitted hexadecimal representation of the example individual *actual address* shown in clause 4.2.1 (Z111 1011);

DE/DF.