INTERNATIONAL STANDARD

**ISO/IEC 13346-2**

Second edition
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# Information technology — Volume and file structure of write-once and rewritable media using non-sequential recording for information interchange —

## Part 2: Volume and boot block recognition



*Technologies de l'information — Structure de volume et de fichier de moyens d'écriture unique et de réécriture utilisant un enregistrement non séquentiel pour l'échange d'information —*



*Partie 2: Reconnaissance de volume et de «boot block»*

Reference number
ISO/IEC 13346-2:1999(E)

## Contents

## 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 this work.

In the field of information technology, ISO and IEC have established a Joint Technical Committee, ISO/IEC JTC 1. Draft International Standards adopted by the Joint Technical Committee are circulated to National Bodies for voting. Publication of an International Standard requires approval by at least 75% of the national bodies casting a vote.

International Standard ISO/IEC 13346-2 was prepared by ECMA, (as Standard ECMA-167) and was adopted, under a special “fast-track procedure”, by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, in parallel with its approval by National Bodies of ISO and IEC.

This second edition cancels and replaces the first edition (ISO/IEC 13346-2:1995), which has been technically revised.

ISO/IEC 13346 consists of the following parts, under the general title *Information technology — Volume and file structure of write-once and rewritable media using non-sequential recording for information interchange*:



— *Part 1: General*

— *Part 2: Volume and boot block recognition*



— *Part 3: Volume structure*

— *Part 4: File structure*

— *Part 5: Record structure*

Annex A of this part of ISO/IEC 13346 is for information only.

## Introduction

ISO/IEC 13346 is a volume and file structure standard for interchanging files and as such, it is a peer to existing volume and file structure standards such as ISO 9293 and ISO 9660. It is rather different from those standards in at least two important ways. Firstly, it offers much more functionality, mainly because of user needs for increased character set support and for more powerful file system features. Secondly, it acknowledges the separate concerns of booting, volume structure and file system structure. Rather than bundling these different functions together, ISO/IEC 13346 carefully segregates these functions into separate parts and describes in detail how those parts fit together. It is expected that future volume and file structure standards will fit into this framework, rather than building other distinct and incompatible formats.

ISO/IEC 13346 is published in five Parts. Part 1 - general - specifies references, definitions, notations and basic structures used in the other four Parts. Part 2 - volume and boot block recognition - specifies formats and system requirements for recognising the volume structures on a medium and booting from a medium. Part 3 - volume structure - specifies how to record various volume-related entities such as volumes, volume sets and logical volumes. Part 4 - file structure - specifies how to record and interpret files, both file data and file attributes, and file hierarchies within logical volumes. Part 5 - record structure - specifies how to record and interpret file data encoded as records.

# Information technology — Volume and file structure of write-once and rewritable media using non-sequential recording for information interchange —

# Part 2:
Volume and boot block recognition

## 1 Scope

This part of ISO/IEC 13346 specifies a format and associated system requirements for volume and boot block recognition by specifying:

— volume recognition;

— boot descriptors intended for use to bring a system to a known state;

— levels of medium interchange;

— requirements for the processes which are provided within information processing systems, to enable information to be interchanged between different systems; for this purpose, this part of ISO/IEC 13346 specifies the functions to be provided within systems which are intended to originate or receive media which conform to this part of ISO/IEC 13346.



## 2 Parts references



See 1/2.

## 3 Part interface

This clause specifies the interface of this part of ISO/IEC 13346 to other standards or Parts.

### 3.1 Input

This part of ISO/IEC 13346 requires the specification of the following by another standard or Part.

— A standard for recording (see 1/5.10).

— The address of the initial sector in the volume (see 2/8.1.1).

— A volume recognition space (see 2/8.2).

### 3.2 Output

This part of ISO/IEC 13346 specifies the following which may be used by other standards or Parts.

— identification of certain standards (see 2/9.1.2) used to record information in the volume.

— information that may be used to bring a system to a known state.

## 4 Conformance

See 1/3.

# 5 Definitions

For the purposes of this part of ISO/IEC 13346, the definitions given in ISO/IEC 13346-1 (see 1/5), and the following definition apply.

## 5.1 extent

A set of sectors, the sector numbers of which form a continuous ascending sequence. The address, or location, of an extent is the number of the first sector in the sequence.

# 6 Notation

The notation of ISO/IEC 13346-1 (see 1/6) applies to this part of ISO/IEC 13346.

# 7 Basic types

The basic types of ISO/IEC 13346-1 (see 1/7) apply to this part of ISO/IEC 13346.

# 8 Volume recognition

## 8.1 Arrangement of data on a volume



### 8.1.1 Sector numbers

Each sector of a volume shall be identified by a unique sector number. Sector numbers shall be consecutive integers assigned in an ascending sequence, in the order of ascending physical address of the volume as specified in the relevant standard for recording (see 1/5.10). Sector number 0 shall be assigned to the initial sector of the volume as specified in 2/3.1.



## 8.2 Volume recognition space

A volume recognition space shall be a contiguous sequence of sectors. The bytes in the volume recognition space shall be numbered with consecutive integers assigned in ascending sequence. The numbering shall start from 0 which shall be assigned to the first byte of the first sector of the volume recognition space. The numbering shall continue through successive bytes of that sector and then through successive bytes of each successive sector, if any, of the volume recognition space.

## 8.3 Volume recognition area

A volume recognition area shall be recorded in the volume recognition space. A volume recognition area shall consist of a volume recognition sequence (see 2/8.3.1) recorded in consecutively numbered sectors starting with the first byte of the first sector that begins after byte number 32 767 of the volume recognition space. This part of ISO/IEC 13346 does not specify the interpretation of the information recorded in the volume recognition space other than in the volume recognition area of the volume recognition space.

### 8.3.1 Volume recognition sequence

A volume recognition sequence shall consist of a consecutively recorded sequence of one or more Volume Structure Descriptors (see 2/9.1) recorded according to the schema shown in figure 2/1.

Each Volume Structure Descriptor shall specify a standard or clause which shall specify the interpretation of the contents of the descriptor and the value of *n* (see figure 2/1).

The first Volume Structure Descriptor of the sequence shall be recorded beginning at the first byte of the first sector of the volume recognition area in which it is recorded. Each successive Volume Structure Descriptor of the sequence shall be recorded beginning at the first byte of the sector with the next higher sector number than that of the last sector constituting the previous Volume Structure Descriptor of the sequence.

Note 1 - The volume recognition sequence is terminated by the first sector which is not a valid descriptor, rather than by an explicit descriptor. This sector might be an unrecorded or blank sector.

```
[volume recognition sequence]{
     <CD-ROM Volume Descriptor Set>0+1
     [Extended Area]{
               <Beginning Extended Area Descriptor> 1+
               { <Volume Structure Descriptor> | <Boot Descriptor> } n+
               <Terminating Extended Area Descriptor> 1+
     } 0+
}
```

**Figure 1 — Volume recognition sequence schema**

#### 8.3.1.1 CD-ROM Volume Descriptor Set

A CD-ROM Volume Descriptor Set shall be a set of consecutively recorded Volume Structure Descriptors whose Standard Identifier fields shall not contain “BEA01” and shall be interpreted according to ISO 9660.

### 8.4 Recording of descriptors



All the descriptors in this part of ISO/IEC 13346 shall be recorded so that the first byte of the descriptor coincides with the first byte of a sector. All space, if any, after the last byte of the descriptor up to the end of the sector containing the last byte of the descriptor is reserved for future standardisation and shall be recorded as all #00 bytes.



## 9 Volume recognition structures

### 9.1 Volume Structure Descriptor

The Volume Structure Descriptor shall be recorded in the format shown in figure 2/2.

| BP | Length | Name | Contents |
|---|---|---|---|
| 0 | 1 | Structure Type | `Uint8` (1/7.1.1) |
| 1 | 5 | Standard Identifier | bytes |
| 6 | 1 | Structure Version | `Uint8` (1/7.1.1) |
| 7 | 2 041 | Structure Data | bytes |

**Figure 2 — Generic Volume Structure Descriptor format**

#### 9.1.1 Structure Type (BP 0)

The number in this field shall specify the type of the Volume Structure Descriptor. The interpretation of the number shall be specified by the Standard or clause identified in the Standard Identifier field.

#### 9.1.2 Standard Identifier (BP 1)

This field shall specify the interpretation of the Volume Structure Descriptor as shown in figure 2/3.