ISO 9660:1988-04 (E)

Information processing; volume and file structure of CD-ROM for information interchange

Contents

Page

Section one : General
1 Scope and field of application 1
2 Conformance 1
2.1 Conformance of a CD-ROM 1
2.2 Conformance of an information processing system 1
3 References 1
4 Definitions 1
4.1 application program 1
4.2 byte 1
4.3 Data Field of a sector 2
4.4 data preparer 2
4.5 descriptor 2
4.6 Extent 2
4.7 file 2
4.8 File Section 2
4.9 implementation 2
4.10 Logical Block 2
4.11 originating system 2
4.12 receiving system 2
4.13 record 2
4.14 sector 2
4.15 standard for recording 2
4.16 user 2
4.17 volume 2
4.18 Volume Set 2
5 Notation 2
5.1 Decimal and hexadecimal notations 2
5.2 Other notation 2
Section two : Requirements for the medium
6 Volume structure 3
6.1 Arrangement of data on a CD-ROM 3
6.1.1 Physical Addresses 3
6. 12 Logical Sector 3
6. 13 Volume Space 3
6.2 Arrangement of the Volume Space 3
6.2.1 System Area and Data Area 3
6.2.2 Logical Block 3
6.3 Arrangement of the Data Area 3
6.4 Arrangement of Extents 4
6.4.1 Extent 4
6.4.2 Mode of recording a File Section 4
6.4.3 Interleaved mode 4
6.4.4 Non-interleaved mode 4
6.4.5 Data length of a File Section 5
6.4.6 Relation of Extended Attribute Record to File Section 5
6.4.7 Recording of a Volume Partition 5
6.5 File structure 5
6.5.1 Relation to File Sections 5
6.5.2 Numbering of bytes in a file 5
6.5.3 Contents of a file 5
6.5.4 Associated File 6
6.6 Volume Set 6

6.7 Volume Descriptors 6
6.7.1 Volume Descriptor Set 6
6.8 Directory structure 6
6.8.1 Directory 6
6.8.2 Directory Hierarchy 7
6.8.3 Relation of Directory Hierarchies 7
6.9 Path Table 8
6.9.1 Order of Path Table Records 8
6.9.2 Path Table Group 8
6.9.3 Recorded Occurrences of the Path Table 8
6.9.4 Consistency of Path Tables between volumes of a Volume Group 8
6.10 Record structure 8
6.10.1 Characteristics 8
6.10.2 Measured Da ta Units (MDU) 9
6.10.3 Fixed-length records 9
6.10.4 Variable-length records 9
7 Recording of descriptor fields 9
7.1 8-bit numerical values 9
7.1.1 8-bit unsigned numerical values 9
7 1.2 8-bit signed numerical values 9
7.2 16-bit numerical value 9
7.2.1 Least significant byte first 9
7.2.2 Most significant byte first 9
72.3 Both-byte orders 9
7.3 32-bit numerical values 9
7.3.1 Least significant byte first 10
7.3.2 Most significant byte first 10
7.3.3 Both-byte orders 10
7.4 Character sets and coding 10
7.4.1 d-characters and a-characters 10
7.4.2 c-characters 10
74.2.1 a 1 -characters 10
7.4.2.2 d1 -characters 10
7.4.3 Separators 10
7.4.4 Use of characters in descriptor fields 10
7.4.5 Justification of characters 10
7.5 File Identifier 10
75.1 File Identifier format 10
7.5.2 File Identifier length 11
7.6 Directory Identifier 11
76.1 Directory Identifier format 11
7.6.2 Reserved Directory Identifiers 11
7.6.3 Directory Identifier length 11
8 Volume Descriptors 11
8.1 Format of a Volume Descriptor 11
8.1.1 Volume Descriptor Type (BP 1) 11
8.1.2 Standard Identifier (BP 2 to 6) 11
8.1.3 Volume Descriptor Version (BP 7) 11
8.1.4 Depends on Volume Descriptor Type (BP 8 to 2 048) 11
8.2 Boot Record 12
8.2.1 Volume Descriptor Type (BP 1) 12
8.2.2 Standard Identifier (BP 2 to 6) 12
8.2.3 Volume Descriptor Version (BP 7) 12
8.2.4 Boot System Identifier (BP 8 to 39) 12
8.2.5 Boot Identifier (BP 40 to 71) 12
8.2.6 Boot System Use (BP 72 to 2 048) 12
8.3 Volume Descriptor Set Terminator 12
8.3.1 Volume Descriptor Type (BP 1) 12
8.3.2 Standard Identifier (BP 2 to 6) 12
8.3.3 Volume Descriptor Version (BP 7) 12
8.3.4 Reserved for future standardization (BP 8 to 2 048) 12
8.4 Primary Volume Descriptor 12

8.4.1 Volume Descriptor type (BP 1) 12
8.4.2 Standard Identifier (BP 2 to 6) 13
8.4.3 Volume Descriptor Version (BP 7) 13
8.4.4 Unused Field (BP 8) 13
8.4.5 System Identifier (BP 9 to 40) 13
8.4.6 Volume Identifier (BP 41 to 72) 13
8.4.7 Unused field (BP 73 to 80) 13
8.4.8 Volume Space Size (BP 81 to 88) 13
8.4.9 Unused Field (BP 89 to 120) 14
8.4.10 Volume Set Size (BP 121 to 124) 14
8.4. 11 Volume Sequence Number (BP 125 to 128) 14
8.4.12 Logical Block Size (BP 129 to 132) 14
8.4.13 Path Table Size (BP 133 to 140) 14
8.4.14 Location of Occurrence of Type L Path Table (BP 141 to 144) 14
8.4.15 Location of Optional Occurrence of Type L Path Table (BP 145 to 148) 14
8.4.16 Location of Occurrence of Type M Path Table (BP 149 to 152) 14
8.4.17 Location of Optional Occurrence of Type M Path Table (BP 153 to 156) 14
8.4.18 Directory Record for Root Directory (BP 157 to 190) 14
8.4.19 Volume Set Identifier (BP 191 to 318) 14
8.4.20 Publisher Identifier (BP 319 to 446) 14
8.4.21 Data Preparer Identifier (BP 447 to 574} 14
8.4.22 Application Identifier (BP 575 to 702) 15
8.4.23 Copyright File Identifier (BP 703 to 739) 15
8.4.24 Abstract File Identifier (BP 7 40 to 776) 15
8.4.25 Bibliographic File Identifier (BP 777 to 813) 15
8.4.26 Volume Creation Date and Time (BP 814 to 830) 15
8.4.27 Volume Modification Date and Time (BP 831 to 847) 15
8.4.28 Volume Expiration Date and Time (BP 848 to 864) 16
8.4.29 Volume Effective Date and Time (BP 865 to 881) 16
8.4.30 File Structure Version (BP 882) 16
8.4.31 Reserved for future standardization (BP 883) 16
8.4.32 Application Use (BP 884 to 1 395) 16
8.4.33 Reserved for future standardization (BP 1 396 to 2 048) 16
8.5 Supplementary Volume Descriptor 16
8.5.1 Volume Descriptor Type (BP 1) 17
8.5.2 Volume Descriptor Version (BP 7) 17
8.5.3 Volume Flags (BP 8) 17
8.5.4 System Identifier (BP 9 to 40) 17
8.5.5 Volume Identifier (BP 41 to 72) 17
8.5.6 Escape Sequences (BP 89 to 120) 17
8.5.7 Path Table Size (BP 1 33 to 140) 17
8.5.8 Location of Occurrence of Type L Path Table (BP 141 to 144) 17
8.5.9 Location of Optional Occurrence of Type L Path Table (BP 145 to 148) 17
8.5.10 Location of Occurrence of Type M Path Table (BP 149 to 152) 17
8.5.11 Location of Optional Occurrence of Type M Path Table (BP 153 to 156) 18
8.5.12 Directory Record for Root Directory (BP 157 to 190) 18
8.5.13 Volume Set Identifier (BP 191 to 318) 18
8.5.14 Publisher Identifier (BP 319 to 446) 18
8.5.15 Data Preparer Identifier (BP 447 to 574) 18
8.5.16 Application Identifier (BP 575 to 702) 18
8.5.17 Copyright File Identifier (BP 703 to 739) 18
8.5.18 Abstract File Identifier (BP 740 to 776) 18
8.5.19 Bibliographic File Identifier (BP 777 to 813) 18
8.5.20 Application Use (BP 884 to 1 395) 18
8.6 Volume Partition Descriptor 18
8.6.1 Volume Descriptor Type (BP 1) 19
8.6.2 Standard Identifier (BP 2 to 6) 19
8.6.3 Volume Descriptor Version (BP 7) 19
8.6.4 Unused Field (BP 8) 19
8.6.5 System Identifier (BP 9 to 40) 19
8.6.6 Volume Partition Identifier (BP 41 to 72) 19
8.6.7 Volume Partition Location (BP 73 to 80) 19

8.6.8 Volume Partition Size (BP 81 to 88) 19
8.6.9 System Use (BP 89 to 2 048) 19
9 File and Directory Descriptors 19
9.1 Format of a Directory Record 19
9.1.1 Length of Directory Record (LEN _DR) (BP 1) 19
9.1.2 Extended Attribute Record Length (BP 2) 20
9.1.3 Location of Extent (BP 3 to 10) 20
9 1.4 Data length (BP 11 to 18) 20
9.1.5 Recording Date and Time (BP 19 to 25) 20
9.1.6 File Flags (BP 26) 20
9.1.7 File Unit Size (BP 27) 21
9.1.8 Interleave Gap Size (BP 28) 21
9.1.9 Volume Sequence Number (BP 29 to 32) 21
9.1.10 Length of File Identifier (LEN _FI)(BP 33) 21
9.1.11 File Identifier [BP 34 to (33 + LEN _FI)] 21
9.1.12 Padding Field [BP (34+ LEN _FI] 21
9.1.13 System Use [BP (LEN _DR-LEN _SU +1) to LEN _DR] 21
9.2 Consistency of File Attributes between Directory Records of a File 21
9.3 Order of Directory Records 21
9.4 Format of a Path Table Record 22
9.4.1 Length of Directory Identifier (LEN _DI) (BP 1) 22
9.4.2 Extended Attribute Record Length (BP 2) 22
9.4.3 Location of Extent (BP 3 to 6) 22
9.4.4 Parent Directory Number (BP 7 to 8) 22
9.4.5 Directory Identifier [B P 9 to (8 + LEN _DI)] 22
9.4.6 Padding Field [BP (9 + LEN _DI)] 22
9.5 Format of an Extended Attribute Record 23
9.5.1 Owner Identification (BP 1 to 4) 23
9.5.2 Group Identification (BP 5 to 8) 23
9.5.3 Permissions (BP 9 to 10) 23
9.5.4 File Creation Date and Time (BP 11 to 27) 24
9.5.5 File Modification Date and Time (BP 28 to 44) 24
9.5.6 File Expiration Date and Time (BP 45 to 61) 24
9.5.7 File Effective Date and Time (BP 62 to 78) 24
9.5.8 Record Format (BP 79) 24
9.5.9 Record Attributes (BP 80) 25
9.5.10 Record Length (BP 81 to 841) 25
9.5.11 System Identifier (BP 85 to 116) 25
9.5.12 System Use (BP 117 to 180) 25
9.5.13 Extended Attribute Record Version (BP 181) 25
9.5.14 Length of Escape Sequences (BP 182) 25
9.5.15 Reserved for future standardization (BP 183 to 246) 25
9.5.16 Length of Application Use (BP 247 to 250) 25
9.5.17 Application Use [BP 251 to (250 + LEN _AU)] 25
9.5.18 Escape Sequences [BP(251 + LEN _AU)] to (250 + LEN _ESC + LEN _AU)] 25
9.6 Consistency of File Attributes between Extended Attribute Records of a File 25
10 Levels of interchange 26
10.1 Level 1 26
10.2 Level 2 26
10.3 Level 3 26
Section three: Requirements for systems
11 Requirement for the description of systems 27
12 Requirements for an originating system 27
12.1 General 27
12.2 Files 27
12.3 Descriptors 27
12.4 System Area 28
13 Requirements for a receiving system 28
13.1 General 28
13.2 Files 28
13.3 Descriptors 28
13.4 Restrictions 29

13.5 Levels of implementation 29
13.5.1 Level 1 29
13.5.2 Level 2 29
Annex A: ISO 646: International Reference Version (IR V) 30