Optical Storage Technology Association

UDF 2.00 approved errata

Base Document: OSTA Universal Disk Format Specification, revision 2.00
Document: UDF 2.00 approved errata
Date: December 4, 2000; last modified July 24, 2006

Purpose of this document:

This document contains the UDF Document Change Notices (DCNs) that were approved as UDF 2.00 errata by the OSTA UDF Committee.

Notice:

The UDF 2.00 errata document has not been well maintained. From November 2000 until July 2006, it contained the text of DCN 5071. In the June 2006 UDF committee meeting DCN-5163 was approved, especially as errata for the UDF revisions 1.50 and 2.00. DCN-5163 is now added to the UDF 2.00 errata document.

Note: In the period between first issue of this errata document and June 2006, there were more DCNs approved that also contain UDF 2.00 errata text. Maybe these DCNs have to be added to this document to complete the UDF 2.00 errata.

History of this document:

03-04-1998: Release of the approved UDF revision 2.00 document.
xx-12-2000: Added DCN 5071, as approved by the UDF committee.
…t.b.d. …
24-07-2006: Editorial update of DVD logo contact info in DCN 5171.
24-07-2006: Added DCN 5163 as approved on June 12, 2006.

Contents:

Document:	OSTA Universal Disk Format Revision 2.00 and 2.01	**DCN-5071**
Subject:	*Requirements for DVD-RAM/RW/R interchangeability*	
Date:	November 13, 2000; approved: June 17, 2002; Editorial update of DVD logo contact info: July 24, 2006	

Description:

Requirements for DVD-RAM, DVD-RW, and DVD-R discs to be used with consumer appliances (e.g. dedicated DVD content recorder/player) are specified as a new appendix for UDF 2.00 and 2.01 to improve data interchangeability among these appliances and computer systems.

This text will be added to the next UDF revision after UDF 2.01 and is errata for UDF 2.00 and 2.01.

Change:

Add new appendix 6.12 as:

6.12 Requirements for DVD interchangeability

This appendix defines the requirements and restrictions on volume and file structures for writable DVD media, including but not limited to DVD-RAM discs (6.12.1), DVD-RW discs (6.12.2) and DVD-R discs (6.12.3), to support the interchange of information between users of both computer systems and consumer appliances. These requirements do not apply to the discs that are used in a computer system environment only and have no interchangeability with consumer appliances. The common requirements for these DVD discs are summarized as follows:

1. The volume and file structure shall comply with UDF 2.00.
2. The Minimum UDF Read Revision and Minimum UDF Write Revision shall be 2.00.
3. The length of logical sector and logical block shall be 2048 bytes.
4. A Main Volume Descriptor Sequence and a Reserve Volume Descriptor Sequence shall be recorded.

6.12.1 Requirements for DVD-RAM

The requirements for DVD-RAM discs are based on UDF 2.00. The volume and file structure is simplified as for overwritable discs using non-sequential recording.

For Volume Structure:

1. A partition on a DVD-RAM disc shall be an overwritable partition specified as access type 4.
2. Virtual Partition Map and Virtual Allocation Table shall not be recorded.
3. Sparable Partition Map and Sparing Table shall not be recorded.

For File Structure:

4. Unallocated Space Table or Unallocated Space Bitmap shall be used to indicate a space set. Freed Space Table and Freed Space Bitmap shall not be recorded.
5. Non-Allocatable Space Stream shall not be recorded.

6.12.2 Requirements for DVD-RW

The requirements for DVD-RW discs under Restricted Overwrite mode are based on UDF 2.00. The volume and file structure is simplified as for rewritable discs using non-sequential recording.

For Volume Structure:

1. A disc shall consist of a single volume with a single sparable partition per side.
2. A Sparable Partition Map and Sparing Table shall be recorded.
3. Length of a packet shall be 16 sectors (32 KB) and the first sector number of a packet shall be an integral multiple of 16.
4. Virtual Partition Map and Virtual Allocation Table shall not be recorded.

For File Structure:

5. Unallocated Space Bitmap shall be used to indicate a space set. Unallocated Space Table, Freed Space Table and Freed Space Bitmap shall not be recorded.
6. Non-Allocatable Space Stream shall be recorded.
7. ICB Strategy type 4 shall be used.
8. Short Allocation Descriptors or the embedded data shall be recorded in the Allocation Descriptors field of the File Entry or Extended File Entry. Long Allocation Descriptors shall not be recorded in this field.

6.12.3 Requirements for DVD-R

The requirements for DVD-R discs under Disc at once recording mode and under Incremental recording mode are based on UDF 2.00. The volume and file structure is simplified as for write once discs using sequential recording.

For Volume Structure:

1. Length of a packet shall be an integral multiple of 16 sectors (32 KB) and the first sector number of a packet shall be an integral multiple of 16.
2. Sparable Partition Map and Sparing Table shall not be recorded.
3. Under Incremental recording mode, only one Open Integrity Descriptor shall be recorded in the Logical Volume Integrity Sequence.
4. Under Incremental recording mode, Virtual Partition Map shall be recorded.

For File Structure:

5. Unallocated Space Table, Unallocated Space Bitmap, Freed Space Table and Freed Space Bitmap shall not be recorded.
6. Only one File Set Descriptor shall be recorded.

7. Non-Allocatable Space Stream shall not be recorded.
8. Under Incremental recording mode, Virtual Allocation Table and VAT ICB shall be recorded.
9. Under Incremental recording mode, ICB Strategy type 4 shall be used.
10. Under Incremental recording mode, the VAT entries in VAT shall be assigned as follows:
    - The virtual address 0 shall be used for File Set Descriptor.
    - The virtual address 1 shall be used for the ICB of the root directory.
    - The virtual addresses in the range of 2 to 255 shall be assigned for the File Entry of DVD_RTAV directory and File Entries of files under the DVD_RTAV directory.

6.12.4 Requirements for Real-Time file recording on DVD discs

DVD Video Recording specification defines the DVD specific sub-directory "DVD_RTAV" and all DVD specific files under the DVD_RTAV directory. DVD specific files consist of Real-Time files with the file type 249 and the related information files.

For Volume Structure:

1. For DVD-RAM/RW discs, a disc shall consist of a single volume with a single partition per side. For DVD-R discs, a disc shall consist of a single volume with a write once partition and a virtual partition per side.
2. For DVD-RW discs, First Sparing Table and Second Sparing Table shall be recorded.

For File Structure:

3. For DVD-RAM/RW discs, only Unallocated Space Bitmap shall be used.
4. For DVD-RW discs, the extent of Unallocated Space Bitmap should have the length of Space Bitmap Descriptor for the available Data Recordable area.
5. Consumer Content Recorders record all their data in a special subdirectory, DVD_RTAV, located in the root directory. The DVD_RTAV directory and its contents have special file system restrictions which are defined in DVD Specifications published from DVD Format/Logo Licensing Corporation. An implementation or application should not create or modify files in this directory unless it meets the restrictions defined by DVD Specifications specified above.

Subject: Change for DVD documents contact information
Date: November 1, 2000; editorial update: July 24, 2006

Description:

Contact information to obtain DVD documents is changed.

Change:

In 6.9.3, replace the contact information with

DVD Format/Logo Licensing Corporation
Daimon Urbanist Bldg. 6F,
2-3-6 Shibadaimon, Minato-ku,
Tokyo, 105-0012 JAPAN

TEL: +81-3-5777-2883
FAX: +81-3-5777-2884

Document: **OSTA Universal Disk Format** **DCN-5163**
Subject: *Sparing Packet Length errata for UDF 1.50 and UDF 2.00*
Date: June 07, 2006; last modified June 12, 2006
Status: Approved June 12, 2006

Description:

This DCN is **for the UDF 1.50 and UDF 2.00 errata only**.

For UDF 1.50 and UDF 2.00, the Sparing Packet Length is equal to a fixed value being 32, see 2.2.9. For UDF Revision 2.01 and higher, the Sparing Packet Length is determined by the medium fixed packet length (e.g. 32 for CD-RW) or ECC blocking factor (e.g. 16 for DVD-RW and DVD+RW). This change was established in DCN-5039. However, this DCN was not approved as UDF 1.50 and UDF 2.00 errata. This means that in fact for a DVD using sparing, the Sparing Packet Length must still be equal to 32 for UDF 1.50 and UDF 2.00, which means that 2 ECC blocks are spared in one Sparing Table entry, also if only one of them is defect. The recommendations for DVD-RW (using UDF 2.00) did not mention this and defined a value of 16 instead (DCN-5071 and UDF 2.00/2.01 errata document). The DVD+RW recommendations in DCN-5076 mentioned it but the sentence was deleted when it was implemented in the UDF 2.50 specification. In order to solve the confusion, we will for UDF 1.50 and 2.00 allow other values than 32 but add also a note to warn for the consequences. A UDF 1.50 and 2.00 implementation should at read use the value as defined in the Sparable Partition Map and when creating a file system it should use 32 or the value for the medium as recommended by UDF 2.01 and higher revisions.
The value of 32 must be allowed for all media in order to avoid that existing UDF implementations are broken while they are according to the current UDF 1.50 and 2.00 specification.

Changes:

Add a new entry for this DCN to the UDF history table in section 6.17:

Description	DCN number	Updated in UDF Revision	Minimum UDF Read Revision	Minimum UDF Write Revision
Sparing Packet Length errata for UDF 1.50 and UDF 2.00	5163	---	1.50	1.50

and …

In 2.2.9, table "Layout of Type 2 partition map for sparable partition"
replace:

	Packet Length	Uint16 = 32
by:	Packet Length	Uint16

and below the table replace:

- Packet Length = the number of user data blocks per fixed packet. Shall be set to 32.

by:

Packet Length = the number of user data blocks per sparing packet. Shall be set to 32. The sole exception is that some implementations may use 16 for DVD media but this may reduce compatibility. When 32 is used for DVD, then 2 ECC blocks are spared together using one Sparing Table entry.