



# Secure UDF<sup>®</sup> Specification

Revision 1.00

February 26, 2002

© Copyright 2002  
Optical Storage Technology Association  
ALL RIGHTS RESERVED

## REVISION HISTORY

1.00

February 26, 2002

Original Release

## POINTS OF CONTACT

### **Optical Storage Technology Association**

19925 Stevens Creek Blvd.  
Cupertino, CA 95014  
USA  
Tel: +1 408 253-3695  
Fax: +1 408 253-9938  
Email: [dbunzel@osta.org](mailto:dbunzel@osta.org)  
Web: <http://www.osta.org>

### **OSTA UDF E-Mail Reflector**

Subscribe address: [request@list.osta.org](mailto:request@list.osta.org) with  
“subscribe udf” in the subject.

Unsubscribe address: [request@list.osta.org](mailto:request@list.osta.org)  
with “unsubscribe udf” in the subject.

Send messages to: [udf@list.osta.org](mailto:udf@list.osta.org)

**Technical Editor:** [editor.secureudf@osta.org](mailto:editor.secureudf@osta.org)

## Important Notices

This document is a specification adopted by Optical Storage Technology Association (OSTA). This document may be revised by OSTA. It is intended solely as a guide for companies interested in developing products which can be compatible with other products developed using this document. OSTA makes no representation or warranty regarding this document, and any company using this document shall do so at its sole risk, including specifically the risks that a product developed will not be compatible with any other product or that any particular performance will not be achieved. OSTA shall not be liable for any exemplary, incidental, proximate or consequential damages or expenses arising from the use of this document. This document defines only one approach to compatibility, and other approaches may be available in the industry.

This document is an authorized and approved publication of OSTA. The underlying information and materials contained herein are the exclusive property of OSTA but may be referred to and utilized by the general public for any legitimate purpose, particularly in the design and development of writable optical systems and subsystems. This document may be copied in whole or in part provided that no revisions, alterations, or changes of any kind are made to the materials contained herein. Only OSTA has the right and authority to revise or change the material contained in this document, and any revisions by any party other than OSTA are totally unauthorized and specifically prohibited.

Compliance with this document may require use of one or more features covered by proprietary rights (such as features which are the subject of a patent, patent application, copyright, mask work right or trade secret right). By publication of this document, no position is taken by OSTA with respect to the validity or infringement of any patent or other proprietary right, whether owned by a Member or Associate of OSTA or otherwise. OSTA hereby expressly disclaims any liability for infringement of intellectual property rights of others by virtue of the use of this document. OSTA has not and does not investigate any notices or allegations of infringement prompted by publication of any OSTA document, nor does OSTA undertake a duty to advise users or potential users of OSTA documents of such notices or allegations. OSTA hereby expressly advises all users or potential users of this document to investigate and analyze any potential infringement situation, seek the advice of intellectual property counsel, and, if indicated, obtain a license under any applicable intellectual property right or take the necessary steps to avoid infringement of any intellectual property right. OSTA expressly disclaims any intent to promote infringement of any intellectual property right by virtue of the evolution, adoption, or publication of this OSTA document.

Universal Disk Format® and UDF® are registered marks of the Optical Storage Technology Association.

## Table of Contents

1	Introduction .....	1
1.1	History .....	2
1.2	References.....	2
1.3	Definitions .....	2
1.4	Document Terminology .....	4
2	Basic Restrictions and Requirements.....	5
3	Volume Data Structures.....	6
3.1	Domain Identifier.....	6
3.1.1	Uint8 Flags.....	6
3.1.2	char Identifier .....	6
3.1.3	char Identifier Suffix .....	6
3.2	Secure Partition Map.....	8
3.3	Partition Descriptor .....	8
3.3.1	struct EntityID ImplementationIdentifier .....	9
3.3.2	byte ImplementationUse[128].....	9
4	Logical Volume Data Structures .....	11
4.1	User Identifier Stream.....	11
4.1.1	Type 1 User ID Stream .....	11
5	File & Directory Data Structures .....	14
5.1	Requirement Information Extended Attribute .....	14
5.1.1	Requirement Info Extended Attribute Format.....	15
5.2	Access Control Stream .....	16
5.2.1	EntityID Implementation Identifier .....	16
5.2.2	Uint32 Access Control Stream Type .....	16
5.2.3	Uint32 Number of Access Control Records .....	16
5.2.4	bytes Reserved .....	16
5.2.5	bytes Access Control Records .....	17
5.3	Data Privacy Stream.....	19
5.3.1	EntityID Implementation Identifier .....	19
5.3.2	Uint32 Data Privacy Stream Type.....	19
5.3.3	Uint32 Number of Data Privacy Records .....	19
5.3.4	bytes Reserved .....	19
5.3.5	bytes Data Privacy Records.....	20
5.4	Data Integrity Stream .....	22
5.4.1	EntityID Implementation Identifier .....	22
5.4.2	Uint32 Data Integrity Stream Type.....	22
5.4.3	Uint32 Number of MAC Records.....	22
5.4.4	bytes Reserved .....	22
5.4.5	bytes MAC Record.....	23
5.5	Access Log Stream .....	25
5.5.1	EntityID Implementation Identifier .....	25
5.5.2	Uint32 Access Log Stream Type.....	25

5.5.3	Uint32 Number of Access Log Records .....	25
5.5.4	Uint32 Strategy of File Access Logging .....	25
5.5.5	Uint32 Strategy of Directory Access Logging .....	25
5.5.6	Uint64 Max Access Log Size.....	26
5.5.7	Uint64 Head Pointer.....	26
5.5.8	Uint64 Tail Pointer .....	26
5.5.9	Uint64 Reserved.....	26
5.5.10	bytes Access Log Record .....	26
5.6	License Stream.....	30
5.6.1	EntityID Implementation Identifier .....	30
5.6.2	Uint32 License Stream Type .....	30
5.6.3	Uint32 Number of License Records.....	30
5.6.4	bytes Reserved .....	30
5.6.5	bytes License Record.....	30
6	Appendix A Application notes (Export/Import) .....	32
6.1	Introduction.....	32
6.2	Appendix Structure.....	33
6.3	Export/Import Interface.....	34
6.3.1	UDF_OPENEXPORT.....	34
6.3.2	UDF_EXPORT .....	36
6.3.3	UDF_CLOSEEXPORT.....	37
6.3.4	UDF_OPENIMPORT .....	38
6.3.5	UDF_IMPORT .....	39
6.3.6	UDF_CLOSEIMPORT .....	41
6.4	Packed Data .....	42
6.4.1	Packed Data Format.....	42
6.4.2	tag : SUDF_PACKDATA_TAG_T .....	43
6.4.3	Main Header : SUDF_PACKDATA_MAIN_HEADER_T .....	44
6.4.4	Sub-Header : SUDF_PACKDATA_SUB_HEADER_T.....	46
6.4.5	Trailer : SUDF_PACKDATA_TRAILER_T .....	49
6.5	Processing Flow of Authentication .....	50
6.6	A Supplementary Explanation .....	51
6.7	Authentication/Session Key Sharing Protocol.....	52
7	Secure UDF Developer Registration Form.....	53

# 1 Introduction

The OSTA Secure UDF specification defines a set of security enhancements to the OSTA Universal Disk Format (UDF<sup>®</sup>) specification. The primary goal of OSTA Secure UDF is to provide support for encryption based security features that are transparent to the user and their applications and is portable between different operating system platforms. Secure UDF is designed to:

- Provide an encryption scheme that should work with any application that is storing information on a Secure UDF volume
- Provide a common encryption scheme that all Secure UDF implementations can support.
- Provide a non-proprietary publicly documented method for supporting encryption in Secure UDF.
- Provide a mechanism that allows Secure UDF to take advantage of all the features of Security Enhanced drives.

The following describe the primary reasons that security is needed in UDF:

- *Native operating system security* - Native operating system security is not portable. For example, a UDF volume created under Windows NT with specific NT security rights on specific directories loses all protection if taken to a UNIX platform, which does not support the NT security rights, resulting in everything on the UDF volume being accessible.
- *Removable Media* - Another very important reason is that UDF is used on *removable* media, which can easily be lost or stolen. Removable media greatly increases the need to have some form of portable protection for the information stored on UDF media.

To accomplish this task this document defines a new *Domain*. A domain defines rules and restrictions on the use of ECMA 167. The domain defined in this specification is known as the “OSTA Secure UDF” domain.

*To be informed of changes to this document please fill out and return the OSTA Secure UDF Developers Registration Form located in section 7.*

The long-term plan for Secure UDF is to integrate it into a future version of the UDF specification as an optional feature. Until that time Secure UDF shall be a separate Domain.