IEC 62481-4

INTERNATIONAL STANDARD

Digital living network alliance (DLNA) home networked device interoperability guidelines –
Part 4: DRM interoperability solutions

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DIGITAL LIVING NETWORK ALLIANCE (DLNA) HOME NETWORKED DEVICE INTEROPERABILITY GUIDELINES –

Part 4: DRM interoperability solutions

FOREWORD

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International Standard IEC 62481-4 has been prepared under technical area 8: Multimedia home systems and applications for end-user network, of IEC technical committee 100: Audio, video and multimedia systems and equipment.

This second edition cancels and replaces the first edition published in 2014. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) removal of references to Mobile Digital Media Uploader (M-DMU);

b) removal of references to Mobile Digital Media Downloader (M-DMD).

The text of this International Standard is based on the following documents:

CDV	Report on voting
100/2733/CDV	100/2883/RVC

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of IEC 62481 series, published under the general title *Digital living network alliance (DLNA) home networked device interoperability guidelines,* can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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IEC 62481-4:2017
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INTRODUCTION

Consumers are acquiring, viewing, and managing an increasing amount of digital media (photos, music, and video) on devices in the consumer electronics (CE), mobile, and personal computer (PC) domains. As such, they want to conveniently enjoy the content, regardless of the source, across different devices and locations in the home. The digital home vision integrates the Internet, mobile, and broadcast networks through a seamless, interoperable network, which will provide a unique opportunity for manufacturers and consumers alike. In order to cater for this need, a common set of industry design guidelines is needed that allows vendors to participate in a growing marketplace, leading to more innovation, simplicity, and value for consumers. This document serves that purpose and provides vendors with the information needed to build interoperable networked platforms and devices for the digital home.

DIGITAL LIVING NETWORK ALLIANCE (DLNA) HOME NETWORKED DEVICE INTEROPERABILITY GUIDELINES –

Part 4: DRM interoperability solutions (DIS)

1   Scope

This part of IEC 62481, the DLNA guidelines, specifies DLNA guidelines for DRM Interoperability Solutions (DIS), which are defined as methods to enable the secure transfer and use of protected commercial content between different implementations on network media devices. This content could be protected by different content protection technologies. In this document, they are referred to as DRMs.

The guidelines are not intended to replace or disable other interoperability mechanisms that could already be in place, for example DLNA Link Protection guidelines stated in IEC 62481-3:2017 or mechanisms provided by underlying DRMs.

2   Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 62481-1-1:2017, *Digital living network alliance (DLNA) home networked device interoperability guidelines – Part 1-1: Architecture and protocols*

IEC 62481-3:2017, *Digital living network alliance (DLNA) home networked device interoperability guidelines – Part 3: Link protection*

ISO/IEC 29341-3-12, *Information technology – UPnP Device Architecture – Part 3-12: Audio Video Device Control Protocol – Content Directory Service*

DTCP Volume 1:2007 (informational version), *Digital Transmission Content Protection Specification Volume 1*
http://www.dtcp.com/specifications.aspx

DTCP Volume 1 Supplement E:2007 (Informational Version), Mapping DTCP to IP
http://www.dtcp.com/specifications.aspx

DTCP Adopter Agreement, *Digital Transmission Content Protection License Agreement, DTLA*
http://www.dtcp.com/

3   Terms, definitions and conventions

For the purposes of this document, the terms and definitions given in IEC 62481-1-1:2017 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

• IEC Electropedia: available at http://www.electropedia.org/

- ISO Online browsing platform: available at http://www.iso.org/obp

3.1   Terms and definitions

3.1.1
Copy
propagating content from a source device to a destination device such that the source device maintains its original version of this content

3.1.2
Move
propagating content from a source device to a destination device such that the source device no longer maintains a usable copy of this content

3.1.3
DIS
DRM Interoperability System
means for content to be protected by DRM A on one device to be transformed to the same content protected by DRM B on another device

3.1.4
DRM
Digital Rights Management
system for protecting the copyrights of electronic digital media

3.1.5
DTCP-IP DIS
Digital Transmission Content Protection over Internet Protocol Digital Rights Management Interoperability System

Note 1 to entry: DIS implemented according to the DTCP-IP specification.

3.2   Conventions

In IEC 62481-1-1:2017 and this document, a number of terms, conditions, mechanisms, sequences, parameters, events, states, or similar terms are printed with the first letter of each word in uppercase and the rest in lowercase (e.g., Move). Any lowercase uses of these words have the normal technical English meanings.

4   Networking architecture, device models and guideline conventions

4.1   DLNA home networking architecture

See Clause 4 of IEC 62481-1-1:2017 for a full description of the DLNA home networking architecture.

4.2   DLNA device model

See Clause 5 of IEC 62481-1-1:2017 for a full description of the DLNA device model. This document extends the existing DLNA Device Classes and Device Capabilities to include protected content used for the following system usages:

- Upload system usage;

- Download system usage;

- Upload Synchronization system usage;

- Download Synchronization system usage.

4.3   Guideline terminology and conventions

See Clause 6 of IEC 62481-1-1:2017 for a full description of the DLNA document conventions.

5   Guideline requirements

5.1   General

See 7.1 of IEC 62481-1-1:2017, for guideline and attribute table layout descriptions.

5.2   Common DRM interoperability guidelines

5.2.1   General

This document defines the usage guidance for the DTCP-IP DLNA DIS technology. For convenience, the term "DTCP-IP DIS" is used to mean the DTCP-IP technology for a DLNA DIS.

DTCP-IP DIS provides Copy and Move functionality by means of the transcription interoperability scenario. DTCP-IP DIS supports the Upload system usage, Download system usage, Upload Synchronization system usage, and Download Synchronization system usage.

5.2.2   Media management – MM/CP additional MM flags-param (flags parameter)

[GUIDELINE] The primary-flags token as defined in 10.1.3.24.2 (GUN 3WJUU) of IEC 62481-1-1:2017, are extended for DLNA DIS with additional bit mappings. The additional bit mappings of primary-flags for DLNA DIS shall be as follows.

- Bit 31 to Bit 14 are as defined in 10.1.3.24.2 (GUN 3WJUU) of IEC 62481-1-1:2017.

- Bit 13: DIS-DTCP-copy flag (DTCP-IP DIS Copy flag)
    - applies only to the HTTP Media Transport;
    - if the flags-param is omitted then this flag shall have an inferred value of false;
    - see guidelines 5.3.2.2.2 and 5.3.2.2.3 for more information.

- Bit 12: DIS-DTCP-move flag (DTCP-IP DIS Move flag)
    - applies only to the HTTP Media Transport;
    - if the flags-param is omitted then this flag shall have an inferred value of false;
    - see guidelines 5.3.2.3.2 and 5.3.2.3.3 for more information.

All other bits in primary-flags are reserved for future use and shall have a value of false.

[ATTRIBUTES]

M	A	DMS DMP DMC DMR +DN+ +UP+ +PU+ +UPSYNC+ +DNSYNC+	M-DMS M-DMP M-DMC	n/a	IEC 62481-1-1: 2017	N3J8N	A

5.2.3   DRM interoperability technology guidelines requirements – DTCP-IP DIS support

5.2.3.1

[GUIDELINE]   A UPnP AV MediaServer or UPnP AV MediaServer control point may implement DTCP-IP DIS.

[ATTRIBUTES]

O	A	DMS +DN+ +UP+ +UPSYNC+ +DNSYNC+	M-DMS	n/a	n/a		BI2KZ	A

[COMMENT] Implementation of the DTCP-IP DIS guidelines is optional in DLNA.

5.2.3.2

[GUIDELINE] If a UPnP AV MediaServer or UPnP AV MediaServer control point implements the DTCP-IP DIS, then it shall conform to all of the guidelines as defined in 5.3.

[ATTRIBUTES]

M	A	DMS +DN+ +UP+ +UPSYNC+ +DNSYNC+	M-DMS	n/a	n/a		NYTO8	A

5.3 DTCP-IP DIS guidelines

5.3.1 General

This subclause contains the guidelines that are specific to the DTCP-IP DIS. Annex A provides the high level description on how the DTCP-IP DIS works in DLNA and some examples of DTCP-IP DIS sequence to enable a better understanding of this subclause.

5.3.2 Media management

5.3.2.1 MM/CP res@dtcp:uploadInfo property

[GUIDELINE] If a UPnP AV MediaServer control point attempts to upload content using the DTCP-IP Move Protocol, as specified in V1SE.8.4 of DTCP Volume 1 Supplement E:2007, then it shall provide a res@dtcp:uploadInfo property with a value whose bits 31 and 30 are set to one, as defined in V1SE.10.5.2 of DTCP Volume 1 Supplement E:2007 with the CDS:CreateObject request.

[ATTRIBUTES]

M	A	+UP+ +UPSYNC+	n/a	n/a	ISO/IEC 29341-3-12 DTCP Volume 1:2007 DTCP Volume 1 Supplement E:2007	JE3NY	A

[COMMENT] The use of the res@dtcp:uploadInfo property is recommended (optional) in DTCP Volume 1 Supplement E:2007, but in order to provide interoperability this is mandated by this guideline.

5.3.2.2 MM/CP DIS DTCP-copy-flag (DTCP-IP DIS Copy flag)

5.3.2.2.1

[GUIDELINE] The flag is set in accordance with usage rule (Copy Control Information) associated with the content binary and DTCP compliance rules in DTCP Adopter Agreement.

In the case of Upload system usage, this flag can be returned in the CMS:GetProtocolInfo response, but Upload Controller or +UPSYNC+ cannot rely on this flag to check on availability of DTCP-IP DIS Copy function on the Receiving Endpoint.

5.3.2.2.2

[GUIDELINE]   If a UPnP AV MediaServer exposes a content binary that is available for Copy using DTCP-IP DIS, then the DIS-DTCP-copy flag in Guideline 5.2.2 of this content item's res@protocolInfo property shall be set to true.

[ATTRIBUTES]

M	A	DMS	M-DMS	n/a	IEC 62481-1-1: 2017 ISO/IEC 29341-3-12	K6IWN	

5.3.2.2.3

[GUIDELINE]   If a UPnP AV MediaServer exposes a content binary that is not available for Copy using DTCP-IP DIS, then the DIS-DTCP-copy flag in Guideline 5.2.2 of this content item's res@protocolInfo property shall be set to false.

[ATTRIBUTES]

M	A	DMS	M-DMS	n/a	IEC 62481-1-1: 2017 ISO/IEC 29341-3-12	2CC5J	

5.3.2.3   MM/CP DIS-DTCPmove flag (DTCP-IP DIS Move flag)

5.3.2.3.1

[GENERAL]   This flag is set in accordance with usage rule (copy control information) associated with the content binary and DTCP COMPLIANCE RULES in DTCP Adopter Agreement.

This flag needs to be consistent with the DTCP-IP content flags (DTCP.COM_FLAGS) defined in V1SE.10.5.1 of DTCP Volume 1 Supplement E:2007 if DTCP.COM_FLAGS is included as an other-param of 4th field in res@protocolInfo property. For example, if the UPnP AV mediaserver sets the DIS-DTCP-move flag in the DLNA.ORG_FLAGS to true and use DTCP.COM_FLAGS for Move capability, then the bits 31 and 30 of the DTCP.COM_FLAGS shall to be set to one.

In the case of Upload system usage, this flag can be returned in the CMS:GetProtocolInfo response, but Upload Controller or +UPSYNC+ cannot rely on this flag to check on availability of DTCP-IP DIS Move function on the Receiving Endpoint.

5.3.2.3.2

[GUIDELINE]   If a UPnP AV MediaServer exposes a content binary that is movable using TCP-IP DIS with DTCP-IP Move Protocol defined in V1SE.8.4 of DTCP Volume 1 Supplement E:2007, then the DIS-DTCP-move flag in Guideline 5.2.2 of this content item's res@protocolInfo property shall be set to true.