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Digital living network alliance (DLNA) home networked device interoperability guidelines

Part 5-1: DLNA Device Profile guidelines

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This British Standard is the UK implementation of EN 62481-5:2014. It is identical to IEC 62481-5:2013.

The UK participation in its preparation was entrusted to Technical Committee EPL/100, Audio, video and multimedia systems and equipment.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Digital living network alliance (DLNA) home networked device interoperability guidelines - Part 5 -1: DLNA Device Profile guidelines

(IEC 62481-5:2013)

Lignes directrices pour l'interopérabilité des dispositifs domestiques DLNA (Digital Living Network Alliance) - Partie 5: Directives sur les profils des appareils DLNA (CEI 62481-5:2013)

Digital living network alliance (DLNA) Interoperabilitäts-Richtlinien für Geräte im Heimnetzwerk - Teil 5: DLNA Geräteprofil-Richtlinien (IEC 62481-5:2013)

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Foreword

The text of document 100/1996/CDV, future edition 1 of IEC 62481-5, prepared by technical area 9, "Audio, video and multimedia applications for end-user network", of IEC/TC 100, "Audio, video and multimedia systems and equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62481-5:2014.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2014-08-27
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2016-11-27

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Endorsement notice

The text of the International Standard IEC 62481-5:2013 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 62481-1	2013	Digital living network alliance (DLNA) home networked device interoperability guidelines - Part 1: Architecture and protocols	EN 62481-1	2014
IEC 62481-2	2013	Digital living network alliance (DLNA) home networked device interoperability guidelines - Part 2: DLNA media formats	EN 62481-2	2014
IEC 62481-3	2013	Digital living network alliance (DLNA) home networked device interoperability guidelines - Part 3: Link protection	EN 62481-3	2014

CONTENTS

INTRODUCTION

This International Standard is structured differently from the other parts of the IEC 62841 series of standards, to allow each DLNA Device Profile to be a standalone clause.

Clauses 1 through 5 align with the overall structure of IEC 62481-1:2013 and IEC 62481-2:2013, Clauses 1 to 7. However, only the generic guidelines description of IEC 62481-2:2013, Clause 7 applies.

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

Part 5: DLNA Device Profile guidelines

1 Scope

This part of IEC 62481 specifies guidelines that define various DLNA Device Profiles. A Device Profile is a collection of DLNA capabilities and features within a DLNA device. A device is compliant with a Device Profile, when it conforms to all the guidelines listed for that Device Profile.

In practice, Device Profiles reference existing optional or recommended DLNA guidelines, that enable certain features, and make those DLNA guidelines mandatory within the context of a Device Profile. A Device Profile may also provide some additional guidelines that complement or modify existing DLNA guidelines for a feature.

A particular type of the DLNA Device Profile is the Commercial Video Profile (CVP). A CVP Device Profile is an extension of the DLNA guidelines that allows content from service providers and multichannel video programming distributers to be distributed on the DLNA network. DLNA Commercial Video Profiles (CVPs) are defined as Device Profiles that consistently enable commercial content that enters the home network through a gateway device via an interface to a commercial content service provider. Since different regions of the world have different requirements for commercial content, multiple CVPs are defined.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 62481-1:2013, *Digital living network alliance (DLNA) home networked device interoperability guidelines – Part 1: Architecture and protocols*

IEC 62481-2:2013, *Digital living network alliance (DLNA) home networked device interoperability guidelines – Part 2: DNLA media formats*

IEC 62481-3:2013, *Digital living network alliance (DLNA) home networked device interoperability guidelines – Part 3: Link protection*

3 Terms, definitions and abbreviated terms

For the purposes of this document, the terms and definitions, symbols and abbreviations given in IEC 69481-1, as well as the following apply.

3.1 Terms and definitions

3.1.1
Device Profile
collection of DLNA capabilities and features within a DLNA device

Note 1 to entry: A device is compliant with a Device Profile, when it implements all of the guidelines listed for that Device Profile.

3.2 Abbreviations

3.2.1
CVP
Commercial Video Profiles
DLNA Device Profile that allows commercial content acquired through a commercial video provider's gateway device to be played on the DLNA network

3.3 Conventions

In IEC 62481-1:2013 and this standard, 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 lowercase (e.g., Device Profile). 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 in IEC 62481-1:2013 for a full description of the DLNA home networking architecture.

4.2 DLNA device model

See Clause 5 in IEC 62481-1:2013 for a full description of the DLNA device model.

4.3 Document conventions and conventions

See Clause 6 in IEC 62481-1:2013 for a full description of the DLNA document conventions.

5 DLNA Device Profile guidelines

5.1 Overview

This clause describes the format of the guidelines for DLNA Device Profiles. Applicability of a referenced guideline to a specific Device Class is defined both by the attribute table of the guideline that references it, as well as by the "applicable Device Classes" column of the Device Profile definition in the table at the top of each Device Profile clause.

5.2 Defined Device Profiles

Each Device Profile begins with a table that briefly describes it.

This table also indicates which DLNA Device Classes the Device Profile applies to. Although a guideline, as defined, could apply to additional Device Classes, the defined Device Profile only provides for the guideline's applicability to the Device Classes listed in conjunction with the Device Profile.

The definition of a Device Profile in this table (the applicable Device Classes and the Device Profile name) is a normative definition of that Device Profile. The Device Casses that a guideline applies to within the context of a Device Profile are the intersection of the Device Classes the guideline applies to (from its attribute table) and the Device Classes that the Device Profile applies to (from its introductory table). See 7.1 in IEC 62481-1:2013 for guideline and attribute table layout descriptions.

6 CVP-NA-1 guideline requirements

6.1 Device Profile definition

Table 1 – CVP-NA-1 Device Profile definition

Device Profile	– Applicable Device Classes (normative list)
Name: CVP-NA-1 **Description:** This is a CVP Device Profile that was designed to define a minimal set of functionality needed to make certain commercial content available to DLNA devices in North America. This does not limit the Device Profile's applicability to other regions and other devices.	DMP DMR

6.2 Media format guidelines – NA media format profiles

6.2.1

[GUIDELINE] A Rendering Endpoint shall conform to guidelines for the following DLNA Media Classes:

- AV for the US region

[ATTRIBUTES]

M	A	DMP DMR	n/a	n/a	IEC 62481-2	XKDRV	N

6.2.2

[GUIDELINE] The additional mandatory media format profiles applicable to the DLNA HND Device Category for the AV Media Class are

- MPEG_TS_NA_ISO,
- AVC_TS_NA_ISO,
- AVC_TS_NA_T.

[ATTRIBUTES]

M	A	DMP DMR	n/a	n/a	IEC 62481-2	NYAPR	N

6.3 Client architecture and protocol guidelines

6.3.1 Baseline client

[GUIDELINE] A Rendering Endpoint shall conform to all the guidelines for both the DMP and DMR Device Classes.

[ATTRIBUTES]

M	A	DMP DMR	n/a	n/a	IEC 62481-1 IEC 62481-2	9WFQZ	N

[COMMENT] This very explicitly requires the Rendering Endpoint to support all mandatory elements of both DMP and DMR, including mandated media format profiles and all other mandated features and functionality.

6.3.2 Client device discovery and control

[GUIDELINE] A Rendering Endpoint shall use the <dlna:X_DLNACAP> element in the device description document and include in the comma-separated list of capability ID values of all the

Device Profiles implemented. Valid capability ID values for Device Profiles are the Device Profile "Name:" strings, as defined in Table 1.

[ATTRIBUTES]

M	A	DMR	n/a	n/a	IEC 62481-1	6JSXN	N

[COMMENT] UPnP AV MediaRenderer devices use the <dlna:X_DLNACAP> element to specify to control points of the Device Profiles that are implemented. For example "CVP-NA-1" would be included for a CVP-NA-1 device. See guideline 7.3.2.35.1 (GUN WJUQC) in IEC 62481-1:2013 for the formal syntax of the <dlna:X_DLNACAP> element. Sample description is given below:

```
<dlna:X_DLNACAP xmlns:dlna="urn:schemas-dlna-org:device-1-0">
CVP-NA-1
</dlna:X_DLNACAP>
```

6.4 Trick modes

6.4.1

[GUIDELINE] A Rendering Endpoint shall conform to all the guidelines for playspeed trick mode, as modified by Table 2.

Table 2 – Updates to existing general HTTP Media Transport for streaming transfer guidelines

Guideline updated (Replace "should" with "shall")	Location in IEC 62481-1:2013	GUN
MM Mandatory Media operations	7.4.1.6.31.2	XDI2P
MT HTTP Fast Forward ScanMedia operation	7.5.4.3.3.8.3	TYB9P
MT HTTP Streaming Slow Forward Scan Media operation	7.5.4.3.3.9.3	3W8KS
MT HTTP Streaming Fast Backward Scan Media operation	7.5.4.3.3.10.3	ZHSFA
MT HTTP Streaming Slow Backward Scan Media operation	7.5.4.3.3.11.3	2DQOQ

[ATTRIBUTES]

M	A	DMP DMR	n/a	n/a	IEC 62481-1	EEVWK	N

6.4.2

[GUIDELINE] A Rendering Endpoint that uses DLNA Link Protection shall conform to all the guidelines for Playspeed trick mode, as modified by Table 3.

Table 3 – Updates to existing general HTTP Media Transport for streaming transfer guidelines with DLNA Link Protection

Guideline updated (Replace "should" with shall")	Location in IEC 62481-3:2013	GUN
MT HTTP Fast Forward Scan Media operation	7.6.4.4.2.3	SW9IL
MT HTTP Streaming Slow Forward Scan Media operation	7.6.4.4.2.5	2U6TN
MT HTTP Streaming Fast Backward Scan Media operation	7.6.4.4.2.7	YFQO6
MT HTTP Streaming Slow Backward Scan Media operation	7.6.4.4.2.9	FFN2S

[ATTRIBUTES]

M	A	DMR DMR	n/a	n/a	IEC 62481-3	CQZOW	N

6.5 DLNA Link Protection

[GUIDELINE] A Rendering Endpoint shall conform to all the guidelines for DLNA Link Protection.

[ATTRIBUTES]

M	A	DMP DMR	n/a	n/a	IEC 62481-3	8J2LL	N

[COMMENT] This very explicitly requires the rendering endpoint to support all mandatory elements of DLNA Link Protection.

6.6 DLNAQOS

[GUIDELINE] A Rendering Endpoint shall conform to all the guidelines for DLNAQOS, as modified by Table 4.

Table 4 – Updates to existing QoS requirement guidelines

Guideline updated (Replace “should” with “shall”)	Location in IEC 62481-1:2013	GUN
NC Devices: DLNAQOS support	7.2.5.2.3.1	6YK2S

[ATTRIBUTES]

M	A	DMP DMR	n/a	n/a	IEC 62481-1	MFNLP	N

[COMMENT] This very explicitly requires the Rendering Endpoint to conform to all mandatory elements of DLNAQOS. Network interfaces on the device need to be conformant to all requirements labeled for a particular interface type in the 7.2.4, Networking and connectivity: QoS requirements of IEC 62481-1:2013. This includes tolerance of tags (VLAN and DSCP) and, when tagging traffic, tagging both VLAN and DSCP using values as defined by the DLNA guidelines. The values used cannot exceed the allowed maximum classifications for any given traffic type.

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