IEC 62481-1-3

Edition 1.0   2017-07

INTERNATIONAL STANDARD

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inside

Digital living network alliance (DLNA) home networked device interoperability guidelines –
Part 1-3: Architecture and protocols – Cloud access

IEC 62481-1-3:2017-07(en)

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

Part 1-3: Architecture and protocols – Cloud access

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International Standard IEC 62481-1-3 has been prepared under technical area 8: Multimedia home systems and applications for end-user network IEC technical committee 100: Audio, video and multimedia systems and equipment.

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

CDV	Report on voting
100/2738/CDV	100/2886/CDV

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- withdrawn,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

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c3a62e3e670d/iec-62481-1-3-2017

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 deliver on this vision, 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 1-3: Architecture and protocols – Cloud access

1 Scope

This part of IEC 62481 specifies guidelines for accessing content in the cloud, that is, outside of the home by devices in the home.

These Guidelines focus on the discovery, association, and control of Apps capable of augmenting DLNA devices with the ability to consume content from sources outside the home. The basic support is realized with the UPnP ApplicationManagement Service.

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) Guidelines – Part 1-1: Architecture and protocols*

IEC 62481-2:2017, *Digital living network alliance (DLNA) Guidelines – Part 2: Media format profiles*

IEC 62481-6-1:2017, *Digital living network alliance (DLNA) Guidelines – Part 6-1: HTML 5 RUI*

ISO/IEC 29341-3-10, *Information Technology – UPnP Device Architecture – Part 3-10: Audio Video Device Control Protocol – Audio Video Transport Service*

ISO/IEC 29341-3-11, *Information Technology – UPnP Device Architecture – Part 3-11: Audio Video Device Control Protocol – Connection Manager Service*

ISO/IEC 29341-20-12, *Information technology – UPnP Device Architecture – Part 20-12: Audio video device control protocol – Level 4 – Content directory service*

IETF RFC 3986, *Uniform Resource Identifier (URI): General Syntax.*
http://www.ietf.org/rfc/rfc3986.txt

UPnP/AMS, *ApplicationManagement:1, UPnP Forum*
https://members.dlna.org/apps/org/workgroup/ils/download.php/30975/ApplicationManagemen t-v1&2_-_20140331_v0.75[1].zip

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 General terms

3.1.1
App
computer software application

Note 1 to entry: General shorthand for the term.

3.1.2
Cloud Content Renderer
DMR or XDMR that supports the Cloud Access Device Function

3.1.3
Cloud Service
one or more media servers outside of the home network

Note 1 to entry Typically, it would provide content using non-DLNA means.

3.1.4
AVT
Audio Video Transport
UPnP service that provides network-based control for common transport operations such as play, stop, pause, next, previous and seek; the AVTransport service specification is a standard UPnP DCP

3.1.5
CDS
Content Directory Service
UPnP service that provides network-based discovery of content and ContentDirectory Service specification is a standard UPnP Device Control Protocol

3.1.6
DMR
Digital Media Renderer
DLNA Device Class having home network environmental characteristics, with the role of rendering content it receives after being setup by another network entity

3.1.7
DMS
Digital Media Server
DLNA Device Class having home network environmental characteristics, with the role of exposing and distributing content throughout the home

3.1.8
MSCP
Media Server Control Point
UPnP AV control point that issues actions to a DMS

3.1.9
XDMR
eXtended DMR
DLNA device class defined to combine the functionality of a Digital Media Renderer (DMR) and a Media Server Control Point (MSCP)

Note 1 to entry: This device class is equivalent to combining previous device classes known as a DMR and a DMP.

3.2   Conventions

In 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 lowercase (e.g., Move). Any lowercase uses of these words have the normal technical English meaning.

4   Networking architecture, device models and guideline conventions

4.1   DLNA home networking architecture

This document extends the DLNA home networking architecture that is defined in Clause 4 of IEC 62481-1-1:2017.

4.2   Document conventions and conventions

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

4.3   Guideline structure and layout

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

5   Cloud Access Device Model and Device Function

5.1   Device Model

Refer to Clause 5 of IEC 62481-1-1:2017 for detailed descriptions of the existing DLNA Device Model. This document extends the existing DLNA devices and system usages. See 0 for additional description on Cloud Service access models and device interaction.

5.2   Device Function

For the Cloud Access guidelines, the following Device Function is defined.

Cloud Access Device Function: this enables a Rendering Endpoint to express support for Cloud Services and the available Apps needed to render the content from Cloud Services. This complements Media Management Guidelines in Clause 10 of IEC 62481-1-1:2017.

6   Cloud Access Device Function guidelines

6.1   Implementation requirements

6.1.1

[GUIDELINE]   A DLNA Device Class should implement the Cloud Access Device Function.

[ATTRIBUTES]

S	A	DMC, DMR, XDMR	M-DMC	n/a	n/a	I8OWW	

6.1.2

[GUIDELINE]   If a DLNA Device Class implements the Cloud Access Device Function, then it shall conform to the Guidelines in 6.2, 6.3, and 6.4.

[ATTRIBUTES]

M	A	DMC, DMR, XDMR	M-DMC	n/a	n/a	8KZ67	

6.2 Cloud Service and parameter syntax

6.2.1 Cloud-service-name type syntax

[GUIDELINE] The cloud-service-name type is a UTF-8 quoted-string of a fully-qualified domain name.

[ATTRIBUTES]

M	A	n/a	n/a	n/a	IETF RFC 3986	Q6M9Z	

[COMMENT] Example: MyService.example.com

6.2.2 ProtocolInfo syntax

[GUIDELINE] The ProtocolInfo value describing support for dlna-service URIs shall be compliant with the following definition:
cloud-protocolInfo = "dlna.org:*:dlna-service:*"

[ATTRIBUTES]

M	A	n/a	n/a	n/a	ISO/IEC 29341-3-11	LDC2P	

[COMMENT] This string is used by the Cloud Content Renderer in its ConnectionManager:SinkProtocolInfo state variable to indicate that it supports the dlna-service URI scheme.

6.2.3 dlna-service URI syntax (cloudservice-URI)

[GUIDELINE] The URI that identifies a content item located on a Cloud Service shall be compliant with the following definition:

cloudservice-URI = "dlna-service://" cloud-service-name "?" URI-parameters

cloud-service-name is defined in 6.2.1

– URI-parameters = (app-id-parameter "&" content-id-parameter) |

                                          (content-id-parameter ["&" app-id-parameter])

– app-id-parameter = "appid=" DQUOTE app-id DQUOTE

– app-id = the application@id attribute of an <application> element in the ApplicationManagement service

– content-id-parameter = "contentid=" DQUOTE content-id DQUOTE

– content-id = 1*(ALPHA | "." | "_" | ":" | "/")

[ATTRIBUTES]

M	A	n/a	n/a	n/a	UPnP/AMS	AU9Y2	