

INTERNATIONAL STANDARD

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First edition
2005-07

Multimedia home server systems – Interchangeable volume/file structure adaptation for broadcasting receivers –

Part 1: General description and architecture

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International Electrotechnical Commission, 3, rue de Varembé, PO Box 131, CH-1211 Geneva 20, Switzerland
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**MULTIMEDIA HOME SERVER SYSTEMS –
INTERCHANGEABLE VOLUME/FILE STRUCTURE ADAPTATION
FOR BROADCASTING RECEIVERS –**

Part 1: General description and architecture

FOREWORD

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International Standard IEC 62328-1 has been prepared by IEC technical committee 100: Audio, video and multimedia systems and equipment.

The text of this standard is based on the following documents:

FDIS	Report on voting
100/963A/FDIS	100/987/RVD

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

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

IEC 62328 consists of the following parts, under the general title *Multimedia home server systems – Interchangeable volume/file structure adaptation for broadcasting receivers*:

Part 1: General description and architecture

Part 2: General recording structure

Part 3: Broadcasting system specific recording structure – ISDB

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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- withdrawn;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

A bilingual version of this publication may be issued at a later date.

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INTRODUCTION

Broadcast data in a transport stream can contain multiple associated objects. When that data is distributed on interchangeable storage media, for example, optical disks, the associated objects should be synchronized. Open distribution of the media requires that the data be adapted to a standardized volume and file structure, which should conform to the existing basic volume and file structure.

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MULTIMEDIA HOME SERVER SYSTEMS– INTERCHANGEABLE VOLUME/FILE STRUCTURE ADAPTATION FOR BROADCASTING RECEIVERS –

Part 1: General description and architecture

1 Scope

This part of IEC 62328 defines the volume and file structure required for interchanging multimedia data of a home server/broadcasting receiver, which consists of an AV stream with multiple associated objects.

This part of IEC 62328 specifies references, definitions, abbreviations, notation and bibliography that apply to this and the other three parts. It also specifies requirements, design considerations and content architecture.

2 Normative references

The following referenced documents are indispensable for the application 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 62328-2: *Multimedia home server systems – Interchangeable volume/file structure adaptation for broadcasting receivers – General recording structure*

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IEC 62328-3: *Multimedia home server systems – Interchangeable volume/file structure adaptation for broadcasting receivers – Broadcasting system specific recording structure – ISDB²*

ISO/IEC 13818 (all parts), *Information technology – Generic coding of moving pictures and associated audio information*

ISO/IEC 13818-1:2000, *Information technology – Generic coding of moving pictures and associated audio information: Systems*

IEEE 1394:2003, *IEEE standard for a high performance serial bus peer-to-peer data transport protocol (PPDT)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 action

duration from start to end defined by a user or equipment

3.2**AV stream**

recorded data in the MainTS stream file of PROGxxxx.PIF in this specification or the general meaning as multiplexed digital audio and video

3.3**event**

set of video and/or audio stream data and/or related objects, which together form a broadcasting service in the duration defined by a broadcaster

3.4**partial TS**

TS derived from broadcasting TS by modifying PSI/SI and/or removing one or more elementary streams

3.5**programme**

recorded TV programme compliant with this specification

3.6**programme reference (PGR)**

pointer which references all or part of the AV stream in a programme

3.7**programme reference group (PGRG)**

set of programme references or programme reference groups

3.8**transport stream (TS)**

system stream for broadcasting defined in ISO/IEC 13818-1

3.9**TV programme**

logical unit of TV broadcasting (event in digital TV service)

3.10**TVRS partial TS**

partial TS recording format, which complies with this specification

4 Abbreviations

For the purposes of this document, the following abbreviations apply.

ACU	Access unit
ALU	Allocation unit
ARIB	Association of radio industries and businesses
ATSC	Advanced television systems committee
CAS	Conditional access system
CBC	Cipher block chaining
CCI	Copy control information
DVB	Digital video broadcasting
EPG	Electronic programme guide

ISDB	Integrated services digital broadcasting
MPEG	Moving picture experts group
PGR	Programme reference
PGRG	Programme reference group
PLL	Phase locked loop
PSI	Programme specific information
RP	Recording packet
SI	Service information
TS	Transport stream
TU	Time unit
TVRS	TV recording format specific
UDF	Universal disk format

5 Notation

5.1 Numerical values

5.1.1 Decimal notation

A decimal number is represented as decimal digits 0 to 9

6 Requirements

6.1 Overview of digital broadcasting

Conversion from analogue broadcasting to digital broadcasting based on ISO/IEC 13818 (MPEG-2) is in progress in many countries.

From the point of view of contents protection, recording of digital broadcasting contents requires circumspection and caution. A discussion about broadcast services and how to store them onto built-in storage media has begun. Another point of discussion is how other receivers in a house can access contents recorded by one receiver. It is expected that distribution of contents and metadata via communications networks, such as the Internet, will include access control data.

This standard aims at the following recording formats.

- A format which does not need to be conscious of built-in and removable media on the application level in order that removable media can be used as an extension of the built-in storage which has limited capacity.
- A format which records a digital broadcasting programme to a removable medium by one receiver and play the programme by another receiver while protecting a content and keeping compatibility between receivers using secure UDF.
- A format which can record contents distributed via broadcasting networks or removable media.

6.2 Main target contents

The primary target contents of this standard are contents the recording of which is permitted by copy control information but the recording directory to be stored of which is not specified. However, contents whose recording directory is specified can also be recorded into this format with some restrictions.

6.3 Security module

A removable medium, which carries a physical tamper-resistant module for protecting license information, is recommended from the content protection point of view.

7 Design considerations

7.1 Relationship between country-specific CAS and this specification

Digital broadcasting contents, especially on pay per view services, may be scrambled by CAS. Each country defined its own CAS. The CAS defined by one country may not be the same as one defined by another country. According to this recording format, the contents scrambled by CAS shall not be recorded. However, the contents descrambled in a receiver may be encrypted and stored.

7.2 Broadcasting system specific structure

A digital broadcasting system defined by one country may be different from that of another country. The digital broadcasting system in the United States has been developed in the ATSC. In Europe, the digital broadcasting system has been developed in the DVB project. In Japan, the digital broadcasting system, which is called ISDB, has been developed in the ARIB. In this specification, the differences between digital broadcasting systems are absorbed as much as possible. Generic recording structure is specified in IEC 62328-2. The broadcasting system specific structure in Japan is specified in IEC 62328-3. Another broadcasting system specific structure may be specified in the future IEC 62328-4¹.

8 Content architecture

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8.1 Basic content architecture

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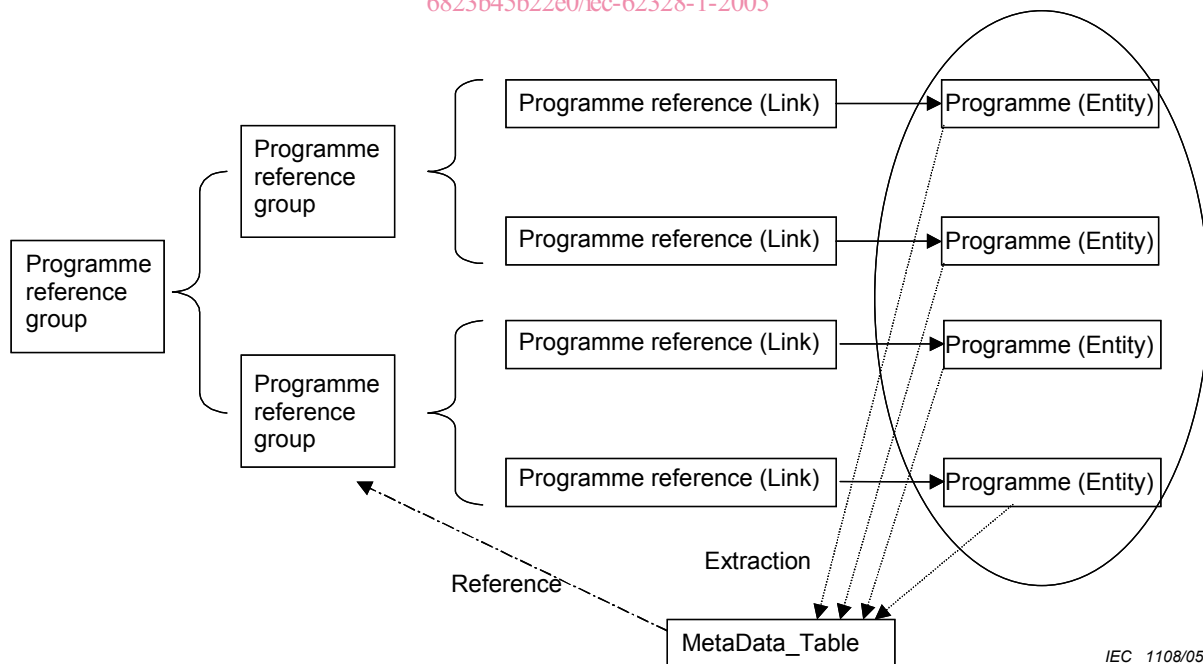


Figure 1 – Basic content architecture

¹ Under consideration.