

TECHNICAL SPECIFICATION



Multimedia home server systems – Conceptual model for domain management
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**MULTIMEDIA HOME SERVER SYSTEMS –
CONCEPTUAL MODEL FOR DOMAIN MANAGEMENT**

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Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC 62579, which is a technical specification, has been prepared by technical area 8: Multimedia home server systems of IEC technical committee 100: Audio, video and multimedia systems and equipment.

The text of this technical report is based on the following documents:

Enquiry draft	Report on voting
100/1626/CDV	100/1676/RVC

Full information on the voting for the approval of this technical specification 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.

The committee has decided that the contents of this publication will remain unchanged until the stability 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 be

- transformed into an International standard,
- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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INTRODUCTION

Compared with analog media, digital contents can be copied easily and the copies don't decline in quality. So it is certain that digital contents should be protected.

But, compared to the rights of private records on analog media, it is hard for users to enjoy their digital contents freely. The concept of a domain has been defined in several organizations for the purpose of improving user convenience. Domains enable users to consume and manage their digital contents in a manner which is more like enjoying analog contents. Users can enjoy digital contents, which are stored on a device, not only on the device where they are stored on but also on other devices within the same domain such as home or school, etc. From a standpoint of copyrights, it means that the contents are allowed to be consumed with a copy control technology on limited devices. A domain manages both user convenience and contents protection. Depending on the scenario of the operated domain, the limit and the boundary on domain configuration can be flexible.

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MULTIMEDIA HOME SERVER SYSTEMS – CONCEPTUAL MODEL FOR DOMAIN MANAGEMENT

1 Scope

This Technical Specification defines the conceptual model of domain management, which includes terms, requirements and reference models. The domain is a set of devices, users, and/or other entities which can share contents. Entities within a domain are allowed to play, copy and move content and usage rules to other entities within the same domain.

Some existing systems have been proposed in this field of domain, but various vocabularies and models are specified. This situation causes confusion and misunderstanding of systems, and disturbs interoperability. This Technical Specification is intended to standardize the vocabularies and clarify the models.

All kinds of digital content, including broadcast content which needs to be protected, are considered in this specification. On the other hand, rights management and content protection technology are beyond the scope of this specification.

NOTE In addition, network protocol and media format for content sharing and exchange are also out of the scope of this specification. Refer also to IEC 62481-1 and IEC 62481-2 for interoperability guidelines..

2 Terms, definitions and abbreviations

2.1 Terms and definitions

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

NOTE These are necessary terms used in the field of domain management.

2.1.1

content issuer

rights issuer or contents holder

2.1.2

content

digital data, such as movies, images, audio and software, etc.

2.1.3

content key

encryption key related to each content

2.1.4

domain

set of devices, users, or other entities which can share contents and associated usage rules

2.1.5

domain ID

unique identifier which is related with a domain

2.1.6

domain key

secret information shared among entities in a domain

2.1.7

domain management server

server which issues or manages a domain ID and a domain key

2.1.8

domain join

process of including an entity in a domain, which enables the entity to obtain a new domain ID or domain key

2.1.9

domain leave

process of excluding an entity from a domain, which ensures that the domain ID and domain key in the device are deleted

2.1.10

domain merge

process of integrating multiple domains into a new domain with a unique domain ID

2.1.11

domain divorce

process of dividing a domain into multiple domains with different domain IDs

2.1.12

domain separate

process of dividing a domain into multiple domains with the same domain ID temporarily

2.1.13

user ID

unique identifier for the user; it could be a user account

2.1.14

user key

secret information shared among only the domains, devices or other entities bound to the user; this information is generated by RI

2.1.15

usage rule

collection of permissions, keys and other attributes which are related to protected contents

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2.2 Abbreviations

AD	Authorized Domain
ARIB	Association of Radio Industries and Businesses
CAS	Conditional Access System
CL	Content License
CPCM	Content Protection and Copy Management
CRL	Certificate Revocation List
DVB	Digital Video Broadcasting
DRM	Digital Rights Management
HANA	High-Definition Audio-Video Network Alliance
KMB	Key Management Block
LAD	Localized Authorized Domain
OMA	Open Mobile Alliance
RMPI	Rights Management and Protection Information
RO	Rights Object
RRT	Round Trip Time
RI	Rights Issuer
TTL	Time to Live
USI	Usage State Information

3 Use cases

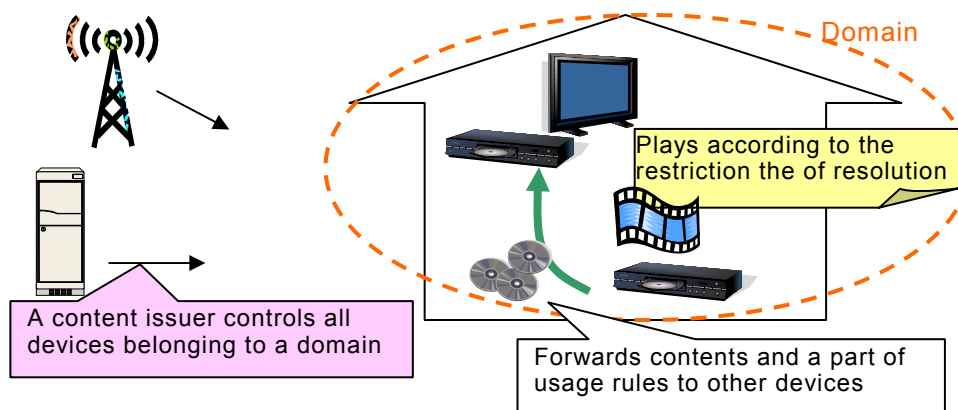
3.1 Purpose of description of use cases

This clause is for information only and describes how domain management is specified and how the scenario of domain is assumed in existing specifications on DRM. This leads to what a domain management standard should contain.

In general, users can consume content without restriction of the location on all home electric appliances, cell phones, mobile devices or car devices in the domain. The devices can share content according to a permission system, which includes the use situation and the quality, in each domain.

3.2 Example 1: A domain in ARIB TR-B27

A device is allowed to copy content and a certain part of the usage rule to storage media. The content is played according to the restriction of the usage rule, as shown in Figure 1.

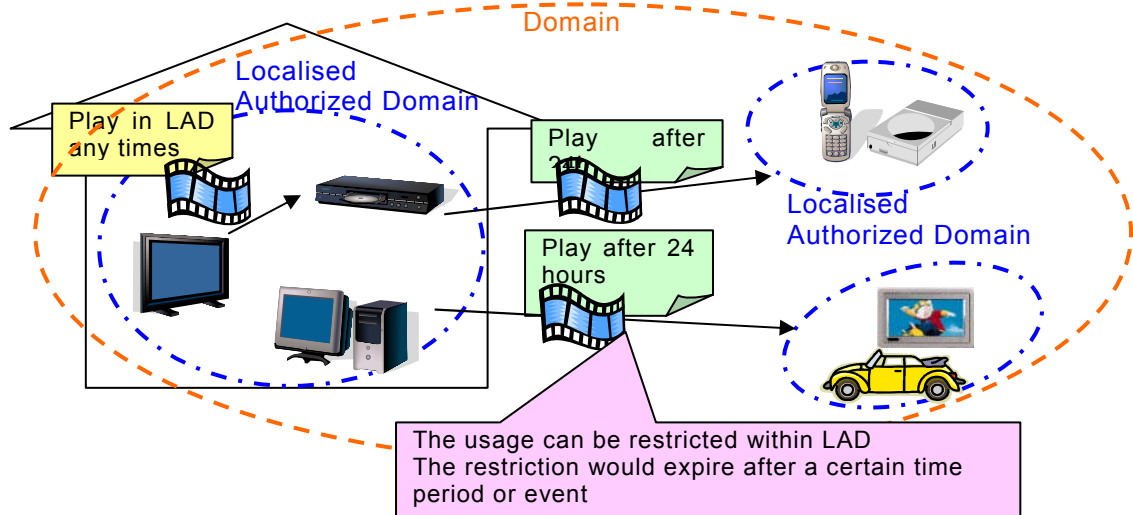


IEC 1034/10

Figure 1 – Domain in ARIB TR-B27

3.3 Example 2: A domain in DVB CPCM

Users can get content available in LAD such as home network. After a certain time or event, the content can be played on all other devices within the same domain, as shown in Figure 2.



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Figure 2 – Domain in DVB CPCM
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3.4 Example 3: A domain in OMA DRM V2.0

A device forwards content and the associated usage rule to a cell phone
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The content and the usage rule are immediately usable on the cell phone without connecting to the content issuers, if the conditions (start and end time) are satisfied.

Devices not connected to the network can obtain content and usage rules via the connected device, using direct device-to-device connection, as shown in Figure 3.