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Digital Video Broadcasting (DVB); Content Protection and Copy Management (DVB-CPCM); Part 4: CPCM System Specification

EBU OPERATING EUROVISION

DVB Digital Video Broadcasting

Reference

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Foreword

This Technical Specification (TS) has been produced by Joint Technical Committee (JTC) Broadcast of the European Broadcasting Union (EBU), Comité Européen de Normalisation ELECtrotechnique (CENELEC) and the European Telecommunications Standards Institute (ETSI).

NOTE: The EBU/ETSI JTC Broadcast was established in 1990 to co-ordinate the drafting of standards in the specific field of broadcasting and related fields. Since 1995 the JTC Broadcast became a tripartite body by including in the Memorandum of Understanding also CENELEC, which is responsible for the standardization of radio and television receivers. The EBU is a professional association of broadcasting organizations whose work includes the co-ordination of its members' activities in the technical, legal, programme-making and programme-exchange domains. The EBU has active members in about 60 countries in the European broadcasting area; its headquarters is in Geneva.

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The Digital Video Broadcasting Project (DVB) is an industry-led consortium of broadcasters, manufacturers, network operators, software developers, regulatory bodies, content owners and others committed to designing global standards for the delivery of digital television and data services. DVB fosters market driven solutions that meet the needs and economic circumstances of broadcast industry stakeholders and consumers. DVB standards cover all aspects of digital television from transmission through interfacing, conditional access and interactivity for digital video, audio and data. The consortium came together in 1993 to provide global standardization, interoperability and future proof specifications.

The present document is part 4 of a multi-part deliverable. Full details of the entire series can be found in part 1 [6].

Introduction

CPCM is a system for Content Protection and Copy Management of commercial digital content delivered to consumer products. CPCM manages content usage from acquisition into the CPCM system until final consumption, or export from the CPCM system, in accordance with the particular usage rules of that content. Possible sources for commercial digital content include broadcast (e.g. cable, satellite, and terrestrial), Internet-based services, packaged media, and mobile services, among others. CPCM is intended for use in protecting all types of content - audio, video and associated applications and data. CPCM specifications facilitate interoperability of such content after acquisition into CPCM by networked consumer devices for both home networking and remote access.

This first phase of the specification addresses CPCM for digital Content encoded and transported by linear transport systems in accordance with TS 101 154 [i.1]. A later second phase will address CPCM for Content encoded and transported by systems that are based upon Internet Protocols in accordance with TS 102 005 [i.2].

1 Scope

The present document is the specification of the Digital Video Broadcasting (DVB) Content Protection and Copy Management (CPCM) System. It contains the generic specification applicable to all deployments of CPCM. Technology-specific adaptations for content formats, storage formats, home network ecosystems and application-specific physical interfaces are contained in TS 102 825-9 [5].

2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the reference document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at http://docbox.etsi.org/Reference.

NOTE: While any hyperlinks included in this clause were valid at the time of publication ETSI cannot guarantee their long term validity.

2.1 Normative references

The following referenced documents are necessary for the application of the present document.

[1] ETSI EN 300 468: "Digital Video Broadcasting (DVB); Specification for Service Information (SI) in DVB systems".

[2] IEEE List of Registered OUI.

NOTE: Available at http://standards.ieee.org/regauth/oui/index.shtml.

[3] ISO 3166-1: "Codes for the representation of names of countries and their subdivisions - Part 1: Country codes".

[4] ETSI TS 101 162: "Digital Video Broadcasting (DVB); Allocation of identifiers and codes for Digital Video Broadcasting (DVB) systems".

[5] ETSI TS 102 825-9: "Digital Video Broadcasting (DVB); Content Protection and Copy Management (DVB-CPCM); Part 9: CPCM System Adaptation Layers".

[6] ETSI TS 102 825-1: "Digital Video Broadcasting (DVB); Content Protection and Copy Management (DVB-CPCM); Part 1: CPCM Abbreviations, Definitions and Terms".

[7] ETSI TS 102 825-5: "Digital Video Broadcasting (DVB); Content Protection and Copy Management (DVB-CPCM); Part 5: CPCM Security Toolbox".

[8] ETSI TS 102 825-7: "Digital Video Broadcasting (DVB); Content Protection and Copy Management (DVB-CPCM); Part 7: CPCM Authorized Domain Management".

[9] ETSI TS 102 825-10: "Digital Video Broadcasting (DVB); Content Protection and Copy Management (DVB-CPCM); Part 10: CPCM Acquisition, Consumption and Export Mappings".

[10] ETSI TS 102 825-3: "Digital Video Broadcasting (DVB); Content Protection and Copy Management (DVB-CPCM); Part 3: CPCM Usage State Information".

2.2 Informative references

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.1] ETSI TS 101 154: "Digital Video Broadcasting (DVB); Specification for the use of Video and Audio Coding in Broadcasting Applications based on the MPEG-2 Transport Stream".

[i.2] ETSI TS 102 005: "Digital Video Broadcasting (DVB); Specification for the use of Video and Audio Coding in DVB services delivered directly over IP protocols".

[i.3] ETSI TS 102 825-2: "Digital Video Broadcasting (DVB); Content Protection and Copy Management (DVB-CPCM); Part 2: CPCM Reference Model".

[i.4] ETSI TR 102 825-8: "Digital Video Broadcasting (DVB); Content Protection and Copy Management (DVB-CPCM); Part 8: CPCM Authorized Domain Management scenarios".

[i.5] ETSI TR 102 825-11: "Digital Video Broadcasting (DVB); Content Protection and Copy Management (DVB-CPCM); Part 11: CPCM Content management scenarios".

[i.6] ETSI TR 102 825-12: "Digital Video Broadcasting (DVB); Content Protection and Copy Management (DVB-CPCM); Part 12: CPCM Implementation Guidelines".

[i.7] ETSI TS 102 825-14: "Digital Video Broadcasting (DVB); Content Protection and Copy Management (DVB-CPCM); Part 14: CPCM Extensions".

[i.8] ETSI TR 101 289: "Digital Video Broadcasting (DVB); Support for use of scrambling and Conditional Access (CA) within digital broadcasting systems".

[i.9] ARIB STD25: "Conditional Access System specifications for digital broadcasting".

[i.10] DVB Bluebook A125: "Support for use of the DVB scrambling algorithm version 3 within digital broadcasting system".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TS 102 825-1 [6] apply.

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in TS 102 825-1 [6] apply.

4 The CPCM System

4.1 General

The CPCM System provides an interoperability platform for the protection and management of "commercial" content, i.e. not user-created content, in the consumer environment.

The CPCM Reference Model (TS 102 825-2 [i.3]) and the CPCM Abbreviations, Definitions and Terms (TS 102 825-1 [6]) provide the foundation upon which this CPCM System specification is based. The CPCM System specification populates each of the aspects of the CPCM Reference Model in order to define a complete and implementable system.

The main body of the present document provides the generic specification of the CPCM System, applicable to all deployments of CPCM.

The generic CPCM System specification defines the aspects of the CPCM System that apply to all deployments of CPCM. The remaining of this clause deal with the following elements of the CPCM System:

- CPCM Security Toolbox;
- CPCM Authorized Domain Management (ADM);
- CPCM System versioning;
- CPCM Device physical interfaces; and
- CPCM Instance logical interfaces.

The subsequent clauses of the CPCM System generic specification, starting in clause 5, deal with the following elements:

- **CPCM data formats:** the generic CPCM System specification contains a common set of CPCM-specific data type definitions used by every CPCM System deployment. The CPCM Data Types are documented in clause 5.
- **CPCM protocols:** the generic CPCM System specification defines a set of protocols that are used by all CPCM Instances in order to enable CPCM Content exchanges and exchange CPCM-relevant data. The CPCM protocols are specified in clause 6.
- **CPCM Content management:** individual aspects of CPCM System behaviour relating to the handling of CPCM Content are specified in clause 7.
- **CPCM Content Licence management:** clause 8 deals with all aspects around the generation and handling of CPCM Content Licences.

Various end-to-end CPCM Content handling scenarios, as well as ADM scenarios, are documented in TR 102 825-8 [i.4] and TR 102 825-11 [i.5], building on the individual content handling aspects from clauses 7 and 8.

The CPCM System is designed to provide a generic content protection and management platform that can be adapted to various content ecosystems. A content ecosystem can consist of one or more aspects to which the CPCM System Specification is adapted in order to provide a complete and workable content protection and management solution. These aspects of adaptation are:

- **Content format:** a CPCM System deployment needs at least one content format adaptation. CPCM System content format adaptations are defined in TS 102 825-9 [5].
- **Storage format:** if a CPCM System deployment includes the ability to Store CPCM Content then it needs at least one storage format. CPCM System storage format adaptations are defined in TS 102 825-9 [5].
- **Home Network ecosystem:** a home network ecosystem adaptation is needed for the CPCM System to work within that ecosystem. Specifications of CPCM System adaptations for particular home network ecosystems are contained in TS 102 825-9 [5].
- **Application-specific physical interface:** the CPCM System can be adapted to provide content protection and management functionality over an application-specific physical interface that benefits from re-using the CPCM tools and facilities. TS 102 825-9 [5] contains the definitions for CPCM System adaptations for particular application-specific physical interfaces.

4.2 CPCM Security toolbox

The CPCM Security Toolbox is the set of cryptographic algorithms and methods that enables the protection of CPCM Content, as required by the provider of that content, throughout its lifetime within the CPCM System.

The set of CPCM security tools in the toolbox do not provide any alternative methods for performing any particular security-related task within the CPCM System. Rather, there is one tool specified for each security-related task.