

# INTERNATIONAL STANDARD



**Consumer terminal function for access to IPTV and open internet  
multimedia services –  
Part 7: Authentication, content protection and service protection**

IEC 62766-7:2017

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**Part 7: Authentication, content protection and service protection**

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

CDV	Report on voting
100/2551/CDV	100/2665/RVC

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.



A list of all parts in the IEC 62766 series, published under the general title *Consumer terminal function for access to IPTV and open Internet multimedia services*, can be found on the IEC website.

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

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## INTRODUCTION

The IEC 62766 series is based on a series of specifications that was originally developed by the OPEN IPTV FORUM (OIPF). They specify the user-to-network interface (UNI) for consumer terminals to access IPTV and open internet multimedia services over managed or non-managed networks as defined by OIPF.

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# CONSUMER TERMINAL FUNCTION FOR ACCESS TO IPTV AND OPEN INTERNET MULTIMEDIA SERVICES –

## Part 7: Authentication, content protection and service protection

### 1 Scope

This part of IEC 62766 specifies functions for content protection, service protection, service access protection, user identification, user authentication, and user authorisation.

The following clauses contain features for which the criteria that determine under which circumstances these features are implemented are out of the scope of the present document or contain conditional normative statements referring to other parts of IEC 62766:

- 4.2 Terminal-centric approach
- 4.2.5 Protected file formats
- 4.2.6 Protection of MPEG-2 transport streams
- 4.3.4 CI+ based gateway
- 4.3.4.7 Protected streaming and file formats
- 4.3.4.8 Personal video recorder
- 4.3.4.9 Time shifting
- 4.3.5 DTCP-IP based gateway
- 4.3.5.6 Protected streaming and file formats
- 5.4.4 HTTP digest authentication using IMS gateway
- 5.4.5 GBA authentication using IMS gateway

NOTE GBA authentication can be achieved using either the mechanism in 5.4.5 GBA authentication using IMS gateway or the, more general, mechanism in 5.4.4 HTTP digest authentication using IMS gateway. 5.4.4 allows the use of different authentication mechanisms in a way that is transparent to the OITF, including possible future authentication mechanisms, and should preferably be used. It is expected that 5.4.5 GBA authentication using IMS gateway will be deprecated and removed in future versions of this specification.

### 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 62455:2010, *Internet protocol (IP) and transport stream (TS) based service access*

IEC 62766-1:2017, *Consumer terminal function for access to IPTV and open Internet multimedia services – Part 1: General*

IEC 62766-2-1:2016, *Consumer terminal function for access to IPTV and open Internet multimedia services – Part 2-1: Media Formats*

IEC 62766-3:2016, *Consumer terminal function for access to IPTV and open Internet multimedia services – Part 3: Content Metadata*

IEC 62766-4-1:2017, *Consumer terminal function for access to IPTV and open Internet multimedia services – Part 4-1: Protocols*

IEC 62766-5-1:2017, *Consumer terminal function for access to IPTV and open Internet multimedia services – Part 5-1: Declarative Application Environment*

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

3GPP TS 24.109, *Bootstrapping interface (Ub) and network application function interface (Ua); Protocol details*

3GPP TS 24.229, *IP Multimedia Call Control Protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP) Stage 3 (Release 8)*

3GPP TS 33.203, *Technical Specification Group Services and System Aspects; 3G security; Access security for IP-based services (Release 8)*

3GPP TS 33.220, *Generic Authentication Architecture (GAA); Generic bootstrapping architecture*

ATIS-0800006, *IIF Default Scrambling Algorithm (IDSA)*

Consumer Electronics Association CEA-2014-A (including the August 2008 Errata), *Web-based Protocol Framework for Remote User Interface on UPnP Networks and the Internet (Web4CE)*

CI Plus LLP, CI Plus Specification V1.3 (2011-01), *Content Security Extensions to the Common Interface*, available from: [http://www.ci-plus.com/data/CI\\_Plus\\_specification\\_V1.3.1.pdf](http://www.ci-plus.com/data/CI_Plus_specification_V1.3.1.pdf)

DTLA, DTCP Adopter Agreement, *Digital Transmission Protection License Agreement*, available from: <http://www.dtcp.com/agreements.aspx>

ETSI ETR 289, *Digital Video Broadcasting (DVB); Support for the use of scrambling and Conditional Access (CA) within digital broadcasting systems*

ETSI EN 50221, *Common Interface Specification for Conditional Access and other Digital Video Broadcasting Decoder Applications*

ETSI TS 101 699 V1.1.1, *Digital Video Broadcasting (DVB); Extensions to the Common Interface Specification*

ETSI TS 103 197 V1.5.1, *Digital Video Broadcasting (DVB); Head-end implementation of DVB SimulCrypt*

ETSI EN 300 468 V1.13.1, *Digital Video Broadcasting (DVB); Specification for Service Information (SI) in DVB systems*

ETSI TS 102 770 V1.1.1, *Digital Video Broadcasting (DVB); System Renewability Messages (SRM) in DVB Systems*

Marlin Developer Community, *Marlin Broadband Transport Stream Specification (BBTS), Version 1.0*, available from: <http://www.marlin-community.com/develop/downloads>

Marlin Developer Community, *Marlin – Broadband Network Service Profile Specification (BNSP), Version 1.1*, available from:  
<http://www.marlin-community.com/develop/downloads>

Marlin Developer Community, *Marlin – File Formats Specification (FF), Version 1.1*, available from: <http://www.marlin-community.com/develop/downloads>

Marlin Developer Community, *Marlin – Simple Secure Streaming Specification (MS3), Version 1.1.1*, available from:  
<http://www.marlin-community.com/develop/downloads>

Marlin Developer Community, *OMArLin Specification, Version 1.0*, available from:  
<http://www.marlin-community.com/develop/downloads>

IETF RFC 2109, *HTTP State Management Mechanism*

IETF RFC 2617, *HTTP Authentication: Basic and Digest Access Authentication*

IETF RFC 5746, *Transport Layer Security (TLS) Renegotiation Indication Extension*

OASIS, *Assertions and Protocols for the OASIS Security Markup Language (SAML) V2.0*, available from:  
<https://www.oasis-open.org/standards#samv2.0>

OASIS, *Profiles for the OASIS Security Assertion Markup Language (SAML) V2.0*, available from:  
<https://www.oasis-open.org/standards#samv2.0>

### 3 Terms, definitions and abbreviated terms

#### 3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62766-1 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>

##### 3.1.1 business token

collection of information defined in BNSP that contains the service-specific information for a given business model

##### 3.1.2 content and service protection gateway

optional gateway function that provides a conversion from a (proprietary) content and service protection solution in the network to one that is supported by an OITF, as defined in IEC 62766-7

### 3.1.3

#### **content and service protection gateway**

optional gateway function that provides a conversion from a (proprietary) content and service protection solution in the network to one that is supported by an OITF, as defined in this document

### 3.1.4

#### **client function**

function that interacts with the Marlin client function in a content and service protection

### 3.1.5

#### **content and service key management function**

entity responsible for storing and providing service, programme, content keys and ECM attached information

Note 1 to entry: This function may be physically co-located with other functions (e.g. the content delivery network controller for content on demand services), see Annex B of IEC 62766-1:2017.

Note 2 to entry: This entity has been identified to illustrate informatively the separation between content encryption, which is part of content preparation, and content delivery.

### 3.1.6

#### **content on demand encryption management function**

back office content on demand function in charge of launching content on demand encryption

Note 1 to entry: This entity has been identified to illustrate informatively the separation between content encryption, which is part of content preparation, and content delivery.

### 3.1.7

#### **content and service protection**

function that handles service protection and content protection for the client in the OITF

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### 3.1.8

#### **CSP-G server**

functional entity in the network that handles content protection and service protection for the content and service protection gateway (CSPG) in the residential network

### 3.1.9

#### **CSP-T server**

functional entity in the network that handles service protection and content protection for the CSP-T client in the OITF

### 3.1.10

#### **Marlin action token**

token defined either in BNSP or in Marlin MS3 that is used to trigger the Marlin protocols from the Marlin client function in CSP, and from which some information (e.g., business token) is used in the Marlin protocols

Note 1 to entry: The mimeType attribute is used to qualify which Marlin token type is returned

### 3.1.11

#### **Marlin client function**

compliant implementation of the Marlin client that is defined in BNSP and that enables secure communications (Marlin Protocols) with the Marlin server function in a CSP-T server

### 3.1.12

#### **Marlin configuration token**

token defined in BNSP that includes the location information of the Marlin server function in CSP-T server with which the CSP communicates

**3.1.13****Marlin server function**

compliant implementation of the Marlin server that is defined in BNSP and that enables secure communications (Marlin protocols) with the Marlin client function in a CSP

**3.1.14****output control information**

output control information as defined in BNSP and BBTS

**3.1.15****programme key**

symmetric key defined in IEC 62455 that encrypts an ECM

**3.1.16****scramble key**

symmetric key that is used to scramble the content

**3.1.17****server function**

function that interacts with the Marlin server function in a CSP-T server

**3.1.18****serviceBaseCID**

part of the content ID that is the same for all content in a service

**3.1.19****service key**

symmetric key defined in IEC 62455 that is used to encrypt an ECM or a programme key

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**3.1.20****single sign on**

method of service access control that enables the user to authenticate once and gain access to the resources of multiple services

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**3.2 Abbreviated terms**

3GPP	Third Generation Partnership Project
AES	Advanced Encryption Standard
AKE	Authentication and Key Exchange
APDU	Application Protocol Data Unit
ATIS	Alliance for Telecommunications Industry Solutions
BBTS	Broadband Transport Stream – MPEG-2 transport stream as defined by BBTS
BNS	Broadband Network Service
BSF	Bootstrapping Server Function
bslbf	bit string, left bit first
B-TID	Bootstrapping Transaction Identifier
CA	Conditional Access
CAD	Content Access Descriptor
CAM	Conditional Access Module
CAT	Conditional Access Table
CBC	Cipher-Block Chaining
CE-HTML	Consumer Electronics – HTML