

ETSI TS 182 027 V3.4.1 (2010-06)

Technical Specification

Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); IPTV Architecture; IPTV functions supported by the IMS subsystem

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Full standard:
<https://standards.iteh.ai/catalog/standards/sist/1bb65304-8450-4792-bb6f-2ad94b9ab172/etsi-ts-182-027-v3.4.1-2010-06>



Reference

 RTS/TISPAN-02070-NGN-R3

Keywords

 architecture, IMS, IP, TV

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

Important notice

Individual copies of the present document can be downloaded from:

<http://www.etsi.org>

The present document may be made available in more than one electronic version or in print. In any case of existing or perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF). In case of dispute, the reference shall be the printing on ETSI printers of the PDF version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at

<http://portal.etsi.org/tb/status/status.asp>

If you find errors in the present document, please send your comment to one of the following services:

http://portal.etsi.org/chaicor/ETSI_support.asp

Copyright Notification

No part may be reproduced except as authorized by written permission.
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2010.
All rights reserved.

DECTTM, **PLUGTESTS**TM, **UMTS**TM, **TIPHON**TM, the TIPHON logo and the ETSI logo are Trade Marks of ETSI registered for the benefit of its Members.

3GPPTM is a Trade Mark of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

LTETM is a Trade Mark of ETSI currently being registered

for the benefit of its Members and of the 3GPP Organizational Partners.

GSM[®] and the GSM logo are Trade Marks registered and owned by the GSM Association.

Contents

Intellectual Property Rights	10
Foreword.....	10
1 Scope	11
2 References	11
2.1 Normative references	11
2.2 Informative references.....	12
3 Definitions and abbreviations.....	13
3.1 Definitions.....	13
3.2 Abbreviations	15
4 High-level overview	16
5 Overview of functional entities	17
5.1 Functional architecture for IPTV services.....	17
5.1.1 Functional architecture overview.....	17
5.1.2 IPTV services.....	18
5.1.2.0 Compliance	18
5.1.2.1 General	19
5.1.3 Functional entities.....	20
5.1.3A Generic Capabilities.....	20
5.1.4 Elementary functions	20
5.1.4.1 Content security functions	22
5.1.5 Functional Entities	22
5.1.5.1 Service Discovery and Selection Functions (SDF and SSF).....	22
5.1.5.2 IPTV Service Control Functions (SCF)	23
5.1.5.3 IPTV Media Control and Delivery Functions (MCF and MDF).....	24
5.1.5.4 UPSF.....	25
5.1.5.5 Transport processing functions	25
5.2 Interactions between Service Control function and Media Functions	26
5.3 Void.....	27
5.4 Inter-destination media synchronization	27
5.4.1 Functional entities MSAS and SC	28
5.4.2 Mapping onto the IPTV architecture	28
5.4.3 Modification and re-origination of media streams.....	29
5.5 IPTV Service State	30
5.5.1 General.....	30
5.5.2 Relationship between IPTV Service State and IPTV presence.....	30
6 Reference points	30
6.1 UE - SSF (Xa)	30
6.2 UE - IPTV Service Control Functions (Ut)	30
6.3 UE - Core IMS (Gm).....	30
6.4 UE - Media Control Functions (Xc).....	30
6.5 UE - Media Delivery Functions (Xd).....	31
6.6 IPTV Service Control Functions (SCF) - UPSF (Sh).....	31
6.7 Core IMS - UPSF (Cx).....	31
6.8 Core IMS - IPTV Service Control Functions (ISC)	31
6.9 Core IMS - IPTV Media Functions (y2)	31
6.10 Core IMS - SDF (ISC).....	32
6.11 SDF - UPSF (Sh).....	32
6.12 Void.....	32
6.13 Application Functions - NASS (e2).....	32
6.14 Core IMS - RACS (Gq')	32
6.15 NASS - RACS (e4).....	32
6.16 IPTV Service Control Functions - SLF (Dh).....	32
6.17 Core IMS - SLF (Dx)	32

6.18	IPTV Media Control Function - IPTV Media Delivery Function (Xp).....	32
6.19	MSAS-SC reference point (Sync)	33
6.20	MSAS-SC' reference point (Sync').....	33
6.21	SSF-SCF reference point (Ss').....	33
7	User data.....	33
7.1	Classification of information.....	33
7.2	Location and access to user data	34
7.2.1	Data management functions.....	34
7.2.2	Access from other application servers	35
7.2.3	Access from User Equipment (UE)	35
7.2.4	Access from the SSF.....	35
7.3	IPTV user profile structure.....	35
7.3.1	IPTV user profile structure	35
7.3.1.1	BC service package	37
7.3.1.2	BC service	37
7.3.1.3	UE	37
7.3.1.4	Global settings: language preference	37
7.3.1.5	Global settings: user action recordable	38
7.3.1.5A	Global settings: PC-CostLimit	38
7.3.1.5B	Global settings: PC-TotalCostLimit.....	38
7.3.1.5C	Global settings: PC-ClassificationRestriction	38
7.3.1.5D	Global settings: PC-TimePeriodRestriction	38
7.3.1.5E	Global settings: PC-TotalPlayTimeLimit.....	38
7.3.1.5F	Global settings: PC-AdminUser.....	38
7.3.1.5G	Global settings: dynamic PC-activation	38
7.3.1.5H	Global settings: PC-Contact.....	38
7.3.1.6	N-PVR storage-limit	39
7.3.1.6A	PVR: IPTVContentMarkerAuthorizedViewUser	39
7.3.1.6B	PVR: IPTVContentMarkerSourceUser	39
7.3.1.6C	PVR: AuthorizedControlUser	39
7.3.1.7	BC: ParentalControlLevel	39
7.3.1.10	PCh: PChId	39
7.3.1.11	PCh: PChExpiryTime.....	40
7.3.1.12	PCh: PChItemServiceType	40
7.3.1.13	PCh: PChItemContentId.....	40
7.3.1.14	PCh: PChItemStartTime	40
7.3.1.15	PCh: PChItemEndTime	40
7.3.1.16	PCh: PChItemOffset.....	40
7.3.1.17	CR Settings: CR notifications	40
7.3.1.18	UGC storage-limit.....	40
7.3.1.19	UGC: AuthorizedControlUser.....	40
7.3.1.20	ICM Settings: ICM rules	40
7.3.2	Usage of IPTV user profile	41
7.3.3	Life cycle	41
7.4	IPTV service action data	41
7.4.0	General.....	41
7.4.1	Data model.....	42
7.4.2	Life cycle	43
7.5	IPTV information storing/sharing services.....	44
7.5.1	General.....	44
7.5.2	IPTV Content Marker	44
7.5.2.1	General	44
7.5.2.2	IPTVContentMarkerID	44
7.5.2.3	OwnerUserID	44
7.5.2.4	IPTV service type identifier	45
7.5.2.5	IPTV Content Identifier	45
7.5.2.6	StartTimeOfIPTVContentMarker	45
7.5.2.8	UserComment	45
7.5.2.9	GenerationTime	45
7.5.2.10	ExpiryTime	45
7.5.3	IPTV Service Access History	45

7.5.3.1	Data model	45
7.5.3.2	UserID	46
7.5.3.3	AccessHistoryID	46
7.5.3.4	ServiceType	46
7.5.3.5	ReferencedContentID	46
7.5.3.6	Rating	46
7.5.3.7	AccessStartTime	46
7.5.3.8	AccessEndTime	47
7.5.3.9	HistoryExpiryTime	47
7.6	IPTV Content Recommendation profile	47
7.6.1	Genre	47
7.6.2	Keyword	47
7.6.3	Creator	47
7.6.4	CreationLocation	47
7.6.5	CreationDate	48
7.7	IPTV Service State Data	48
7.7.1	Data model	48
7.7.2	Life cycle	49
8	Procedures	49
8.1	IPTV addressing mechanisms	49
8.1.1	IPTV end-users identification and addressing mechanisms	49
8.1.2	Addressing of nodes	49
8.2	UE start-up procedure	49
8.3	Broadcast session	52
8.3.1	Signalling flows for broadcast session initiation	52
8.3.1.1	Overview of the signalling flows for session initiation	52
8.3.1.1.1	UE-initiated BC session initiation	52
8.3.1.1.2	SCF-initiated BC session initiation	53
8.3.1.2	Signalling flows for the establishment of the delivery channel	54
8.3.1.2.1	SCF-initiated establishment of the delivery channel	54
8.3.1.2.2	UE-initiated establishment of the delivery channel	55
8.3.2	Signalling flows for BC session modification	56
8.3.2.1	UE-initiated BC session modification	56
8.3.2.2	SCF-initiated BC session modification	57
8.3.3	Signalling flows for broadcast session release	58
8.3.3.1	UE-initiated session release	58
8.3.3.2	SCF-initiated session release	59
8.3.4	Signalling flow for Broadcast TV channel switching	60
8.3.5	Signalling flows for transition from Broadcast TV to Broadcast TV with trick play	61
8.3.6	Signalling flows for transition from Broadcast TV with trick play to Broadcast TV	63
8.3.7	Signalling flows for Broadcast TV with trick play session release	63
8.3.8	Signalling flows for Pay Per View service	63
8.4	CoD session	64
8.4.1	Signalling Flows for CoD session initiation	65
8.4.1.1	Overall signalling flows for CoD session initiation	65
8.4.1.1.1	UE-initiated CoD session initiation	65
8.4.1.1.2	SCF-initiated CoD session initiation	66
8.4.1.2	Media Channel Negotiation	68
8.4.1.2.1	Signalling flows for the establishment of the content control and content delivery channels from MF	68
8.4.1.2.2	Signalling flows for the establishment of the content control and content delivery channels from UE	69
8.4.1.2.3	Signalling flows for the establishment of the content control channel from UE	69
8.4.2	Signalling Flows for CoD session modification	70
8.4.2.0A	UE-initiated CoD session modification	70
8.4.2.0B	MF-initiated CoD session modification	72
8.4.2.1	Signalling flows for the establishment/modification of the content delivery channel from UE	73
8.4.2.2	Signalling flows for the modification of the content delivery channels from MF	73
8.4.3	Signalling Flows for CoD session release	74
8.4.3.1	UE-initiated session release	74
8.4.3.2	SCF-initiated session release	75

8.4.3.3	MF-initiated session release	76
8.4.4	Signalling Flows for CoD session transfer	77
8.4.4.1	Terminal centric session transfer pushed from transferor UE to transferee UE	77
8.4.4.2	Network centric session Transfer pushed from transferor UE to transferee UE	79
8.4.4.3	Session Replication pushed from transferor UE to transferee UE	81
8.4.4.4	Session Transfer pulled by the transferee UE	81
8.4.4.5	Session Replication Between transferor to transferee in a pull mode transfer	83
8.4.5	Signalling flows for CoD service action data update/Requests	83
8.4.5.1	CoD service action data updated by UE	83
8.4.5.2	CoD service action data updated by MF	84
8.4.5.3	CoD Service Action Data requested by the SCF	85
8.4.6	Signalling flows for generating playlist by SCF and sending playlist information from SCF to MF during CoD session initiation.....	85
8.4.6.1	IPTV Data Model for playlist.....	86
8.4.6.1.1	General	86
8.4.6.1.2	ContentD	87
8.4.6.1.3	Duration.....	87
8.4.6.1.4	Begin Time	87
8.4.6.1.5	Restricted trick play.....	87
8.4.7	Signalling flows for generating playlist by SCF and sending playlist information from SCF to MF during an existing CoD session.....	87
8.4.8	Content switch procedure within a CoD playlist	88
8.5	PVR service procedures	89
8.5.00	PVR use for non-BC services	89
8.5.0A	Signalling Flows for PVR Using Impulsive Request.....	89
8.5.0B	Signalling flows for the PVR off-line capture request.....	91
8.5.1	Network PVR service procedures.....	92
8.5.1.1	Signalling Flows for Network-PVR Service Capture Request.....	92
8.5.1.1.1	Signalling Flows for Network-PVR Using Impulsive Request	92
8.5.1.1.2	Signalling flows for the Network-PVR off-line capture request	92
8.5.1.2	Signalling flows for Network-PVR content session.....	93
8.5.2	Client PVR service procedures	94
8.5.2.1	Signalling Flows for Client-PVR Service Capture Request.....	94
8.5.2.1.1	Signalling Flows for Client-PVR Using Impulsive Request	94
8.5.2.1.2	Signalling flows for the Client-PVR off-line capture request.....	94
8.5.2.2	Signalling flows for Client-PVR recording session	94
8.5.3	PVR content update procedures.....	95
8.6	Time Shift service procedures.....	96
8.7	Preview procedures	96
8.7.1	Preview procedures for BC service.....	96
8.7.1.1	Session initiation procedures for multi-screen BC preview	96
8.7.1.2	Procedures for transition between multi-screen BC preview and regular BC service.....	97
8.7.2	Preview procedures for COD service.....	97
8.7.3	Preview procedures for other IPTV service.....	97
8.8	Parental control procedures	98
8.9	UGC procedures.....	100
8.9.1	Overview	100
8.9.2	UGC creation procedure	100
8.9.3	UGC watching procedure	102
8.9.4	UGC removal procedure.....	103
8.10	Personalized channel (PCh) service procedures.....	103
8.10.1	Generic Procedure for PCh service.....	103
8.10.2	MF Option for PCh Service Provision.....	104
8.10.3	UE Option for PCh Service Provision	106
8.11	Interaction procedures with other IPTV Services.....	107
8.11.1	Notification procedures.....	107
8.11.1.1	Notification procedures using signalling path.....	107
8.11.1.2	Notification procedures using multicast media path	108
8.12	Procedures for IPTV User Profile Configuration	109
8.13	Content Recommendation service procedures.....	109
8.14	Advertising (Ad) service procedures.....	111
8.14.1	Generic Procedures for targeted ad insertion (TAI).....	111

8.14.2	Generic Signalling for Targeted Ad insertion.....	112
8.14.2.1	Signalling flows for TAI at UE side.....	112
8.14.2.2	Signalling flows for TAI at MF side.....	114
8.15	Procedures for inter-destination media synchronization.....	115
8.15.1	MSAS - SC.....	115
8.15.1.1	SCF-based media synchronization.....	115
8.15.1.1.1	Mapping 1: SC in UE.....	115
8.15.1.1.2	Mapping 2: SC in Transport.....	116
8.15.2	MSAS - SC'.....	116
8.16	Signalling flows for network-controlled trick play.....	117
8.17	Push Procedures.....	118
8.17.1	Push CoD session.....	118
8.18	Unicast Content Upload/Download Procedures.....	119
8.18.1	Signalling Flows for UE-initiated Unicast Content Upload/Download.....	119
8.18.2	Signalling Flows for SCF-initiated Unicast Content Download.....	120
8.19	Multicast Content Download Procedures.....	121
8.20	Signalling flows for restricted trick play.....	121
8.21	Shared Service Control (SSC) procedures.....	122
8.21.1	Overview.....	122
8.21.2	Room creation procedure for SSC.....	122
8.21.3	Room selection procedure for SSC.....	123
8.21.4	Shared service control procedures.....	125
8.21.4.1	Shared BC channel changes.....	125
8.21.4.2	Shared CoD trick play commands.....	126
8.21.5	Room deletion procedure for SSC.....	128
8.22	Personalized Service Composition (PSC) procedures.....	128
8.22.1	General.....	128
8.22.2	PSC session initiation.....	129
8.22.3	Session modification during PSC session initiation.....	130
8.22.4	PSC session release.....	132
8.22.4.1	UE-initiated PSC session release.....	132
8.22.4.2	SCF-initiated PSC session release.....	132
8.23	Signalling flows for IPTV Content Marker service procedures.....	133
8.23.1	IPTV Content Marker storing procedures.....	133
8.23.2	IPTV Content Marker retrieval procedures.....	133
8.23.3	IPTV Content Marker update/removal procedures.....	134
8.24	Role of BGF in IPTV.....	135
8.25	Procedures for service initiation by remote UE.....	135
8.26	Signalling flows for IPTV service state data updates/requests.....	137
8.26.1	IPTV service state data updated by MF.....	137
8.26.2	IPTV service state data update requested by the SCF.....	137
9	Interactions between IPTV services and other TISPAN services.....	138
9.1	Presence and IPTV.....	138
9.1.1	Presence architecture and functional description.....	138
9.1.2	Presence attributes for IPTV.....	139
9.1.3	SIP related procedure.....	140
9.2	Incoming call management.....	140
9.2.1	Procedure for incoming call management.....	141
9.2.2	Incoming call accepted on a phone device.....	142
9.3	Message and IPTV.....	143
9.3.1	Messaging procedures.....	143
9.3.2	Procedures for deliver messages of BC service using media path.....	144
9.4	Event Handling involving the SCF.....	145
10	Security.....	146
10.1	Authentication.....	146
10.2	Content Protection.....	146
10.3	Service Protection.....	146
11	Charging.....	147
12	Management.....	147

12.1	Management requirements	147
12.2	Content management	147
13	Support of Metadata	148
13.1	Introduction	148
13.2	SSF support	148
13.3	SCF/MF support	148
14	Support of Mobility Capabilities	149
15	Emergency alert	149
Annex A (informative): Integration of non-SIP-AS Service Discovery Function in IMS based IPTV		150
A.1	Introduction	150
A.2	Architecture	150
A.2.1	Functional entities	150
A.2.2	Reference points	151
A.2.2.1	UE - SDF (Xa)	151
A.2.3	Procedures	151
A.2.3.1	IPTV service attachment and selection	151
Annex B (normative): Policies for Shared Service Control		152
B.1	SSC room policies	152
Annex C (informative): Architectures for Interactions between IPTV services and other TISPAN services		154
C.1	Interaction based on an OSA/Parlay/Parlay X SCS	154
C.1.1	Service Capability Server (SCS)	154
C.1.2	Architecture	154
C.2	Interaction based on a 3GPP SCIM	155
C.2.1	Service Capability Interaction Manager (SCIM)	155
C.2.2	Architecture	155
Annex D (informative): Mapping of elementary functions		157
D.1	Mapping of elementary functions to generic capabilities	157
D.2	Mapping of elementary functions to functional entities	158
D.3	Mapping of elementary functions to IPTV services	159
Annex E (informative): Implementation Examples for Targeted Advertising		161
E.1	Internal Advertising Architecture Option	161
E.1.2	Advertising architecture	161
E.1.3	Reference points	161
E.1.4	Procedures for targeted ad insertion (TAI)	161
E.1.4.1	Signalling flows for TAI at UE side	161
E.1.4.2	Signalling flows for TAI at MF side	162
E.2	SCTE-130 Based External Advertising Architecture Option	164
E.2.1	SCTE-130 Definitions	164
E.2.2	SCTE-130 based Advertising Architecture	164
E.2.3	Reference points	166
E.2.3.1	IPTV Service Control Functions (SCF) - SCTE-130 External Ad system (ADx)	166
E.2.3.2	IPTV Media Function (MF) - SCTE-130 External Ad system (ADy)	166
E.2.3.3	IPTV User Equipment (UE) - SCTE-130 External Ad system (ADz)	166
E.2.4	Procedures for Targeted Ad Insertion (TAI)	166
E.2.4.1	Signalling flows for UE performing TAI	167
E.2.4.1.1	UE detects service state	167
E.2.4.1.1	MF detects service state	169

E.2.4.2	Signalling flows for MF performing TAI	171
E.2.4.2.1	MF detects service state	171
E.3	OMA MobAd Based External Architecture Option	172
E.3.1	OMA MobAd Definitions	172
E.3.2	OMA MobAd based Advertising Architecture.....	174
E.3.3	Reference Points.....	175
E.3.3.1	IPTV SCF/MCF - MobAd External Ad system (MobAd-2).....	175
E.3.3.2	IPTV UE - MobAd External Ad system (MobAd-3).....	176
E.3.4	Procedures for Targeted Ad Insertion (TAI)	176
E.3.4.1	Signalling Flows for TAI at UE side	176
E.3.4.2	Signalling flows for TAI at MF side.....	177
Annex F (informative): Mapping between TISPAN entities and external architectures		179
F.1	Mapping between TISPAN entities and SCTE-130 entities	179
F.1	Mapping between TISPAN Entities and OMA MobAd Entities	180
Annex G (informative): Ad placement options		182
G.1	IPTV Ad placement: SCTE-130 option	182
Annex H (informative): Interconnection Models to support of Mobility Capabilities		183
H.1	Interconnection model using IMS roaming to home IMS IPTV	184
H.2	Signalling flows.....	184
H.2.1	UE start-up procedures	185
H.2.2	CoD procedures.....	186
Annex I (informative): IPTV Identifiers.....		188
I.1	IPTV content identifiers	188
I.2	IPTV service type identifier	188
Annex J (informative): Bibliography.....		190
Annex K (informative): Change history		191
History		196

Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: "*Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards*", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<http://webapp.etsi.org/IPR/home.asp>).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN).

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
<https://standards.iteh.ai/catalog/standards/sist/1bb65304-8450-4792-bb6f-2ad94b9ab172/etsi-ts-182-027-v3.4.1-2010-06>

1 Scope

The present document specifies the architecture and functions of an IPTV system that makes use of the NGN IMS architecture and its features, implementing the requirements defined in TS 181 014 [14] and TS 181 016 [15].

The present document has taken IPTV solutions defined by other organizations (such as DVB, ATIS IIF, etc.) into account. It is based on an IMS based architecture and where appropriate the aforementioned solutions are referenced.

By relying on common components the resulting architecture can coexist with other TISPAN NGN services.

NOTE: As the use of IPTV services may release personal data the provider of IPTV services is expected to comply with relevant privacy protection principles as specified for Identity Management in the NGN in TS 187 016 [19].

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 ES 282 001: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); NGN Functional Architecture".
- [2] ETSI TS 182 006: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); IP Multimedia Subsystem (IMS); Stage 2 description [3GPP TS 23.506 Release 8, modified]".
- [3] ETSI ES 282 004: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); NGN Functional Architecture; Network Attachment Sub-System (NASS)".
- [4] ETSI TS 133 220: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Generic Authentication Architecture (GAA); Generic bootstrapping architecture (3GPP TS 33.220)".
- [5] ETSI TS 187 003: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); NGN Security; Security Architecture".
- [6] ETSI TS 102 034: "Digital Video Broadcasting (DVB); Transport of MPEG-2 TS Based DVB Services over IP Based Networks".
- [7] ITU-T Recommendation P.10/G.100 "Vocabulary for performance and quality of service" - New Appendix I - Definition of Quality of Experience (QoE).
- [8] ETSI ES 282 003: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Resource and Admission Control Sub-System (RACS); Functional Architecture".

- [9] ETSI TS 183 004: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); PSTN/ISDN simulation services: Communication Diversion (CDIV); Protocol specification".
- [10] ETSI TS 182 008: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Presence Service; Architecture and functional description [Endorsement of 3GPP TS 23.141 and OMA-AD-Presence-SIMPLE-V1-0]".
- [11] ETSI ES 282 007: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); IP Multimedia Subsystem (IMS); Functional architecture".
- [12] Void.
- [13] ETSI ES 283 030: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Presence Service Capability; Protocol Specification [3GPP TS 24.141 V7.0.0, modified and OMA-TS-Presence-SIMPLE-V1-0, modified]".
- [14] ETSI TS 181 014: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Requirements for network transport capabilities to support IPTV services".
- [15] ETSI TS 181 016: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Service Layer Requirements to integrate NGN services and IPTV".
- [16] ETSI TS 122 340: "Universal Mobile Telecommunications System (UMTS); IP Multimedia Subsystem (IMS) messaging; Stage 1 (3GPP TS 22.340 version 7.0.0 Release 7)".
- [17] ETSI TS 123 237: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; IP Multimedia Subsystem (IMS) Service Continuity; Stage 2 (3GPP TS 23.237 Release 9)".
- [18] ETSI TS 124 237: "Universal Mobile Telecommunications System (UMTS); LTE; IP Multimedia (IM) Core Network (CN) subsystem IP Multimedia Subsystem (IMS) service continuity; Stage 3 (3GPP TS 24.237 Release 9)".
- [19] ETSI TS 187 016: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); NGN Security; Identity Protection (Protection Profile)".
- [20] Void.

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] DSL Forum Technical Report TR-126: "Triple-play Services Quality of Experience (QoE) Requirements".
- [i.2] Void.
- [i.3] ETSI ES 282 010: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Charging management [Endorsement of 3GPP TS 32.240 Release 7, 3GPP TS 32.260 Release 7, 3GPP TS 32.297 Release 7, 3GPP TS 32.298 Release 7 and 3GPP TS 32.299 Release 7, modified]".
- [i.4] ETSI TR 182 005: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Organization of user data".
- [i.5] ETSI ES 204 915(all parts): "Open Service Access (OSA); Application Programming Interface (API); (Parlay 6.0)".
- [i.6] ETSI ES 202 504 (all parts): " Open Service Access (OSA); Parlay X Web Services; (Parlay X 3)".

- [i.7] ETSI TS 129 198 (all parts): "Universal Mobile Telecommunications System (UMTS); LTE; Open Service Access (OSA) Application Programming Interface (API); (3GPP TS 29.198 Release 7)".
- [i.8] ETSI TS 123 002: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Network architecture (3GPP TS 23.002 Release 8)".
- [i.9] ETSI TS 123 218: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; IP Multimedia (IM) session handling; IM call model; Stage 2 (3GPP TS 23.218 Release 8)".
- [i.10] 3GPP TR 23.810: " Technical Specification Group Services and System Aspects; Study on Architecture Impacts of Service Brokering; (Release 8)".
- [i.11] Toshiro Nunome; Shuji Tasaka, "An Application-Level QoS Comparison of Inter-Destination Synchronization Schemes for Continuous Media Multicasting", IEICE transactions on communications, ISSN 0916-8516, Vol. 87 (2004), No. 10, pp. 3057-3067 (11).
- [i.12] SCTE-130 part 1: "Advertising Systems Overview".
- [i.13] SCTE-130 part 2: "Core Data Elements".
- [i.14] SCTE-130 part 3: "Ad Management Service interface".
- [i.15] OMA MobAd 1.0 RD: "Mobile Advertising Requirements".
- [i.16] OMA MobAd 1.0 AD: "Mobile Advertising Architecture".
- [i.17] Void.
- [i.18] ITU-T Recommendation J.181: "Digital program insertion cueing message for cable television systems".
- [i.19] ETSI TS 129 199 (all parts): "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Open Service Access (OSA); Parlay X web services; (3GPP TS 29.199 version 8.1.0 Release 8)".
- [i.20] ETSI TS 126 234: "Universal Mobile Telecommunications System (UMTS); LTE; Transparent end-to-end Packet-switched Streaming Service (PSS); Protocols and codecs (3GPP TS 26.234 Release 8)".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

content control: procedure for controlling content delivery

NOTE: E.g. starting content delivery, playback of content (such as pause, fast and slow playback, reverse playback, rewinding, jumping forwards or backwards), stopping content delivery), and content management (e.g. digital rights management, program scheduling management, delivery management).

content delivery: procedure for delivering multimedia contents

content Provider: entity that owns or is licensed to sell content or content assets

content protection: protection of content or content assets during its entire lifetime

NOTE: The content provider defines the lifetime that the protection is required for