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SERIES J: CABLE NETWORKS AND TRANSMISSION OF TELEVISION, SOUND PROGRAMME AND OTHER MULTIMEDIA SIGNALS

Secondary distribution of IPTV services

Messages and protocols enabling the distribution of target-specific content within integrated broadband cable networks

Recommendation ITU-T J.707

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Messages and protocols enabling the distribution of target-specific content within integrated broadband cable networks

Summary

Recommendation ITU-T J.707 defines the messages and protocols used to realize target-specific content distribution for integrated broadband cable networks. Target-specific content distribution is the mechanism for content distribution addressed to specific target users. This Recommendation defines message format and delivery protocols between content providers/Ad providers and the platform.

History

Edition	Recommendation	Approval	Study Group
1.0	ITU-T J.707	2012-01-13	9

FOREWORD

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The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

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NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementers are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database at http://www.itu.int/ITU-T/ipr/.

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Introduction

Target-specific content distribution is a type of content distribution whereby the delivery platform automatically selects and/or recommends the best content corresponding to the delivery policy, content information, and user information. This would be applicable to, but not limited to, the following services:

– target advertisement video insertion for VOD/linear TV;

– target application insertion for enhanced broadcasting;

– content recommendation.

Appendix I of [ITU-T J.706] shows these services in detail.

To realize target-specific content distribution services, the following interactions are necessary between the service provider and the delivery platform.

Target content distribution policy notification: This message is sent from the service provider to the target content distribution function of the platform. It includes target region/user information, desired content distribution method (e.g., content will be played at the beginning of the VOD service), content delivery schedule, and so on. Clause 6.2 defines this message in more detail.

Target-specific content distribution report notification: This message is sent from the delivery platform to the service provider. The purpose is to report the results of target-specific content distribution services. Clause 6.3 defines this message in more detail.

Figure 1 shows the architecture for target-specific content distribution defined in [ITU-T J.706]. Content providers/Ad providers initially send the target-specific content distribution policy to the delivery platform. Then, in accordance with that policy, the content decision function selects and/or recommends the best content and indicates it to the content distribution function (target-specific content distribution indication). The service measurement function gathers reports from each local content distribution function and sends the integrated report to content providers/Ad providers (target-specific content distribution report).

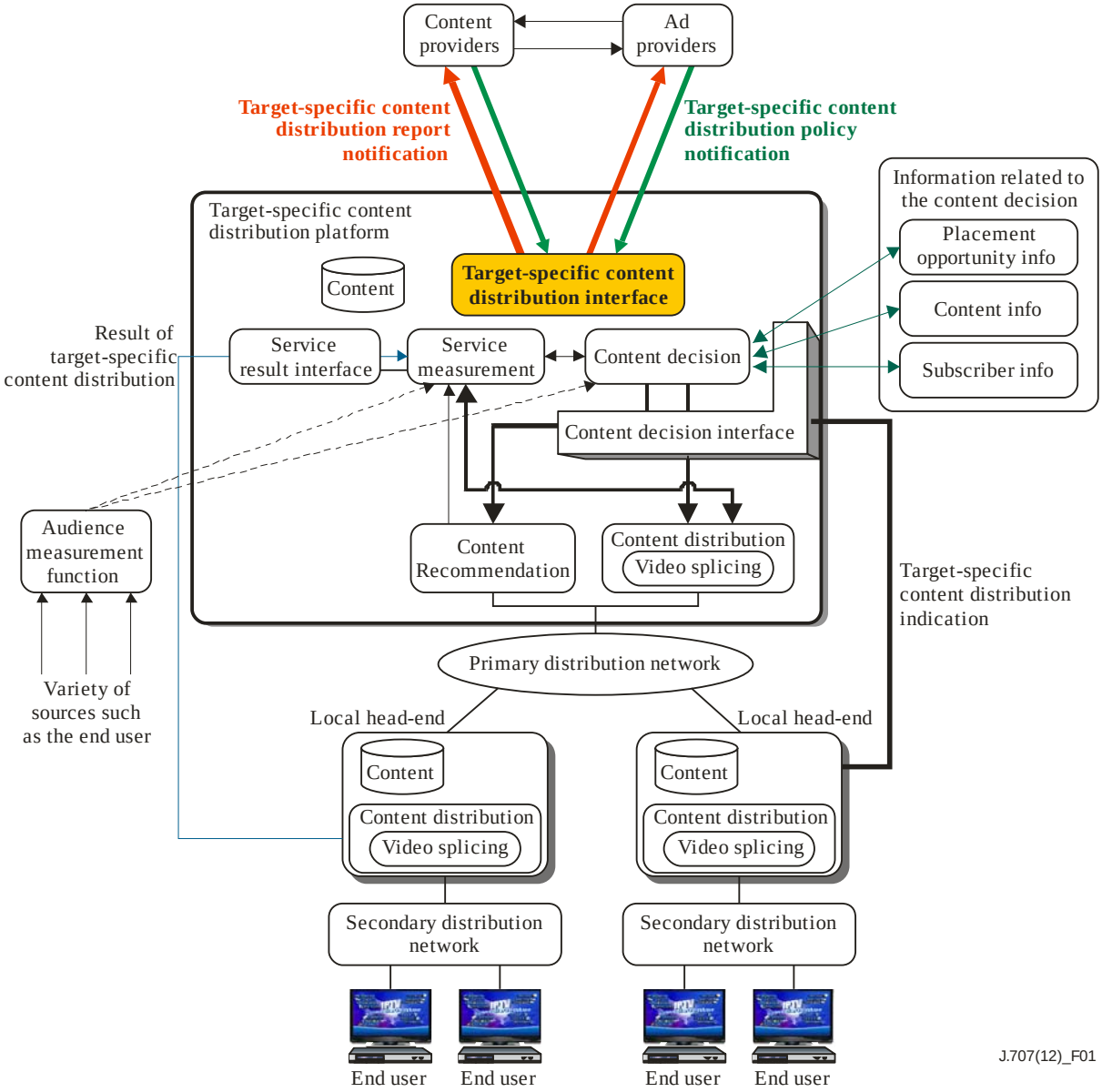

Figure 1 – Target-specific content distribution architecture

Recommendation ITU-T J.707

Messages and protocols enabling the distribution of target-specific content within integrated broadband cable networks

1 Scope

This Recommendation defines the messages and protocols used to realize target-specific content distribution carried out on a delivery platform for integrated broadband cable networks. Target-specific content distribution is the mechanism for content distribution addressed to specific target users according to a set of distribution policies and specific interactive feedback between content providers/Ad providers and the platform. Assumed services are target advertisement video insertion, target application insertion, and content recommendation.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

[ITU-T J.704] Recommendation ITU-T J.704 (2009), *Functional requirements of the service provider interface for television primary and secondary distribution and associated interactive services*.

[ITU-T J.706] Recommendation ITU-T J.706 (2012), *Overview of the distribution of target-specific content*.

3 Definitions

3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

3.1.1 enhanced broadcasting [b-ITU-T J.700]: A system that is capable of delivering broadcast programmes over existing secondary distribution networks composed of HFC or FTTx with enhancements by applications and/or services transferred over IP-enabled networks.

3.1.2 linear TV [b-ITU-T Y.1901]: A television service in which a continuous stream flows in real time from the service provider to the terminal device and where the user cannot control the temporal order in which contents are viewed.

3.2 Terms defined in this Recommendation

None.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

Ad Advertisement

EPG Electronic Programme Guide

HTTP HyperText Transfer Protocol

HTTPS Secure HTTP

STB Set-Top Box

VOD Video On Demand

5 Conventions

None.

6 Messages and protocols for target-specific content distribution

6.1 Message transfer protocol

The message transfer protocol should be generic and easy to handle for content providers/Ad providers. Therefore, widely-used message exchange protocols, such as HTTP [b-IETF RFC 2616], HTTPs [b-IETF RFC 2818], SOAP over HTTP(s) [b-W3C SOAP] are assumed.

6.2 Message definition for a target-specific content distribution policy

Figure 2 shows the structure of a target-specific content distribution policy and Table 1 shows an overview of the same. The message shall include one piece of general information and service provider information, and one or more distribution policies.

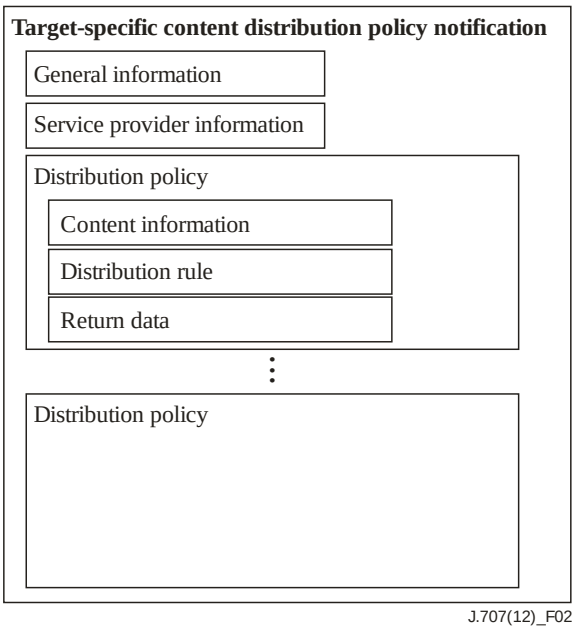

Figure 2 – Message structure of a target-specific content distribution policy

Table 1 – Message overview of a target-specific content distribution policy

Record name	Description	Number	Reference
General information	This record indicates the identification, version and date of the message.	One	6.2.1
Service provider information	This record indicates the identification of the service provider providing the message.	One	6.2.2
Distribution policy	This record consists of all information required for the content distribution. It includes information about the content itself, the target user/region, distribution period, and desired distribution time and so on.	One or more	6.2.3

6.2.1 General information

Table 2 shows the elements of general information.

Table 2 – Elements of general information

Element	Description	M/O	Example(s)
MessageID	Identifier of the message. A unique identifier such as the UUID should be used.	M	93a27ee0-7514-11df-85ea-0002a5d5c51b (It is the example of the UUID.)
MessageVersion	Message version. When the message is an update of any previous message, the message shall use the same MessageID as for the previous message and the MessageVersion shall be increased.	M	1
MessageDate	Date and time that the message was created/revised.	M	2009-08-30T12:10Z
Etc	Other information needed for the service.	O	

6.2.2 Service provider information

Table 3 shows the elements of service provider information.

Table 3 – Elements of service provider information

Element	Description	M/O	Example(s)
ServiceProviderID	The information used to identify the service provider. A unique identifier such as the URI should be used.	M	http://www.serviceprovider0123.com/
ServiceProviderContact	The contact information of the service provider. Email, phone number, and so on.	O	Email: contact_address@serviceprovider0123.com
Etc	Other information needed for the service.	O	

6.2.3 Distribution policy

Table 4 shows an overview of the distribution policy. Each distribution policy shall include one set of content information and may include any number of distribution rules for the same. Content will be distributed only once any distribution rule has been satisfied. Therefore, if the distribution policy does not include any distribution rule, it means that the content will never be distributed. Also, each distribution policy may include one return data to indicate how the delivery platform reports on the content.

Table 4 – Overview of the distribution policy

Record name	Description	Number	Reference
Content information	This record consists of information concerning the content to be delivered.	One	6.2.3.1
Distribution rule	This record consists of the distribution rule filters. These indicate the condition and limitation of the content distribution and also include target user/region.	Zero or any number	6.2.3.2
Return data	This record specifies the method of the report concerning the content. Note that this record corresponds to RetData element of [b-SaFI CIP] [b-SaFI CIP] in an application insertion case.	Zero or one	6.2.3.3

6.2.3.1 Content information

Table 5 shows the elements of content information.

Table 5 – Elements of content information

Element	Description	M/O	Example(s)
Content type	The information used to specify the type of content. Assumed content types are entertainment video content, advertisement video content, widget application, and music content. If an additional type of content is needed, it should be defined by the delivery platform.	M	Content type="Entertainment video"
ContentProviderID	The information used to identify the content provider. Unique information such as the providerID in [b-ADI 1.1], [b-ADI 2.0] should be used.	M	cprovider0987.com
ContentID	The ID of the content. The ID shall be unique in the content provider's domain. For entertainment video and Ad video content, existing VOD content ID such as the assetID in [b-ADI 1.1], [b-ADI 2.0] should be used.	M	CBLT02010000000123455
ContentMetadata	Content Metadata such as the filename, genre, actor/actress, and rating information, and so on.	O	Filename="documentary201006.mpg" Rating="PG"
ContentPreview	The URI or filename of the content preview, thumbnail, and/or summarised video.	O	Thumbnail="documentary201006.png"
Priority	Priority of the content. It should be a numerical value such as an integer from zero to one hundred. (One hundred being the highest priority.)	O	50

Table 5 – Elements of content information

Element	Description	M/O	Example(s)
AdvertisedProduct	This element only applies to the advertisement content and expresses information concerning the product advertised by the content.	O	Genre="food" Product=" freeze-dry food" NewProduct="True"
Etc	Other information needed for the service.	O	

6.2.3.2 Distribution rule

Categorised elements of the distribution rule are shown in Table 6. The distribution rule consists of the set of distribution rule filters. A distribution rule filter is expressed as a combination of the characteristic name and target specific value. Examples include:

characteristic name: Day, Values: Sunday

characteristic name: Age, Values: over 20

characteristic name: Zip code, Values: equal to 123-6789

In this case, the service provider requests to distribute and/or recommend the content to an adult user living in a particular area on Sunday. Note that this information will be used by the content decision function of the delivery platform, but the usage is outside the scope of this Recommendation.

Table 6 – Elements of the distribution rule

Category	Element	Description	M/O	Example(s)
General	RuleID	Any type of identification used to specify the distribution rule.	M	5966b260-7545-11df-b96e-0002a5d5c51b
	Revision	If the message is an update of any previous rule, the message shall use the same RuleID as the previous rule and the revision shall be increased.	O	0
	RuleType	This element specifies the "Insertion" or "Recommendation". If this value is "Insertion", the subsequent elements in this table indicate "Rules for the content (video or application) insertion". If this value is "Recommendation", the subsequent elements in this table indicate "Rules for the content recommendation".	M	Insertion
Number of times	UpperLimitTotal	The upper limit for the total number of distributions/recommendations. It shall be an integer greater than zero.	O[a)]	1000
	UpperLimitOneUer	The upper limit for the distribution/recommendation for one user. It shall be an integer greater than zero.	O	3

Table 6 – Elements of the distribution rule

Category	Element	Description	M/O	Example(s)
Date and time	ExpirationData	Information about the start and end times of the content distribution/recommendation.	O[a)]	Start="2009-09-15T12:00Z" End="2010-09-14T11:59Z"
	TimeFilter	The desired day and time for distribution/recommendation.	O	Day="Sunday" Between="T17:00:00:00.0Z-T23:59:59:00.0Z"
Target content filter	ExplicitTarget	Note that this element is mainly used for content insertion. The specific programme ID to explicitly indicate the target entertainment content that inserts the advertisement. Note that this element corresponds to the ExplicitTarget element defined in [b-SaFI CIP] in application insertion case.	O[a)]	ContentProviderID="cprovider0987.com" ContentID="CBLT02010000000123455"
	TargetFilter	[Note] This element is mainly used for content insertion and used when the service provider wants to insert the Ad content only with entertainment contents that match the specific condition. The condition of the entertainment content that becomes the target of the Ad insertion.	O[a)]	ContentType="EntertainmentVideo" Genre = "Sports" Rating ="PG"
Target region filter	RegionFilter	The condition of the target region.	O[a)]	ZipCode="1234567"
Target user filter	TargetUserFilter	The condition and limitation of the target user of the content distribution/recommendation. Typically, the total attributes of the subscribing household are used as the condition. Additionally, the individual attributes of each family member (e.g., father, mother, kid, etc.) can also be used.	O[a)]	Age="over 20" KidsPresent ="True"
Price	PriceInfo	Price information for the content. This element indicates how the delivery platform is charged to the end user.	O	Price="3" validation="one time"
	ExpenseInfo	Information on the cost that the service provider pays to the delivery platform when the platform distributes the content.	O	0.5
Etc		Other information needed for the service.	O	

[a)] These elements are optional but at least one element shall be present when the distribution rule record exists.

6.2.3.3 Return data

Table 7 shows an overview of the return data. Return data indicates the destination and frequency of the report. Additionally, return data may also indicate the kinds of information the service provider wants to receive.

Table 7 – Elements of return data

Element name	Description	M/O	Example(s)
RetContact	The destination URI for delivering reports.	O[a)]	http://www.serviceprovider0123.com/
RetRule	Frequency and conditions of the report.	O[a)]	Time.interval="12H0M0S"
Etc	Other information needed for the service.	O	
[a)] These elements are optional but at least one element shall be present when the Distribution Rule record exists.			

6.3 Message definition for a target-specific content distribution report

Figure 3 shows the structure of a target-specific content distribution report notification and Table 8 shows its overview. This notification can include the following reports.

– Service measurement report:

  The service measurement report includes summarised statistics of service execution.

– User's response report:

  This report indicates the user's response to the delivered content and/or application. It may include, but is not limited to, the user's rating of the content, or the user's response to an enquiry, etc.

The delivery platform may generate any number of separate reports for one service provider. It depends on the implementation.

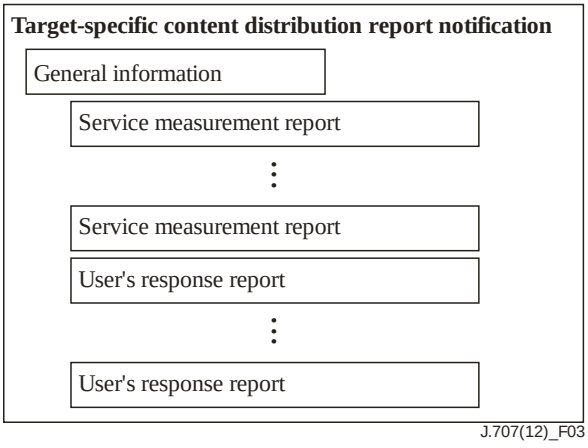

Figure 3 – Message structure of a target-specific content distribution report notification

Table 8 – Message overview of a content distribution report notification

Record name	Description	Number	Reference
General information	This record indicates the identification, version, and period of the report.	One	6.3.1
Service measurement report	This record indicates the measurement report of each service. One or more service measurement reports will be made for each distributed content. Note that the service measurement report solely concerns statistical information about the services and does not include any individual user privacy information.	Zero to any number[a)]	6.3.2
User's response report	This record carries the user's response, rating, and privacy information itself. Note that the delivery platform shall inform the user's response report only when the user agrees to inform the user's response and/or privacy information to the service provider. For example, when a giveaway application is delivered and the user has applied to the application, the application shall ask the user whether he/she agrees to inform his/her address information to the service provider.	Zero to any number[a)]	6.3.3
[a)] These records are optional but at least one shall be present.			

6.3.1 General information

Table 9 shows the elements of general information.

Table 9 – Elements of general information

Element name	Description	M/O	Example(s)
MessageID	Identifier of the message. A unique identifier such as the UUID should be used.	M	5a04b280-7b58-11df-85a5-0002a5d5c51b
MessageVersion	Message version. When the message is an update of any previous message, the message shall use the same MessageID as the previous message and the MessageVersion shall be increased.	M	1
PlatformDescription	Identification of the platform.	O	PlatformProvider5678.com
Etc	Other information needed for the service.	O	

6.3.2 Service measurement report

Table 10 shows the elements of a service measurement report.

Table 10 – Elements of a service measurement report

Element name		Description	M/O	Example(s)
Content type		This element indicates the type of content that is covered by the report. It corresponds to the content type in the target content policy information (see clause 6.2.3.1)	M	Content type="Entertainment video"
ServiceProviderID		Identifier of the provider providing the content that is covered by the report.	O	cprovider0987.com
ContentID		The ID of the content that is covered by the report.	M	CBLT02010000000123455
ProgrammedEventID		This element indicates the RuleID (see clause 6.2.3.1) to specify the distribution rule covered by the report.	O	5966b260-7545-11df-b96e-0002a5d5c51b
MessageTime		Date and time of message creation and/or revision.	M	2009-10-31T00:05Z
TimeRange		Time frame of the report.	M	Start=2009-10-01T12:00Z End=2009-10-30T11:59Z
Service measurement[a)]	NumberOfUsers	Number of the users who watched/played the content.	M	7578
	User's/area profile	The user and/or area profile used to count the NumberOfUsers.	O	Age="over 20"
	Parameters	The parameters used to count the NumberOfUsers. For example, if the service provider would like to know the number of users who voted for candidate A in the vote application, the delivery platform informs the NumberOfUsers with the "Parameters, ChoiceBox01=1".	O	ChoiceBox01=1
Etc		Other information needed for the service.	O	

[a)] One service measurement report may include multiple service measurement.

6.3.3 User's response report

Table 11 shows the element of a user's response information.

Table 11 – Elements of a user's response

Element name	Description	M/O	Example(s)
MessageTime	Date and time of message creation and/or revision.	M	2009-10-31T00:05Z
ServiceProviderID	Identifier of the provider that provides the content that is covered by the report.	O	cprovider0987.com
ContentID	The ID of the content that is covered by the report.	M	CBLT02010000000123455
ProgrammedEventID	This element indicates the RuleID (see clause 6.2.3.2) to specify the distribution rule covered by the report.	O	5966b260-7545-11df-b96e-0002a5d5c51b
UserInfo	User's profile information. The type of information to be informed depends on the application. Note that Table 5 of [b-ITU-T H.741.0] shows examples of user information.	O	UserGender="F"
UserInputEvent	Information about the user's input. For example, in a voting application, this element may carry the user's choice of voting. In a questionnaire application, this element may carry the user's text input. The format of the element depends on the application. It may be the result of ChoiceBox, free text Input space, RadioButton, User’s input for remote controller, and so on.	O	ChoiceBox01=1 TextInput01="This movie is amazing".
SessionEvent	Events related to a session. For example, the start/end of the video session, entertainment content segment, advertisement content segment, and chapter information of entertainment content.	O	SessionEvent time="2007-01-31T01:59:59Z" type="startSession"
SystemEvent	The SystemEvent provides the global events, events that are unrelated to the content, and those not fitting other event elements. Each system event should be informed by the integral code.	O	StatusCode =2
Etc	Other information needed for the service.	O	

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