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SERIES Y: GLOBAL INFORMATION
INFRASTRUCTURE, INTERNET PROTOCOL ASPECTS
AND NEXT-GENERATION NETWORKS

Next Generation Networks – Service aspects: Service
capabilities and service architecture

Framework for NGN support of multicast-based services

Recommendation ITU-T Y.2236

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Recommendation ITU-T Y.2236

Framework for NGN support of multicast-based services

Summary

Recommendation ITU-T Y.2236 provides a framework for NGN support of multicast-based services. In particular, it provides general descriptions of NGN multicast capabilities and functional requirements for each functional group of the NGN architecture.

Source

Recommendation ITU-T Y.2236 was approved on 12 September 2009 by ITU-T Study Group 13 (2009-2012) under Recommendation ITU-T A.8 procedures.

Keywords

Multicast, multicast-based services, NGN multicast capabilities.

FOREWORD

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Framework for NGN support of multicast-based services

1 Scope

This Recommendation describes a framework for NGN support of multicast-based services. It provides a general description of NGN multicast capabilities and the functional requirements for each functional group of the NGN architecture (i.e., transport stratum functions, service stratum functions, end-user functions and management functions).

Specific multicast-based services, as well as the actual implementation of NGN multicast capabilities for different network technologies, are out of scope of this 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 X.601] Recommendation ITU-T X.601 (2000), *Multi-peer communications framework*.
- [ITU-T X.603] Recommendation ITU-T X.603 (2004) | ISO/IEC 16512-1:2005, *Information technology – Relayed multicast protocol: Framework*.
- [ITU-T Y.2011] Recommendation ITU-T Y.2011 (2004), *General principles and general reference model for next generation networks*.
- [ITU-T Y.2012] Recommendation ITU-T Y.2012 (2006), *Functional requirements and architecture of the NGN release 1*.
- [ITU-T Y.2201] Recommendation ITU-T Y.2201 (2007), *NGN release 1 requirements*.
- [ITU-T Y.2233] Recommendation ITU-T Y.2233 (2008), *Requirements and framework allowing accounting and charging capabilities in NGN*.

3 Definitions

3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

- 3.1.1 active group** [ITU-T X.601]: A set of enrolled group members that has entered the multicast data transfer phase; satisfying the group-characteristics requirements.
- 3.1.2 multicast** [ITU-T X.603]: A data delivery scheme where the same data unit is transmitted from a single source to multiple destinations in a single invocation of service.
- 3.1.3 multicast group** [ITU-T X.601]: A set of service users that abide by appropriate group-membership criteria, or a set of rules belonging to a group that enables multicast-based services and applications.

3.1.4 nomadism [b-ITU-T Q.1706]: The ability of the users to change their network access point on moving. When changing the network access point, the user's service session is completely stopped and then started again, i.e., there is no service continuity or hand-over used. It is assumed that normal usage pattern is that users shut down their service session before attaching to a different access point.

3.1.5 personal mobility [b-ITU-T Q.1706]: This is the mobility for those scenarios where the user changes the terminal used for network access at different locations. The ability of a user to access telecommunication services at any terminal on the basis of a personal identifier, and the capability of the network to provide those services delineated in the user's service profile.

3.1.6 service continuity [ITU-T Y.2201]: The ability for a moving object to maintain ongoing service over including current states, such as user's network environment and session for a service.

3.1.7 terminal mobility [b-ITU-T Q.1706]: This is the mobility for those scenarios where the same terminal equipment is moving or is used at different locations. The ability of a terminal to access telecommunication services from different locations and while in motion, and the capability of the network to identify and locate that terminal.

3.2 Terms defined in this Recommendation

This Recommendation defines the following terms:

3.2.1 group: A set of service users using a particular service.

NOTE – The concept of group allows defining a set of entities as a virtual single entity. One of the main reasons to create a group is the possibility to name and address all group members with a single name, a single address, or unified characteristics of group communications, called group-name, group-address, or group-characteristics respectively.

3.2.2 multicast connection: A transmission path used for data transfer among members of a multicast group.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

ANI	Applications to Network Interface
DMB	Digital Multimedia Broadcasting
EPG	Electronic Program Guide
FTP	File Transfer Protocol
IGMP	Internet Group Management Protocol
IP	Internet Protocol
IPTV	Internet Protocol Television
MPLS	MultiProtocol Label Switching
NGN	Next Generation Network
NNI	Network to Network Interface
PON	Passive Optical Network
QoS	Quality of Service
SDR	Session Directory
TTL	Time to Live
VoD	Video on Demand

5 Conventions

In this Recommendation:

The keywords "is required to" indicate a requirement which must be strictly followed and from which no deviation is permitted, if conformance to this Recommendation is to be claimed.

The keywords "is prohibited from" indicate a requirement which must be strictly followed and from which no deviation is permitted, if conformance to this Recommendation is to be claimed.

The keywords "is recommended" indicate a requirement which is recommended but which is not absolutely required. Thus, this requirement need not be present to claim conformance.

The keywords "is not recommended" indicate a requirement which is not recommended but which is not specifically prohibited. Thus, conformance with this Recommendation can still be claimed even if this requirement is present.

The keywords "can optionally" indicate an optional requirement which is permissible, without implying any sense of being recommended. This term is not intended to imply that the vendor's implementation must provide the option and the feature can be optionally enabled by the network operator/service provider. Rather, it means the vendor may optionally provide the feature and still claim conformance with this Recommendation.

6 Introduction

As shown in Figure 6-1 below, various services – multimedia conference, linear TV, file distribution and entertainment applications such as games being representative examples – may require that NGN supports multicast capabilities.

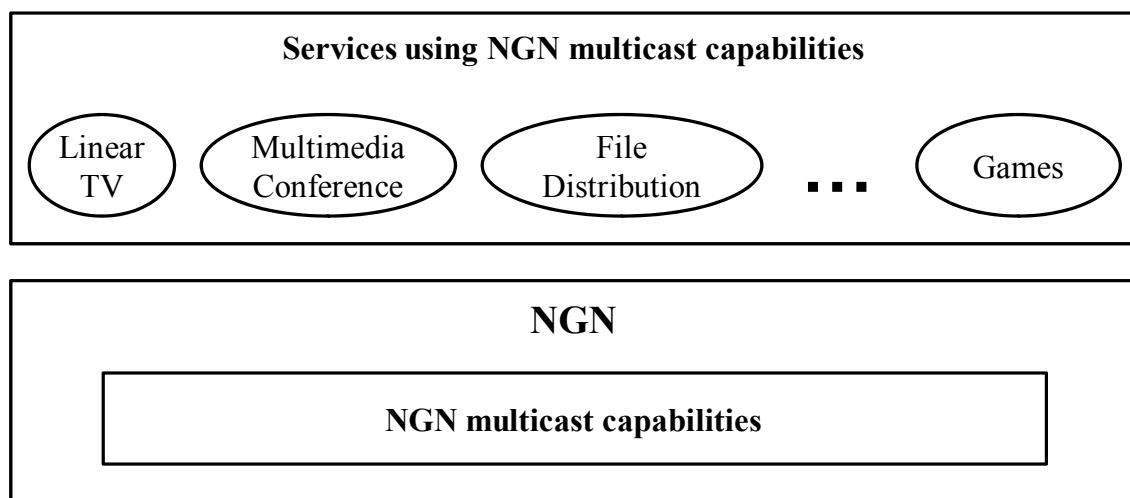


Figure 6-1 – Examples of services using NGN multicast capabilities

NGN may provide multicast capabilities based on different network technologies (e.g., IP, MPLS, Ethernet and PON); these different network technologies do not necessarily provide identical multicast related functionalities.

This Recommendation provides the description of requirements for NGN multicast capabilities. Detailed requirements for specific network technologies are out of scope of this Recommendation. Appendix I describes an example scenario of multicast-based services.