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

Requirements of managed delivery services

Recommendation ITU-T Y.2212

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

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Requirements of managed delivery services

Summary

Recommendation ITU-T Y.2212 provides the service and functional requirements of managed delivery services (MDS).

Source

Recommendation ITU-T Y.2212 was approved on 29 February 2008 by ITU-T Study Group 13 (2005-2008) under Recommendation ITU-T A.8 procedure.

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Always on service (AoS), managed delivery services (MDS), MDS control, MDS functional architecture model, MDS service classification, MDS service partnership, MDS service profile, MDS service scenario, non-subscription based MDS, on-demand service (ODS), subscription-based MDS.

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Introduction

One of the advantages of the ITU-T NGN is the openness formed by the whole of the ITU-T NGN architecture (Recommendation ITU-T Y.2001). The NGN's concept, principles and functional architectural model provides a great opportunity to initiate a more detailed development of various interfaces such as UNI, NNI, ANI, etc.

NGN should have efficient and flexible capabilities to enable third-party providers and users to use NGN capabilities through the interfaces.

This Recommendation describes "managed delivery services" as the services that use ANI to enable the provision of managed delivery services between third-party providers and users.

Recommendation ITU-T Y.2212

Requirements of managed delivery services

1 Scope

The objective of this Recommendation is to describe the service and functional requirements of the managed delivery services (MDS) provided by an NGN provider to third-party providers via ANI (application network interface), with features supported by the next generation network (NGN) [ITU-T Y.2001], [ITU-T Y.2011], [ITU-T Y.2012], and [ITU-T Y.2201].

The service and functional requirements described in this Recommendation are built on the NGN general reference model [ITU-T Y.2011] and generalized functional architecture [ITU-T Y.2012]. This Recommendation describes the service concept of MDS, the business model among players relevant to MDS, the service requirements of MDS, profiles for MDS management, the functional architecture model, MDS service scenarios, and security considerations for MDS.

This Recommendation describes several service scenarios to show how MDSs are operated. These service scenarios are described from a service procedural point of view, as well as in terms of the functional entities involved.

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 Y.2001] Recommendation ITU-T Y.2001 (2004), *General overview of NGN*.
- [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.2111] Recommendation ITU-T Y.2111 (2006), *Resource and admission control functions in next generation networks*.
- [ITU-T Y.2201] Recommendation ITU-T Y.2201 (2007), *NGN release 1 requirements*.
- [ITU-T Y.2701] Recommendation ITU-T Y.2701 (2007), *Security requirements for NGN release 1*.

3 Definitions

3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

3.1.1 application network interface (ANI) [ITU-T Y.2012]: Interface which provides a channel for interactions and exchanges between applications and NGN elements. The ANI offers capabilities and resources needed for the realization of applications.

3.2 Terms defined in this Recommendation

This Recommendation defines the following terms:

3.2.1 managed delivery services (MDS): The services provided by an NGN provider to third-party providers with features supported by the NGN, in which comprehensive control capabilities for service delivery are available between third-party providers and their users.

3.2.2 MDS control profile: The set of information regarding service control, session control, resource control and transport control to support MDS.

3.2.3 MDS service profile: The sets of MDS service information to provide comprehensive control capabilities for service delivery between third-party providers and their users.

3.2.4 user: The user of the services of a third-party provider whose services are provided with managed delivery features facilitated through MDS.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

AC	Admission Control
AMG-FE	Access Media Gateway Functional Entity
ANI	Application Network Interface
AoS	Always on Service
ASF&SSF	Application Support Functions and Service Support Functions
BE	Best Effort
BiC	Bandwidth Instantiation Control
BoD	Bandwidth-on-Demand
BW	Bandwidth
CoS	Class of Services
CPE	Customer Premises Equipment
CPE-BE	Customer Premises Equipment Border Element
FE	Functional Entity
IBC-FE	Interconnection Border Gateway Control Functional Entity
IBG-FE	Interconnection Border Gateway Functional Entity
I-CSC-FE	Interrogating Call Session Control Functional Entity
MDS	Managed Delivery Services
MGC-FE	Media Gateway Control Functional Entity
MRB-FE	Media Resource Broker Functional Entity
MRC-FE	Media Resource Control Functional Entity
NACF	Network Attachment Control Function
NAPT	Network Address and Port Translation
NGN	Next Generation Network
ODS	On-Demand Service

P-CSC-FE	Proxy Call Session Control Functional Entity
PSS	Pre-Scheduled Service
RACF	Resource and Admission Control Function
SCF	Service Control Function
S-CSC-FE	Serving Call Session Control Functional Entity
SeC	Security Control
TCF	Transport Control Function
UNI	User Network Interface
VoD	Video-on-Demand

5 Conventions

This Recommendation uses the following conventions, the same as those used in [ITU-T Y.2012], to denote functional entities.

A-n: This term is used to indicate the functional entity in application support functions.

S-n: This term is used to indicate the functional entity in service support functions.

T-n: This term is used to indicate the functional entity in transport and transport control functions.

6 MDS overview

This clause describes the business model and service provisioning types of MDS.

6.1 MDS business model

It is recognized that MDS focus on the online business area, particularly on markets and businesses where the broadband real-time interaction is involved, and where an added value is required via customization.

It is required that MDS make use of NGN capabilities to differentiate the service levels experienced by users, such as quality of service, security level, etc.

Figure 6-1 explains the key aspects of the MDS business model. Users invoke services to satisfy their own special requirements by requesting certain managed capabilities, such as bandwidth allocation and routing, depending on their service needs. A third-party provider will be able to provide more service capabilities by partnering with NGN providers, without any further infrastructural investments between a user and a third-party provider, or between users of the third-party providers. Due to these additional capabilities, a third-party provider will provide a better and broader range of services through the selection of appropriate parameters. Users of a third-party provider will use their services in various ways, depending on their needs. NGN providers will be able to extend their business coverage jointly with third-party providers, in order to extend their users directly or indirectly, and to develop a value-added infrastructure.

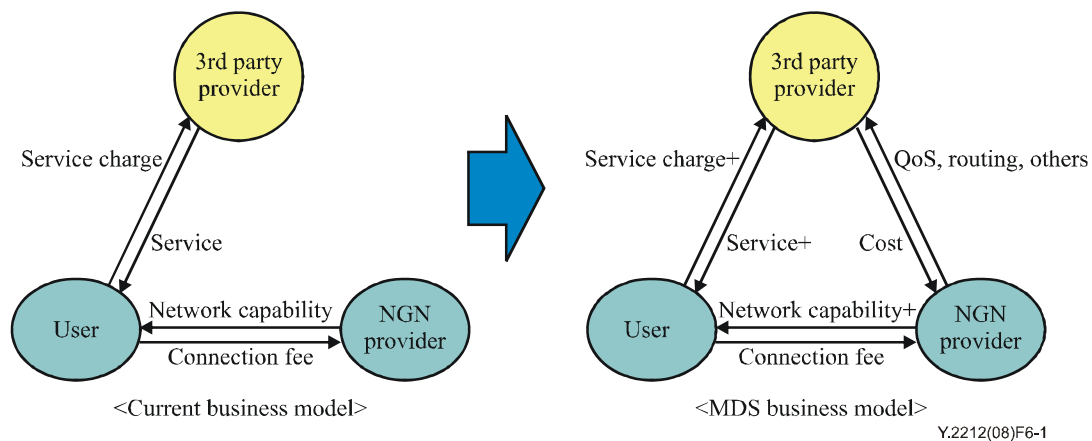


Figure 6-1 – Example of MDS business model

6.2 MDS service provisioning

There are three different general categories of MDS service provisioning: subscription related viewpoint, service request related viewpoint, and participation into MDS control process related viewpoint.

1) Service provisioning from a subscription related viewpoint

Two types of MDS service provisioning can be distinguished, depending on whether or not a prior subscription exists between a third-party provider and a user.

- **Subscription-based MDS:** This requires a subscription between a third-party provider and a user prior to using MDS. This type is generally useful for services having a regular or specific usage pattern. In general, MDS control policy applies to the network when the user connects to the network. Virtual private leased line services and network-controlled e-learning services would be examples of subscription-based MDS.
- **Non-subscription-based MDS:** This requires no subscription between a third-party provider and a user prior to using MDS. This type is generally useful for services having an irregular or single usage pattern. MDS control policy applies to the network when the user requests an MDS on demand. VoD services, video phone services and networked storage services with BoD would be examples of non-subscription-based MDS.

2) Service provisioning from a service request related viewpoint

Three types of MDS service provisioning can be distinguished, depending on whether MDS is provided when a user is always connected to the network, or a user requests a service in pre-scheduled or on-demand manner.

- **Always on service (AoS):** In this service type, MDS is provided when a user connects to the network, without any concern about whether MDS related traffic is generated or not. MDS is cancelled when a user disconnects from the network.
- **Pre-scheduled service (PSS):** In this service type, MDS is provided when a user connects to the network, in a pre-scheduled manner that is agreed between a third-party provider and a user.
- **On-demand service (ODS):** In this service type, MDS is provided when a user requests a service using MDS on demand. When a user requests the corresponding service to end, MDS is cancelled.

3) Service provisioning from a control process participation related viewpoint

Two types of MDS service provisioning can be distinguished, depending on whether a third-party provider takes part in the MDS control process or not.

- **MDS control process participation:** In this type, a third-party provider participates in the MDS control process by agreement with an NGN provider. In the case of ODS service type, MDS control process participation is required, and the third-party provider requests MDS control to the NGN provider. In the case of AoS/PSS service types, the third-party provider is informed by the NGN provider regarding the user's network access, and then can optionally request MDS control to the NGN provider.
- **No MDS control process participation:** In the case of AoS/PSS service types, when a user connects to the network, an NGN provider provides MDS control on its own, without the participation of the 3rd party provider.

Subscription-based MDS with a regular usage pattern is provisioned as either AoS, PSS or ODS type, according to the user profile given to the 3rd party provider during the subscription process. Non-subscription based MDS with an irregular usage pattern is provisioned as ODS type.

Figure 6-2 shows the relationship between MDS service provisioning types.

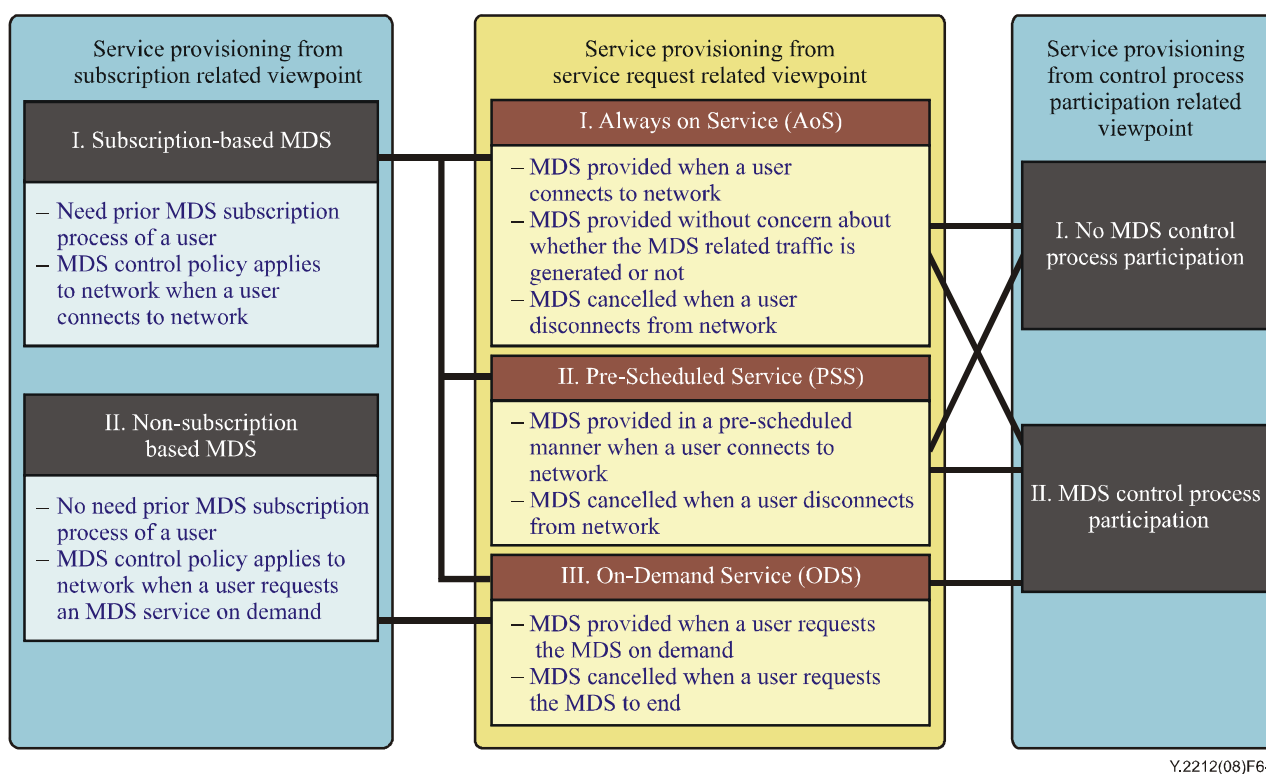


Figure 6-2 – Relationship between MDS service provisioning types

7 Service requirements of MDS

This clause describes the service requirements for the provision of MDS.