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SERIES G: TRANSMISSION SYSTEMS AND MEDIA,
DIGITAL SYSTEMS AND NETWORKS

Access networks – In premises networks

Generic home network transport architecture

Recommendation ITU-T G.9970

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Recommendation ITU-T G.9970

Generic home network transport architecture

Summary

Recommendation ITU-T G.9970 describes the generic architecture for home networks and their interfaces to the operators' broadband access networks.

Source

Recommendation ITU-T G.9970 was approved on 13 January 2009 by ITU-T Study Group 15 (2009-2012) under Recommendation ITU-T A.8 procedures.

FOREWORD

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Introduction

As the use of electronics and communications equipment proliferates in the home, as well as their technologies and protocols, there have been several proposals for standardization of equipment, transport and networking within the "home network". Recommendation ITU-T G.9970 proposes the generic home network architecture for the transport layer that can become the platform for the development of home networking standards.

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Recommendation ITU-T G.9970

Generic home network transport architecture

1 Scope

Considering that, in the future, the home network will be interconnected with the next generation network (NGN), this Recommendation describes the generic home network architecture from the viewpoint of the NGN architecture. [ITU-T Y.2012] defines the transport stratum as well as the service stratum. Considering these, the generic home network architecture can be separately discussed both in the transport layer categorized in the transport stratum and the application layer categorized in the service stratum. This Recommendation references the former model. Note that the latter model is specified in the companion recommendation, [ITU-T H.622]. Its detail will be described in clause 6.

This Recommendation discusses the interfaces between access networks and home networks, including interfaces within home networks as well as legacy interfaces. However, interfaces for off-air broadcast services are not considered in this Recommendation. Interfaces in the home network as well as the interface to the access network are shown as reference points, while proposed demarcation points for the customer and the operator are also shown in this Recommendation. Moreover, this Recommendation identifies key transport technologies for an operator to consider when providing services relevant to home networking.

In summary, this Recommendation addresses layer 3 of the home network architecture, while [ITU-T G.9960] addresses the home network architecture in layers 2 and 1. Moreover, this Recommendation describes the high level requirements for layer 2 and 3 transport technologies from the viewpoint of the interaction between access network and home network, while one of the detailed requirements and specifications for the layer 2 transport technologies within the home network can be found in [ITU-T G.9960]. The detailed description regarding the relationship between this Recommendation and [ITU-T G.9970] can be found in Annex A.

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 G.9954] Recommendation ITU-T G.9954 (2007), *Home networking transceivers – Enhanced physical, media access, and link layer specifications*.
- [ITU-T G.9960] Recommendation ITU-T G.9960 (2009), *Next generation home networking transceivers*.
- [ITU-T H.610] Recommendation ITU-T H.610 (2003), *Full service VDSL – System architecture and customer premises equipment*.
- [ITU-T H.622] Recommendation ITU-T H.622 (2008), *A generic home network architecture with support for multimedia services*.
- [ITU-T J.190] Recommendation ITU-T J.190 (2002), *Architecture of MediaHomeNet that supports cable-based services*.

- [ITU-T X.1111] Recommendation ITU-T X.1111 (2007), *Framework of security technologies for home network*.
- [ITU-T Y.1541] Recommendation ITU-T Y.1541 (2006), *Network performance objectives for IP-based services*.
- [ITU-T Y.2012] Recommendation ITU-T Y.2012 (2006), *Functional requirements and architecture of the NGN release 1*.
- [ITU-R M.1450] Recommendation ITU-R M.1450 (2008), *Characteristics of broadband radio local area networks*.
- [ITU-R M.1801] Recommendation ITU-R M.1801 (2007), *Radio interface standards for broadband wireless access systems, including mobile and nomadic applications, in the mobile service operating below 6 GHz*.
- [ISO/IEC 15045-1] ISO/IEC 15045-1 (2004), *Information technology – Home electronic system (HES) gateway – Part 1: A residential gateway model for HES*.
<http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=26313>
- [TR-069 Amd.1] Broadband Forum TR-069 Amendment 1 (2006), *CPE WAN management protocol*.
<<http://www.broadband-forum.org/technical/download/TR-069Amendment1.pdf>>
- [TR-094] Broadband Forum TR-094 (2004), *Multi-Service Delivery Framework for Home Networks*.
<<http://www.broadband-forum.org/technical/download/TR-094.pdf>>
- [TR-098] Broadband Forum TR-098 Amendment 2 (2008), *Internet Gateway Device Data Model for TR-069*.
<http://www.broadband-forum.org/technical/download/TR-98_Amendment_2.pdf>
- [TR-104] Broadband Forum TR-104 (2005), *DSLHome™ Provisioning Parameters for VoIP CPE*.
<<http://www.broadband-forum.org/technical/download/TR-104.pdf>>
- [TR-135] Broadband Forum TR-135 (2007), *Data Model for TR-069 Enabled STB*.
<<http://www.broadband-forum.org/technical/download/TR-135.pdf>>

3 Definitions

The new terminologies are defined in clause 6.

4 Abbreviations

This Recommendation uses the following abbreviations:

AGAF	Access Gateway Application layer Function
AGTF	Access Gateway Transport layer Function
AGW	Access Gateway
ALDF	Application Layer Device Function
ASG	Application Service Gateway
B-NT	Broadband Network Termination
CPE	Customer Premises Equipment
DHCP	Dynamic Host Configuration Protocol
DSCP	Differentiated Services Code Point

EU	End User
EUT	End User Terminal
FPD	Functional Processing Device
FPD/T	Functional Processing Device and Terminal
GW	Gateway
HA	Home Access
HB	Home Bridge
HC	Home Client
HD	Home Decoder
ICMP	Internet Control Message Protocol
IMS	IP Multimedia Subsystem
IP	Internet Protocol
IPTV	Internet Protocol TeleVision
LANT	Local Area Network side Termination
NGN	Next Generation Network
NP	Network Provider
NW	Network
OSGi	Open Service Gateway initiative
PC	Personal Computer
PLC	Power Line Communication
POTS	Plain Old Telephone Service
PPP	Point to Point Protocol
PS	POTS Splitter
QoS	Quality of Service
RG	Routing Gateway
RMS	Remote Management Server
RSVP	Resource ReSerVation Protocol
SIP	Session Initiation Protocol
SNMP	Simple Network Management Protocol
SP	Service Provider
STB	Set Top Box
TV	Television Set
VDSL	Very high-speed Digital Subscriber Line
VTP/D	VDSL Termination Processing or VDSL Termination Processing and Decoding
WANT	Wide Area Network side Termination