**Question 7/9 – Transmission control and interfaces (MAC layer) for IP and/or packet-based data over integrated broadband cable networks**

(Continuation of Question 7/9)

## 1 Motivation

Digital cable television systems in most countries are also provisioning very high-speed bidirectional data facilities intended to support, among other payloads, those utilizing Internet protocol (IP). These facilities can also be used to supply other digital services to the home, based on packet-data, exploiting the broadband capacity provided by hybrid fibre/coaxial (HFC) based on advanced smart digital cable television systems, and interconnecting local, geographically distinct digital cable television systems through direct connections or managed backbones.

The envisaged range of packet-based data services to be provided encompasses those services and applications that are based on the use of IP. It also encompasses among others, digital bidirectional (interactive) television and sound-programme cablecasting, advanced interactive television, sound-programme and multimedia services, video conference and video telephony and so on.

The technology considered for the transmission and delivery of those packet-based data services over the advanced smart cable television infrastructure utilizes the relevant transmission protocols, including IP and enhancements thereof.

The peculiarities common to the range of services to be provided are:
– the use of modern and future hybrid bidirectional integrated broadband cable network;
– the use of the transmission methods specified for integrated broadband cable network;
– the architecture for the transmission protocol for integrated broadband cable network;
– the service architecture for the transmission on integrated broadband cable network (managed and unmanaged services);
– the use of the architecture and modems specified for those integrated broadband cable network;
– the architecture of the integrated broadband cable network and its interoperability with mobile networks, including 5G;
– the transmission control and management of the integrated broadband cable network;
– compliance with the specifications and QoE peculiar to integrated broadband cable network;
– capability for real time (low latency) operation for advanced smart interactive services that require it;
– interoperability with relevant transmission protocols for packet-based data, notably IP.

## 2 Question

Study items to be considered include, but are not limited to:
– What are the transmission protocols to support services that need to be provided over integrated broadband cable network?
– What are the specifications to convey IP-based data over quadrature amplitude modulation (QAM)?
– Which open protocols can be used or enhanced for the delivery of services?
– Which protocol should be recommended to provide each considered service, in order to facilitate future service upgrades?

– Which protocol requirements should apply to provide and operate digital services utilizing IP over integrated broadband cable network?

– Which interfaces (MAC layer) are needed to support applications utilizing IP over integrated broadband cable network?

## 3　Tasks

Tasks include, but are not limited to:

– Preparation of draft new Recommendations to address the study items under the above paragraph "Question".

An up-to-date status of work under this Question is contained in the Study Group 9 work programme (https://www.itu.int/ITU-T/workprog/wp_search.aspx?sp=17&sg=9).

## 4　Relationships

**Recommendations**

– ITU-T J-series

**Questions**

– 1/9, 5/9, 6/9, 8/9 and 9/9

**Study groups**

– ITU T SG11
– ITU T SG13
– ITU T SG15

**Standardization bodies**

– Cablelabs
– ETSI
– IEEE
– IETF
– SCTE

**WSIS action lines**

– C2, C3, C5, C6, C9, C11

**SDGs**

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