ITU-T

G.7712/Y.1703

Amendment 1
(10/2013)

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

Data over Transport – Generic aspects – Transport network control aspects

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

Internet protocol aspects – Operation, administration and maintenance

Architecture and specification of data communication network

Amendment 1

Recommendation ITU-T G.7712/Y.1703 (2010) – Amendment 1

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Recommendation ITU-T G.7712/Y.1703

Architecture and specification of data communication network

Amendment 1

Summary

Amendment 1 to Recommendation ITU-T G.7712/Y.1703 (2010) contains the specification and requirements for using the data communication network (DCN) for optical channel (OCh) overhead communication. A DCN that is used for overhead communication is referred to as the overhead communications network (OCN). The OCN provides one or more point-to-point channels for the communication of the overhead. These channels are referred to as the overhead communications channel (OCC).

History

Edition	Recommendation	Approval	Study Group
1.0	ITU-T G.7712/Y.1703	2001-11-29	15
2.0	ITU-T G.7712/Y.1703	2003-03-16	15
3.0	ITU-T G.7712/Y.1703	2008-06-22	15
4.0	ITU-T G.7712/Y.1703	2010-09-06	15
4.1	ITU-T G.7712/Y.1703 (2010) Amd. 1	2013-10-07	15

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications, information and communication technologies (ICTs). The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

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

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

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

Compliance with this Recommendation is voluntary. However, the Recommendation may contain certain mandatory provisions (to ensure, e.g., interoperability or applicability) and compliance with the Recommendation is achieved when all of these mandatory provisions are met. The words "shall" or some other obligatory language such as "must" and the negative equivalents are used to express requirements. The use of such words does not suggest that compliance with the Recommendation is required of any party.

INTELLECTUAL PROPERTY RIGHTS

ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

As of the date of approval of this Recommendation, ITU had 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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Recommendation ITU-T G.7712/Y.1703

Architecture and specification of data communication network

1) Scope

This amendment contains the specification and requirements for using the data communication network (DCN) for OCh overhead communication when the optical supervisory channel (OSC) is not available.

2) Updates to ITU-T G.7712

2.1) Clause 2, References

Add the following new references in clause 2:

[ITU-T G.698.1]   Recommendation ITU-T G.698.1 (2009), *Multichannel DWDM applications with single-channel optical interfaces*.

[ITU-T G.698.2]   Recommendation ITU-T G.698.2 (2009), *Amplified multichannel dense wavelength division multiplexing applications with single channel optical interfaces*.

[ITU-T G.872]   Recommendation ITU-T G.872 (2012), *Architecture of optical transport networks*; plus Amendment 1 (2013).

2.2) Clause 3.2, Terms defined in this Recommendation

Re-number the existing clause 3.2.8 on SCC as 3.2.10 and add the following two new definitions as 3.2.8 and 3.2.9:

3.2.8   overhead communications channel (OCC): The overhead communications network (OCN) provides one or more channels for the communication of the overhead. These channels are referred to as the overhead communications channel (OCC).

3.2.9   overhead communications network (OCN): A data communication network (DCN) that is used for overhead communication is referred to as the overhead communications network (OCN).

2.3) Clause 4, Abbreviations and acronyms

Add the following new abbreviations in clause 4:

AP   Access Point

NC   Network Connection

NIM   Non-Intrusive Monitoring

OCC   Overhead Communications Channel

OCh   Optical Channel

OCh-O   OCh Overhead

OCh-P   OCh Payload

OCN   Overhead Communications Network

TCP   Termination Connection Point

2.4)   Clause 6.3

6.3   Other applications requiring communication networks

Besides TMN and ASON applications, other applications such as overhead communication (e.g., OCh overhead), voice communications (e.g., orderwire), software downloads and operator specific communications require a communication network to provide transport of information between components.

A DCN that is used for overhead communication is referred to as the overhead communications network (OCN). The OCN provides one or more channels for the communication of the overhead. These channels are referred to as the overhead communications channel (OCC). Described below is an application of the OCN for OCh layer overhead communication.

6.3.1   OCh overhead communication application

The OCh layer network uses non-associated overhead (OCh-O), which is normally transported in the OTM-n.m via the OTM overhead signal (OOS) carried in the optical supervisory channel (OSC). For the case where an OCh signal is transported in a single channel intra-domain interface as described in [ITU-T G.698.1] and [ITU-T G.698.2], the OSC may not be available. To transport this OCh-O across the interface between the OCh subnetwork and the OCh source/sink, an overhead communications channel (OCC) within the overhead communications network (OCN) is used as shown in Figure 6-17. The OCh-O messages must be carried in a PDU that is encapsulated into the OCN packet/frame format for the technology used in the OCN. The OCh-O PDU must contain sufficient information so that the source, sink and intermediate points can verify the connectivity.

In this application, the OCN provides point-to-point connectivity between two OCh-O connection points (OCh-O CP) to transport the OCh-O associated with the OCh payload (OCh-P) (see Figure 6-17). The OCN should be able to support one or more of these point-to-point connections simultaneously.

An OCN should be designed to ensure that a single fault does not prevent the transfer of the OCh-O messages. The OCN should be designed to ensure that the messages are delivered correctly and does not impose blocking or excessive delay.

NOTE – The specification for how the primitive and information elements described in Amendment 2 of [ITU-T G.709] are carried across an OCN is for further study.

**Figure 6-17 – OCh overhead transport for the case of single channel IaDI
(based on Figure 12-1 of Amendment 1 of [ITU-T G.872])**

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