

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

G.798

Amendment 1
(12/2008)

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

Digital terminal equipments – Other terminal equipment

Characteristics of optical transport network
hierarchy equipment functional blocks

**Amendment 1: New Appendix V – Client
services of Sub ODU1 rate mapping into OTN
using higher order virtual container mapping**

Recommendation ITU-T G.798 (2006) – Amendment 1

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For further details, please refer to the list of ITU-T Recommendations.

Recommendation ITU-T G.798

Characteristics of optical transport network hierarchy equipment functional blocks

Amendment 1

New Appendix V – Client services of Sub ODU1 rate mapping into OTN using higher order virtual container mapping

Summary

Amendment 1 to Recommendation ITU-T G.798 introduces a new Appendix V, which describes how sub-ODU1 rate signals can also be mapped into OTN by using methods from existing standards that can also be supported by legacy equipment. For such mapping, the SDH higher order virtual container (HOVC, defined in Recommendation ITU-T G.707/Y.1322) can be used.

Source

Amendment 1 to Recommendation ITU-T G.798 (2006) was agreed on 12 December 2008 by ITU-T Study Group 15 (2009-2012).

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.

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**Characteristics of optical transport network
hierarchy equipment functional blocks**

Amendment 1

**Appendix V – Client services of Sub ODU1 rate mapping
into OTN using higher order virtual container mapping**

(This appendix does not form an integral part of this Recommendation)

V.1 Description of the application

Current SDH and OTN standards (i.e., [ITU-T G.783] and this Recommendation) allow mapping of a generic packet-based client signal over OTN, mapping it into a virtually concatenated group (VCG) composed of a number of VC-4s, as represented in Figure V.1. The VCG is therefore mapped into an STM-N container which is (a)synchronously mapped into ODUk.

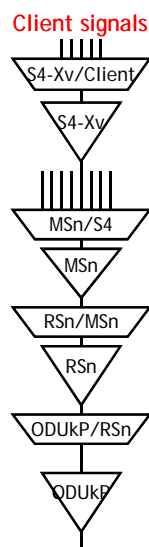


Figure V.1 – Mapping of clients over OTN

The great advantage of this mapping procedure is that all the basic functionalities are already defined in the standards and deployed in the installed base.

Operators can decide whether to simplify this mapping procedure by switching off the OAM information of the MS-OH and RS-OH SDH layers, considering that within the transport network the client service monitoring and cross-connection are provided at the Sn level while the MS and RS layers provide a duplication of the OAM functionalities already present in the ODUk layer. As such, MS and RS could be considered for mapping purposes only. The result is a compound function (Figure V.2), defined as ODUkP/Sn, that provides the direct mapping of the Sn-Xv into an ODUk container.

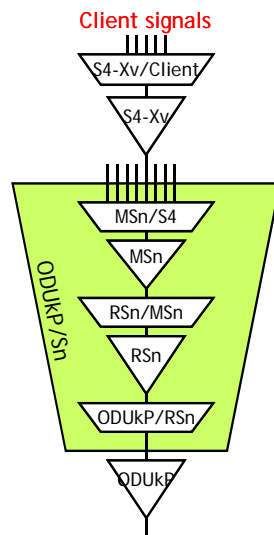


Figure V.2 – Compound function for mapping of clients over OTN via ODUkP/Sn

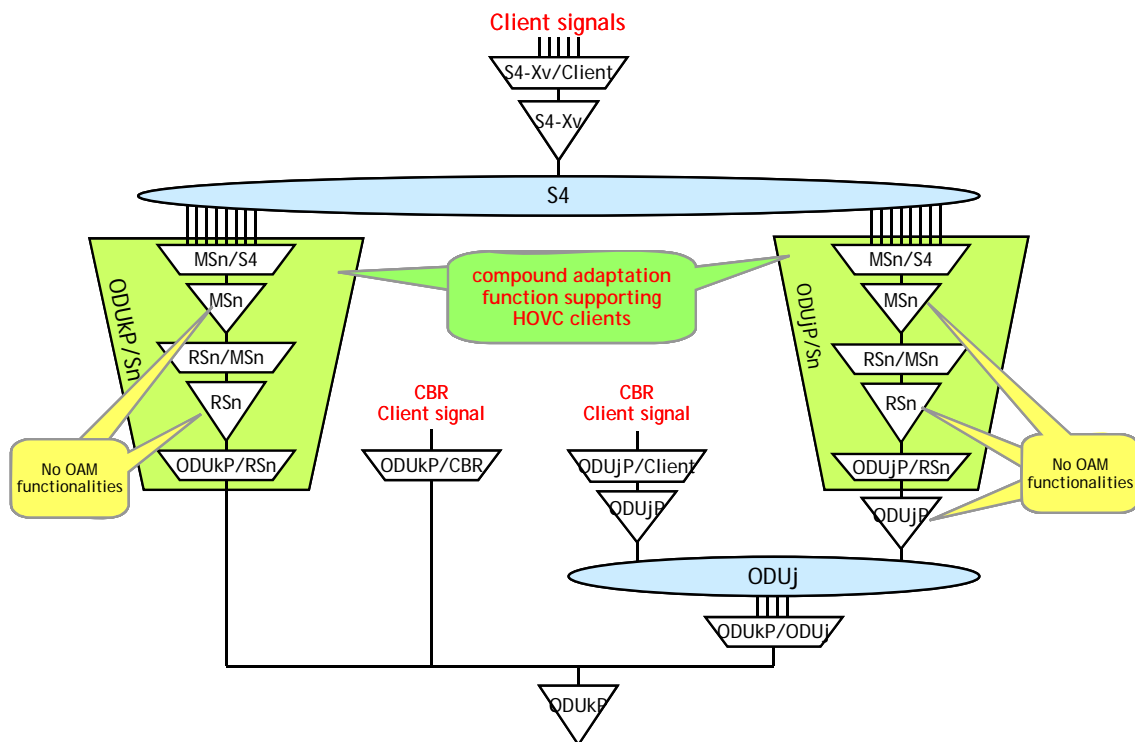


Figure V.3 – Equipment model example for mapping of clients over OTN via ODUkP/Sn

V.2 ODUk/Sn compound function

V.2.1 ODUkP to Sn compound adaptation function (ODUkP/Sn_A)

The ODUkP to Sn adaptation functions perform the adaptation between the ODUkP ($k = 1, 2, 3$) layer adapted information and the characteristic information of an Sn signal belonging to a virtually concatenated group. It is the composite of a set of functionalities described in this Recommendation and [ITU-T G.783], with a simplified management.

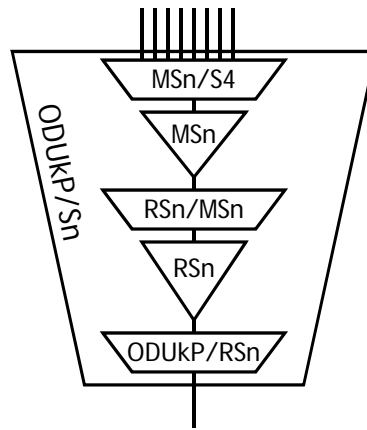


Figure V.4 – ODUkP/Sn compound function

V.2.1.1 ODUkP to Sn compound adaptation source function (ODUkP/Sn_A_So)

The ODUkP to Sn compound adaptation source function is composed of the following functionalities, defined in this Recommendation and [ITU-T G.783]:

- MSn/Sn adaptation source.
- MSn termination source.
- RSn/MSn adaptation source.
- RSn termination source.
- ODUkP/RSn adaptation source.

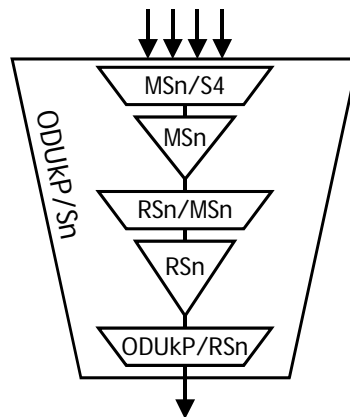


Figure V.5 – ODUkP/Sn compound adaptation source function

V.2.1.2 ODUkP to Sn compound adaptation sink function (ODUkP/Sn_A_Sk)

The ODUkP to Sn compound adaptation sink function is composed of the following functionalities, defined in this Recommendation and [ITU-T G.783]:

- ODUkP/RSn adaptation sink.
- RSn termination sink.
- RSn/MSn adaptation sink.
- MSn termination sink.
- MSn/Sn adaptation sink.

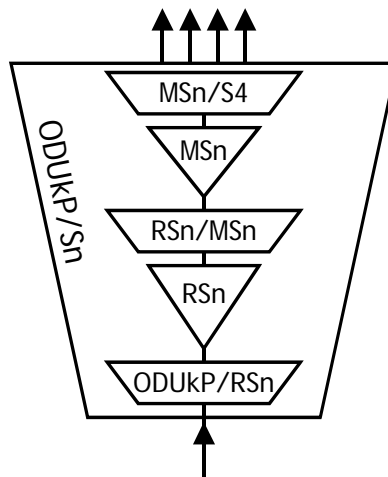


Figure V.6 – ODUkP/Sn compound adaptation sink function

V.3 Migration from SDH towards OTN networking

Using the approach described in this appendix for client services mapping into OTN via HOVC allows a smooth migration from the existing SONET/SDH transport network towards the new optical transport network deployment, as depicted in Figure V.7, saving the investment that operators are still making in SONET/SDH technologies.

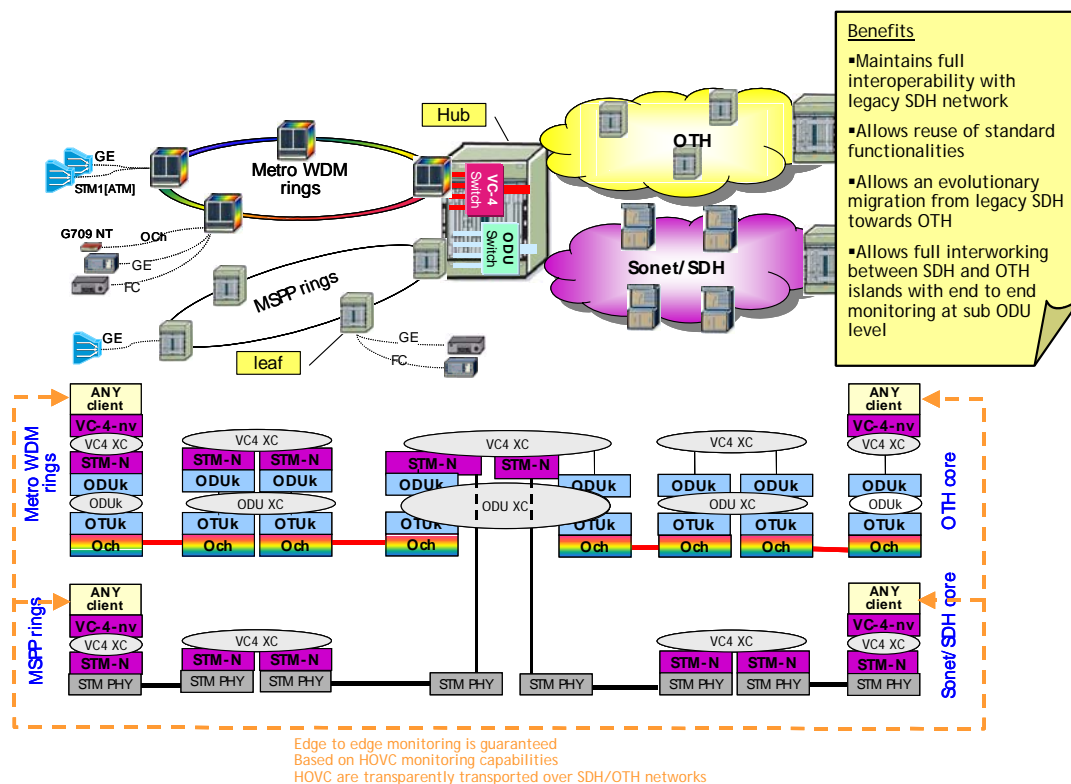


Figure V.7 – Migration from SDH/SONET towards OTN

At the same time, operators who do not today see the need for investment in SONET/SDH, can have an efficient way to map directly into OTN a generic client service without waiting for the definition of new mapping techniques that would require a non-negligible amount of time for a new standard definition and new implementations.

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