



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

G.774.2

(02/2001)

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

Digital terminal equipments – Operations, administration
and maintenance features of transmission equipment

Synchronous digital hierarchy (SDH) – Configuration of the payload structure for the network element view

ITU-T Recommendation G.774.2

(Formerly CCITT Recommendation)

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ITU-T Recommendation G.774.2

Synchronous digital hierarchy (SDH) – Configuration of the payload structure for the network element view

Summary

This Recommendation provides an information model for the Payload Configuration Management of Synchronous Digital Hierarchy (SDH) Networks. This model describes the managed object classes and their properties for the Payload Configuration function as related to SDH Network Elements. These objects are useful to describe information exchanged across interfaces defined in ITU-T M.3010 Telecommunications Management Network (TMN) architecture for the management of the Payload Configuration function.

Document history	
Issue	Notes
2001	First revision incorporated the changes documented in the G.774.2 Corrigendum 1 (1996).
11/1994	Initial version of the Recommendation.

Source

ITU-T Recommendation G.774.2 was revised by ITU-T Study Group 15 (2001-2004) and approved under the WTSA Resolution 1 procedure on 9 February 2001.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications. 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.

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As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

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ITU-T Recommendation G.774.2

Synchronous digital hierarchy (SDH) – Configuration of the payload structure for the network element view

1 Scope

SDH Payload Configuration Functions are used to configure the various SDH adaptation functions.

Modification of the SDH payload structure is done by applying an action on relevant managed objects. These actions are included by subclassing of existing G.774 managed object classes.

The new objects defined in this Recommendation supersede those defined in ITU-T G.774.2 (1994).

Structure of this Recommendation

Clause 5.1 provides an overview of the SDH Payload Configuration information model. Clauses 6 to 12 describe the information model using the notation mechanisms defined in ITU-T X.722 Guidelines for the Definition of Managed Objects. Clauses 13 and 14 describe the connectivity pointer constraint rules and the subordination rules applicable to the termination point fragment. Clause 15 contains the syntax definitions of the information carried in the protocol using Abstract Syntax Notation One (ASN.1) defined in ITU-T X.680-X.683. Naming and Inheritance are illustrated in informative Appendix I.

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.

- ITU-T G.707/Y.1322 (2000), *Network node interface for the synchronous digital hierarchy (SDH)*.
- ITU-T G.773 (1993), *Protocol suites for Q-interfaces for management of transmission systems*.
- ITU-T G.774 (2001), *Synchronous digital hierarchy (SDH) – Management information model for the network element view*.
- ITU-T G.783 (2000), *Characteristics of synchronous digital hierarchy (SDH) equipment functional blocks*.
- ITU-T G.784 (1999), *Synchronous digital hierarchy (SDH) management*.
- ITU-T G.803 (2000), *Architecture of transport networks based on the synchronous digital hierarchy (SDH)*.
- ITU-T G.831 (2000), *Management capabilities of transport networks based on the synchronous digital hierarchy (SDH)*.
- ITU-T G.958 (1994), *Digital line systems based on the synchronous digital hierarchy for use on optical fibre cables*.
- ITU-T M.60 (1993), *Maintenance terminology and definitions*.

- ITU-T M.2120 (2000), *PDH path, section and transmission system and SDH path and multiplex section fault detection and localization procedures*.
- ITU-T M.3010 (2000), *Principles for a telecommunications management network*.
- ITU-T M.3013 (2000), *Considerations for a telecommunications management network*.
- ITU-T M.3100 (1995), *Generic network information model*.
- ITU-T Q.811 (1997), *Lower layer protocol profiles for the Q3 and X interfaces*.
- ITU-T Q.812 (1997), *Upper layer protocol profiles for the Q3 and X interfaces*.
- ITU-T Q.822 (1994), *Stage 1, Stage 2 and Stage 3 description for the Q3-interface – Performance management*.
- ITU-T X.680 to X.683 (1997), *Information technology – Abstract Syntax Notation One (ASN.1)*.
- ITU-T X.701 (1997), *Information technology – Open Systems Interconnection – Systems management overview*.
- ITU-T X.710 (1997), *Information technology – Open Systems Interconnection – Common management information service*.
- ITU-T X.711 (1997), *Information technology – Open Systems Interconnection – Common management information protocol: Specification*.
- ITU-T X.720 (1992), *Information technology – Open Systems Interconnection – Structure of Management Information: Management information model, plus Amd.1 (1995) and Cor.1 (1994)*.
- ITU-T X.721 (1992), *Information technology – Open Systems Interconnection – Structure of management information: Definition of management information, plus Cor.1 (1994), Cor.2 (1996), Cor.3 (1998) and Cor.4 (2000)*.
- ITU-T X.722 (1992), *Information technology – Open Systems Interconnection – Structure of management information: Guidelines for the definition of managed objects, plus Amd.1 (1995), Amd.2 (1997) and Cor.1 (1996)*.
- ITU-T X.730 (1992), *Information technology – Open Systems Interconnection – Systems Management: Object management function, plus Amd.1 (1995) and Amd.1/Cor.1 (1996)*.
- ITU-T X.731 (1992), *Information technology – Open Systems Interconnection – Systems Management: State management function, plus Amd.1 (1995), Cor.1 (1995) and Amd.1/Cor.1 (1996)*.
- ITU-T X.733 (1992), *Information technology – Open Systems Interconnection – Systems Management: Alarm reporting function, plus Cor.1 (1994), Amd.1 (1995), Amd.1/Cor.1 (1996) and Cor.2 (1999)*.
- ITU-T X.734 (1992), *Information technology – Open Systems Interconnection – Systems Management: Event report management function, plus Cor.1 (1994), Amd.1 (1995), Amd.1/Cor.1 (1996) and Cor.2 (1999)*.
- ITU-T X.735 (1992), *Information technology – Open Systems Interconnection – Systems Management: Log control function, plus Amd.1 (1995) and Amd.1/Cor.1 (1996)*.

3 Terms and definitions

This Recommendation uses the terms and definitions defined in ITU-T G.774, G.784 and M.3100.

4 Abbreviations

This Recommendation uses the following abbreviations:

AU	Administrative Unit
AUG	Administrative Unit Group
Bid	Bidirectional
CTP	Connection Termination Point
GTP	Group Termination Point
Id	Identifier
MS	Multiplex Section
NE	Network Element
OS	Operations System
OSI	Open Systems Interconnection
PDH	Plesiochronous Digital Hierarchy
RS	Regenerator Section
SDH	Synchronous Digital Hierarchy
SPI	Synchronous Physical Interface
TMN	Telecommunications Management Network
TP	Termination Point
TTP	Trail Termination Point
TU	Tributary Unit
TUG	Tributary Unit Group
VC-n	Virtual Container n

5 Payload configuration information model

5.1 Overview

Modification of the SDH frame structure is done by applying an action on relevant managed objects. These actions are included by subclassing of G.774 managed object classes. Actions are applied on the following classes:

New Managed Object Classes

Action used

modifiableAugSink	defineAUGStructure
modifiableAugSource	defineAUGStructure
modifiableAugBidirectional	defineAUGStructure
modifiableTug3Sink	defineTug3Structure
modifiableTug3Source	defineTug3Structure
modifiableTug3Bidirectional	defineTug3Structure
modifiableTug2Sink	defineTug2Structure
modifiableTug2Source	defineTug2Structure
modifiableTug2Bidirectional	defineTug2Structure
modifiableVC4TTPSinkR1	defineVC4Structure
modifiableVC4TTPSourceR1	defineVC4Structure
modifiableVC4TTPBidirectionalR1	defineVC4Structure
modifiableVC3TTPSinkR1	defineVC3Structure

modifiableVC3TTPSourceR1	defineVC3Structure
modifiableVC3TTPBidirectionalR1	defineVC3Structure
modifiableVC2TTPSinkR1	defineClientType
modifiableVC2TTPSource	defineClientType
modifiableVC2TTPBidirectionalR1	defineClientType
modifiableVC12TTPSinkR1	defineClientType
modifiableVC12TTPSource	defineClientType
modifiableVC12TTPBidirectionalR1	defineClientType
modifiableVC11TTPSinkR1	defineClientType
modifiableVC11TTPSource	defineClientType
modifiableVC11TTPBidirectionalR1	defineClientType

Different actions are defined depending on the class of the managed object on which the action is applied.

The behaviour related to the action is specified along with the action definition.

For object classes defined in this Recommendation, the specialization is made from object classes defined in ITU-T G.774 according to the following scheme:

- Sink from Sink;
- Source from Source;
- Bidirectional from Bidirectional.

The **supportableClientList** attribute is used to contain a list of managed object classes. Only instances of classes present in the list may be contained by an instance of the class which contains the **supportableClientList** attribute.

In a case where a TP or **indirectAdaptor** could only contain one type of client, the managed object classes from ITU-T G.774 should be used.

5.2 Requirements

The choice between instantiation of modifiable or non-modifiable indirect adaptor object classes is made according to the make-up and mode of operation of the network element.

The choice between instantiation of modifiable or non-modifiable trail termination point object classes is made according to the make-up and mode of operation of the network element or by direct OS operations.

All the structure below any Trail Termination Point (i.e. **vc4TTP**, **vc3TTP**, ...) is completely configured once they are created according to a predefined default configuration.

Reconfiguration of the multiplexing structure should be supported (i.e. changing a **tug3** from a not multiplexed structure into **7 tug2**).

Configuration or reconfiguration defines the complete subtrees between the Trail Termination Point of the server layer (e.g. **vc4TTP**) and the Connection Termination Points of its clients (e.g. **tu3CTP**, **tu12CTP**, ...).

In a case when a Trail Termination Point can be cross-connected, it can exist independently of any existing path that has to be terminated.

The management system may select if the created connection termination point (e.g. **tu3CTP**) can be flexibly assigned or not.

The concatenation of **Nxtu2CTP** or **Nxau4CTP** is done by means of GTP objects and by means of the **addTpsToGTP** and **removeTpsFromGTP** actions on the fabric managed object.

The management system should be able to select the type of mapping of the PDH payload inside virtual container.

Change of configuration of already cross-connected CTP which is contained directly or indirectly by the object on which the action is applied is not feasible. The involved connection termination points should be disconnected first using the disconnect action onto the fabric.

6 Object classes

Revisions that require re-registration

This clause provides replacement managed object class definitions for the existing ITU-T G.774.2 (1994). Any managed object class replaced by one in this clause is considered to be deprecated. The reasons for the replacement of a managed object class are as follows:

- 1) The replaced managed object class is faulty and must be fixed.
- 2) The replaced managed object class includes an attribute, package, notification or action which has been re-registered in this or another Recommendation.
- 3) The replaced managed object class inherits from a managed object class which has been re-registered in this or another Recommendation.

In each case where a class is replaced, the new class will be registered within this Recommendation. The textual label for the class will be revised to include the text "R1". For example, in the revision of the G.774.2 (1994) managed object class "modifiableVC4TTPBidirectional", the revised label will become "modifiableVC4TTPBidirectionalR1".

Below is a table of classes deprecated from ITU-T G.774.2 (1994) and the G.774.2 classes which replace them:

Deprecated G.774.2 1994 Classes

modifiableVC4TTPBidirectional
 modifiableVC4TTPSink
 modifiableVC4TTPSource
 modifiableVC3TTPBidirectional
 modifiableVC3TTPSink
 modifiableVC3TTPSource
 modifiableVC2TTPBidirectional
 modifiableVC2TTPSink
 modifiableVC12TTPBidirectional
 modifiableVC12TTPSink
 modifiableVC11TTPBidirectional
 modifiableVC11TTPSink

Replacement G.774.2 Classes

modifiableVC4TTPBidirectionalR1
 modifiableVC4TTPSinkR1
 modifiableVC4TTPSourceR1
 modifiableVC3TTPBidirectionalR1
 modifiableVC3TTPSinkR1
 modifiableVC3TTPSourceR1
 modifiableVC2TTPBidirectionalR1
 modifiableVC2TTPSinkR1
 modifiableVC12TTPBidirectionalR1
 modifiableVC12TTPSinkR1
 modifiableVC11TTPBidirectionalR1
 modifiableVC11TTPSinkR1

6.1 Indirect Adaptors

modifiableAugBidirectional MANAGED OBJECT CLASS

DERIVED FROM "Recommendation G.774": augBidirectional;

CHARACTERIZED BY

modifiableAugBidPackage PACKAGE

BEHAVIOUR

modifiableAugBidBehaviour BEHAVIOUR

DEFINED AS

** This CLASS shall be instantiated when change of the SDH frame structure by management operation is supported **

;;

ACTIONS

defineAUGStructure;;

REGISTERED AS { g774-02MObjectClass 1 };

```

modifiableAugSink  MANAGED OBJECT CLASS
    DERIVED FROM "Recommendation G.774": augSink;
    CHARACTERIZED BY
        modifiableAugSinkPackage  PACKAGE
            BEHAVIOUR
                modifiableAugSinkBehaviour  BEHAVIOUR
DEFINED AS
*   This CLASS shall be instantiated when change of the SDH frame structure by
management operation is supported *
;;
    ACTIONS
        defineAUGStructure;;;
REGISTERED AS { g774-02MObjectClass 2 };

modifiableAugSource  MANAGED OBJECT CLASS
    DERIVED FROM "Recommendation G.774": augSource;
    CHARACTERIZED BY
        modifiableAugSourcePackage  PACKAGE
            BEHAVIOUR
                modifiableAugSourceBehaviour  BEHAVIOUR
DEFINED AS
*   This CLASS shall be instantiated when change of the SDH frame structure by
management operation is supported *
;;
    ACTIONS
        defineAUGStructure;;;
REGISTERED AS { g774-02MObjectClass 3 };

modifiableTug3Bidirectional  MANAGED OBJECT CLASS
    DERIVED FROM "Recommendation G.774": tug3Bidirectional;
    CHARACTERIZED BY
        modifiableTug3BidPackage  PACKAGE
            BEHAVIOUR
                modifiableTug3BidBehaviour  BEHAVIOUR
DEFINED AS
*   This CLASS shall be instantiated when change of the SDH frame structure by
management operation is supported *
;;
    ACTIONS
        defineTug3Structure;;;
REGISTERED AS { g774-02MObjectClass 4 };

modifiableTug3Sink  MANAGED OBJECT CLASS
    DERIVED FROM "Recommendation G.774": tug3Sink;
    CHARACTERIZED BY
        modifiableTug3SinkPackage  PACKAGE
            BEHAVIOUR
                modifiableTug3SinkBehaviour  BEHAVIOUR
DEFINED AS
*   This CLASS shall be instantiated when change of the SDH frame structure by
management operation is supported *
;;
    ACTIONS
        defineTug3Structure;;;
REGISTERED AS { g774-02MObjectClass 5 };

modifiableTug3Source  MANAGED OBJECT CLASS
    DERIVED FROM "Recommendation G.774": tug3Source;
    CHARACTERIZED BY
        modifiableTug3SourcePackage  PACKAGE
            BEHAVIOUR
                modifiableTug3SourceBehaviour  BEHAVIOUR

```

```

DEFINED AS
* This CLASS shall be instantiated when change of the SDH frame structure by
management operation is supported *
;;
    ACTIONS
        defineTug3Structure;;;
REGISTERED AS { g774-02MObjectClass 6 };

modifiableTug2Bidirectional MANAGED OBJECT CLASS
    DERIVED FROM "Recommendation G.774": tug2Bidirectional;
    CHARACTERIZED BY
        modifiableTug2BidPackage PACKAGE
        BEHAVIOUR
            modifiableTug2BidBehaviour BEHAVIOUR
DEFINED AS
* This CLASS shall be instantiated when change of the SDH frame structure by
management operation is supported *
;;
    ACTIONS
        defineTug2Structure;;;
REGISTERED AS { g774-02MObjectClass 7 };

modifiableTug2Sink MANAGED OBJECT CLASS
    DERIVED FROM "Recommendation G.774": tug2Sink;
    CHARACTERIZED BY
        modifiableTug2SinkPackage PACKAGE
        BEHAVIOUR
            modifiableTug2SinkBehaviour BEHAVIOUR
DEFINED AS
* This CLASS shall be instantiated when change of the SDH frame structure by
management operation is supported *
;;
    ACTIONS
        defineTug2Structure;;;
REGISTERED AS { g774-02MObjectClass 8 };

modifiableTug2Source MANAGED OBJECT CLASS
    DERIVED FROM "Recommendation G.774": tug2Source;
    CHARACTERIZED BY
        modifiableTug2SourcePackage PACKAGE
        BEHAVIOUR
            modifiableTug2SourceBehaviour BEHAVIOUR
DEFINED AS
* This CLASS shall be instantiated when change of the SDH frame structure by
management operation is supported *
;;
    ACTIONS
        defineTug2Structure;;;
REGISTERED AS { g774-02MObjectClass 9 };

```

6.2 High Order Path Layer

```

modifiableVC4TTPBidirectionalR1 MANAGED OBJECT CLASS
    DERIVED FROM "Recommendation G.774": vc4TTPBidirectionalR1;
    CHARACTERIZED BY
        "Recommendation M.3100": supportableClientListPackage,
        modifiableVC4TTPBidR1Package PACKAGE
        BEHAVIOUR
            modifiableVC4TTPBidR1Behaviour BEHAVIOUR
DEFINED AS
* This CLASS shall be instantiated when change of the SDH frame structure by
management operation is supported *
;;

```

```

    ACTIONS
        defineVC4Structure;;;
REGISTERED AS { g774-02MObjectClass 25 };

modifiableVC4TTPSinkR1  MANAGED OBJECT CLASS
    DERIVED FROM "Recommendation G.774": vc4TTPSinkR1;
    CHARACTERIZED BY
        "Recommendation M.3100": supportableClientListPackage,
    modifiableVC4TTPSinkR1Package  PACKAGE
        BEHAVIOUR
            modifiableVC4TTPSinkR1Behaviour  BEHAVIOUR
DEFINED AS
* This CLASS shall be instantiated when change of the SDH frame structure by
management operation is supported *
;;

    ACTIONS
        defineVC4Structure;;;
REGISTERED AS { g774-02MObjectClass 26 };

modifiableVC4TTPSourceR1  MANAGED OBJECT CLASS
    DERIVED FROM "Recommendation G.774": vc4TTPSourceR1;
    CHARACTERIZED BY
        "Recommendation M.3100": supportableClientListPackage,
    modifiableVC4TTPSourceR1Package  PACKAGE
        BEHAVIOUR
            modifiableVC4TTPSourceR1Behaviour  BEHAVIOUR
DEFINED AS
* This CLASS shall be instantiated when change of the SDH frame structure by
management operation is supported *
;;

    ACTIONS
        defineVC4Structure;;;
REGISTERED AS { g774-02MObjectClass 27 };

modifiableVC3TTPBidirectionalR1  MANAGED OBJECT CLASS
    DERIVED FROM "Recommendation G.774": vc3TTPBidirectionalR1;
    CHARACTERIZED BY
        "Recommendation M.3100": supportableClientListPackage,
    modifiableVC3TTPBidR1Package  PACKAGE
        BEHAVIOUR
            modifiableVC3TTPBidR1Behaviour  BEHAVIOUR
DEFINED AS
* This CLASS shall be instantiated when change of the SDH frame structure by
management operation is supported *
;;

    ACTIONS
        defineVC3Structure;;;
REGISTERED AS { g774-02MObjectClass 28 };

modifiableVC3TTPSinkR1  MANAGED OBJECT CLASS
    DERIVED FROM "Recommendation G.774": vc3TTPSinkR1;
    CHARACTERIZED BY
        "Recommendation M.3100": supportableClientListPackage,
    modifiableVC3TTPSinkR1Package  PACKAGE
        BEHAVIOUR
            modifiableVC3TTPSinkR1Behaviour  BEHAVIOUR
DEFINED AS
* This CLASS shall be instantiated when change of the SDH frame structure by
management operation is supported *
;;

    ACTIONS
        defineVC3Structure;;;
REGISTERED AS { g774-02MObjectClass 29 };

```

```

modifiableVC3TTPSourceR1  MANAGED OBJECT CLASS
    DERIVED FROM "Recommendation G.774": vc3TTPSourceR1;
    CHARACTERIZED BY
        "Recommendation M.3100": supportableClientListPackage,
    modifiableVC3TTPSourceR1Package  PACKAGE
        BEHAVIOUR
    modifiableVC3TTPSourceR1Behaviour  BEHAVIOUR
DEFINED AS
*   This CLASS shall be instantiated when change of the SDH frame structure by
management operation is supported *
;;
    ACTIONS
        defineVC3Structure;;;
REGISTERED AS { g774-02MObjectClass 30 };

```

6.3 Low Order Path Layer

```

modifiableVC2TTPBidirectionalR1  MANAGED OBJECT CLASS
    DERIVED FROM "Recommendation G.774": vc2TTPBidirectionalR1;
    CHARACTERIZED BY
        "Recommendation M.3100": supportableClientListPackage,
    modifiableVC2TTPBidR1Package  PACKAGE
        BEHAVIOUR
    modifiableVC2TTPBidR1Behaviour  BEHAVIOUR
DEFINED AS
*   This CLASS shall be instantiated when change of the SDH frame structure by
management operation is supported *
;;
    ACTIONS
        defineClientType;;;
REGISTERED AS { g774-02MObjectClass 31 };

```

```

modifiableVC2TTPSinkR1  MANAGED OBJECT CLASS
    DERIVED FROM "Recommendation G.774": vc2TTPSinkR1;
    CHARACTERIZED BY
        "Recommendation M.3100": supportableClientListPackage,
    modifiableVC2TTPSinkR1Package  PACKAGE
        BEHAVIOUR
    modifiableVC2TTPSinkR1Behaviour  BEHAVIOUR
DEFINED AS
*   This CLASS shall be instantiated when change of the SDH frame structure by
management operation is supported *
;;
    ACTIONS
        defineClientType;;;
REGISTERED AS { g774-02MObjectClass 32 };

```

```

modifiableVC2TTPSource  MANAGED OBJECT CLASS
    DERIVED FROM "Recommendation G.774": vc2TTPSource;
    CHARACTERIZED BY
        "Recommendation M.3100": supportableClientListPackage,
    modifiableVC2TTPSourcePackage  PACKAGE
        BEHAVIOUR
    modifiableVC2TTPSourceBehaviour  BEHAVIOUR
DEFINED AS
*   This CLASS shall be instantiated when change of the SDH frame structure by
management operation is supported *
;;
    ACTIONS
        defineClientType;;;
REGISTERED AS { g774-02MObjectClass 18 };

```

```

modifiableVC12TTPBidirectionalR1  MANAGED OBJECT CLASS
    DERIVED FROM "Recommendation G.774": vc12TTPBidirectionalR1;
    CHARACTERIZED BY
        "Recommendation M.3100": supportableClientListPackage,
        modifiableVC12TTPBidR1Package  PACKAGE
        BEHAVIOUR
            modifiableVC12TTPBidR1Behaviour  BEHAVIOUR
DEFINED AS
*   This CLASS shall be instantiated when change of the SDH frame structure by
management operation is supported *
;;
    ACTIONS
        defineClientType;;;
REGISTERED AS { g774-02MObjectClass 33 };

modifiableVC12TTPSinkR1  MANAGED OBJECT CLASS
    DERIVED FROM "Recommendation G.774": vc12TTPSinkR1;
    CHARACTERIZED BY
        "Recommendation M.3100": supportableClientListPackage,
        modifiableVC12TTPSinkR1Package  PACKAGE
        BEHAVIOUR
            modifiableVC12TTPSinkR1Behaviour  BEHAVIOUR
DEFINED AS
*   This CLASS shall be instantiated when change of the SDH frame structure by
management operation is supported *
;;
    ACTIONS
        defineClientType;;;
REGISTERED AS { g774-02MObjectClass 34 };

modifiableVC12TTPSource  MANAGED OBJECT CLASS
    DERIVED FROM "Recommendation G.774": vc12TTPSource;
    CHARACTERIZED BY
        "Recommendation M.3100": supportableClientListPackage,
        modifiableVC12TTPSourcePackage  PACKAGE
        BEHAVIOUR
            modifiableVC12TTPSourceBehaviour  BEHAVIOUR
DEFINED AS
*   This CLASS shall be instantiated when change of the SDH frame structure by
management operation is supported *
;;
    ACTIONS
        defineClientType;;;
REGISTERED AS { g774-02MObjectClass 21 };

modifiableVC11TTPBidirectionalR1  MANAGED OBJECT CLASS
    DERIVED FROM "Recommendation G.774": vc11TTPBidirectionalR1;
    CHARACTERIZED BY
        "Recommendation M.3100": supportableClientListPackage,
        modifiableVC11TTPBidR1Package  PACKAGE
        BEHAVIOUR
            modifiableVC11TTPBidR1Behaviour  BEHAVIOUR
DEFINED AS
*   This CLASS shall be instantiated when change of the SDH frame structure by
management operation is supported *
;;
    ACTIONS
        defineClientType;;;
REGISTERED AS { g774-02MObjectClass 35 };

```

```

modifiableVC11TTPSinkR1  MANAGED OBJECT CLASS
    DERIVED FROM "Recommendation G.774": vc11TTPSinkR1;
    CHARACTERIZED BY
        "Recommendation M.3100": supportableClientListPackage,
        modifiableVC11TTPSinkR1Package  PACKAGE
        BEHAVIOUR
            modifiableVC11TTPSinkR1Behaviour  BEHAVIOUR
DEFINED AS
*   This CLASS shall be instantiated when change of the SDH frame structure by
management operation is supported *
;;
    ACTIONS
        defineClientType;;;
REGISTERED AS { g774-02MObjectClass 36 };

modifiableVC11TTPSource  MANAGED OBJECT CLASS
    DERIVED FROM "Recommendation G.774": vc11TTPSource;
    CHARACTERIZED BY
        "Recommendation M.3100": supportableClientListPackage,
        modifiableVC11TTPSourcePackage  PACKAGE
        BEHAVIOUR
            modifiableVC11TTPSourceBehaviour  BEHAVIOUR
DEFINED AS
*   This CLASS shall be instantiated when change of the SDH frame structure by
management operation is supported *
;;
    ACTIONS
        defineClientType;;;
REGISTERED AS { g774-02MObjectClass 24 };

```

7 Packages

None.

8 Attributes

None.

9 Actions

9.1 Define AUG Structure

```

defineAUGStructure  ACTION
    BEHAVIOUR    defineAUGStructureBehaviour;
    MODE        CONFIRMED;
    PARAMETERS    definesDHStructureError;
    WITH INFORMATION SYNTAX    SDHConfASN1.AUGStructureInfo;
REGISTERED AS { g774-02Action 1 };
defineAUGStructureBehaviour  BEHAVIOUR
DEFINED AS

```

*This action is used to select between a one au4 structured aug and a three au3 structured aug.

If the object(s) contained by the aug already matche(s) the "AUGStructureInfo" parameter nothing is raised. In all other cases objects contained by the aug are deleted and corresponding to the "AUGStructureInfo" parameter one **au4CTP**, or three **au3CTP** are created.

The corresponding connection termination point(s) are created with the **crossConnectionPointerPackage** package according to the "**connectionInfo**" parameter. If the "unknown" choice of the "**connectionInfo**" parameter is selected the choice is left to the network element according to its make-up and mode.

When applied on a sink managed object, sink connection termination points are created.

When applied on a source managed object, source connection termination points are created.

When applied on a bidirectional managed object, bidirectional connection termination points are created.

The action fails if:

- change of configuration applies on an already existing cross-connected connection termination point contained directly or indirectly by the object on which the action is applied;
- the multiplexing structure is not supported by the network element;
- at least one created connection termination point is not cross-connectable and the **crossConnectable** choice of the "**connectionInfo**" parameter is selected.

NOTE – The definition of the connection termination point managed object classes which represent the adaptation function of the characteristic information of the client inside SDH virtual container is not already defined.*

;

9.2 Define VC4 Structure

```
defineVC4Structure ACTION
    BEHAVIOUR    defineVC4StructureBehaviour,
                defineTug3StructureBehaviour,
                defineTug2StructureBehaviour;
    MODE        CONFIRMED;
    PARAMETERS    defineSDHStructureError;
    WITH INFORMATION SYNTAX    SDHConfASN1.VC4StructureInfo;
REGISTERED AS { g774-02Action 2 };
defineVC4StructureBehaviour BEHAVIOUR
DEFINED AS
```

*If the action parameter is "**notSubmultiplexed**" and contains "**noClient**" all contained objects are deleted. If the action parameter is "**notSubmultiplexed**" and contains a value different from "**noClient**" a CTP which corresponds to the client of the VC4 is created and the existing contained object(s) are deleted.

If the action parameter is "**threeTUG3**", three tug3 are created if they do not already exist, contained objects are deleted. Each TUG3 is structured according to the "**TUG3StructureInfo**" parameter ranked according to the time sequence of the tug3.

If the action has succeeded then the C2 signal label is updated according to the new frame structure:

- When applied on a sink VC4 the expected signal label is updated.
- When applied on a source VC4 the sent signal label is updated.
- When applied on a bidirectional VC4 both the expected and sent signal label are updated.

NOTE – The definition of the connection termination point managed object classes which represent the adaptation function of the characteristic information of the client inside SDH virtual container is not already defined.*

;

9.3 Define VC3 Structure

```
defineVC3Structure ACTION
    BEHAVIOUR    defineVC3StructureBehaviour,
                defineTug2StructureBehaviour;
    MODE        CONFIRMED;
    PARAMETERS   defineSDHStructureError;
    WITH INFORMATION SYNTAX    SDHConfASN1.VC3StructureInfo;
REGISTERED AS { g774-02Action 3 };
defineVC3StructureBehaviour BEHAVIOUR
DEFINED AS
```

*If the action parameter is **"notSubmultiplexed"** and contains **"noClient"** all contained objects are deleted. If the action parameter is **"notSubmultiplexed"** and contains a value different from **"noClient"** a CTP which corresponds to the client of the VC3 is created and the existing contained objects are deleted.

If the action parameter is **"sevenTUG2"**, seven tug2 are created if they do not already exist, contained CTP are deleted. Each TUG2 is structured according to the **"TUG2StructureInfo"** parameter ranked according to the time sequence of the tug2.

If the action has succeeded then the C2 signal label is updated according to the new frame structure:

- When applied on a sink VC3 the expected signal label is updated.
- When applied on a source VC3 the sent signal label is updated.
- When applied on a bidirectional VC3 both the expected and sent signal label are updated.

NOTE – The definition of the connection termination point managed object classes which represent the adaptation function of the characteristic information of the client inside SDH virtual container is not already defined.*

;

9.4 Define Tug3 Structure

```
defineTug3Structure ACTION
    BEHAVIOUR    defineTug3StructureBehaviour,
                defineTug2StructureBehaviour;
    MODE        CONFIRMED;
    PARAMETERS   defineSDHStructureError;
    WITH INFORMATION SYNTAX    SDHConfASN1.TUG3StructureInfo;
REGISTERED AS { g774-02Action 4 };
defineTug3StructureBehaviour BEHAVIOUR
DEFINED AS
```

*If the **tug3StructureInfo** parameter is **"oneTU3"** a tu3CTP is created if it does not already exist and the existing contained object(s) are deleted.

If the **tug3StructureInfo** parameter is **"sevenTUG2"**, seven tug2 are created if they do not already exist, contained CTP is deleted. Each TUG2 is structured according to the **"TUG2StructureInfo"** parameter ranked according to the time sequence of the tug2.

NOTE – The definition of the connection termination point managed object classes which represent the adaptation function of the characteristic information of the client inside SDH virtual container is not already defined.*

;