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

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Synchronous Digital Hierarchy (SDH) management of lower order path trace and interface labelling for the network element view

ITU-T Recommendation G.774.7

(Previously CCITT Recommendation)

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ITU-T RECOMMENDATION G.774.7

SYNCHRONOUS DIGITAL HIERARCHY (SDH) MANAGEMENT OF LOWER ORDER PATH TRACE AND INTERFACE LABELLING FOR THE NETWORK ELEMENT VIEW

Summary

This Recommendation provides an information model for the Management of Lower Order Path Trace and Interface Labelling in Synchronous Digital Hierarchy (SDH) Networks. This model describes the managed object classes and their properties for the Lower Order Path Trace and Interface Labelling functions as related to SDH Network Elements. These objects are useful to describe information exchanged across interfaces defined in Recommendation M.3010 [12] [Telecommunications Management Network (TMN) architecture for the management of the Lower Order Path Trace and Interface Labelling functions].

Source

ITU-T Recommendation G.774.7 was prepared by ITU-T Study Group 15 (1993-1996) and was approved under the WTSC Resolution No. 1 procedure on the 8th of November 1996.

Keywords

Action, ASN.1, Attribute, GDMO, Information Model, Managed Object Class, Notification, Synchronous Digital Hierarchy

FOREWORD

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The World Telecommunication Standardization Conference (WTSC), which meets every four years, establishes the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

The approval of Recommendations by the Members of the ITU-T is covered by the procedure laid down in WTSC Resolution No. 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, the ITU had/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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Recommendation G.774.7

SYNCHRONOUS DIGITAL HIERARCHY (SDH) MANAGEMENT OF LOWER ORDER PATH TRACE AND INTERFACE LABELLING FOR THE NETWORK ELEMENT VIEW

(Geneva, 1996)

The ITU,

considering

a) that Recommendation G.707 gives a coherent set of specifications for the Synchronous Digital Hierarchy (SDH) and the Network Node Interface (NNI);

b) that Recommendations G.783 and G.784 form a coherent set of specifications for SDH multiplex equipment functions and management;

c) that Recommendation M.3010 defines the principles for a Telecommunications Management Network (TMN);

d) that Recommendation G.773 defines the protocol suites for Q-interfaces;

e) that Recommendation M.3100 defines a Generic Network Information Model for the exchange of management information;

f) that Recommendation G.774 defines an SDH Management Information Model for the Network Element View;

g) that Recommendation G.774.1 defines an SDH Management Information Model for the Network Element View for Performance Monitoring;

h) that Recommendation G.774.2 defines an SDH Management Information Model for the Network Element View for Configuration of the Payload Structure;

i) that Recommendation G.774.3 defines an SDH Management Information Model for the Network Element View for Management of Multiplex Section Protection;

j) that Recommendation G.774.4 defines an SDH Management Information Model for the Network Element View for Management of Subnetwork Connection;

k) that Recommendation G.774.5 defines an SDH Management Information Model for the Network Element View for Management of connection Supervision Functionality (HCS/LCS),

recommends

that the management of lower order path trace and labelling of SDH interfaces be carried out by using the information model defined in accordance with the details contained within this Recommendation.

1 Scope

1.1 Scope of this Recommendation

This Recommendation covers the following functionality:

- the ability to configure and retrieve a label associated with electrical SDH physical interfaces;
- the ability to configure and retrieve a label associated with optical SDH physical interfaces;
- the ability to configure path trace on SDH lower order paths.

The rationale for supporting the above functionality is that the functions were agreed as changes in the G.774 Implementor's Guide, but these changes are functional extensions and not defect fixes. Therefore, a specific new Recommendation was created.

1.2 Structure of this Recommendation

Subclause 5.1 provides an overview of the SDH Interface Label and Lower Order Path Trace information model. Clauses 6-12 describe the information model using the notation mechanisms defined in Recommendation X.722 (Guidelines for the Definition of Managed Objects) [17]. Clause 15 contains the syntax definitions of the information carried in the protocol using Abstract Syntax Notation One (ASN.1) defined in Recommendation X.208 [13]. Clauses 5-15 are normative; all other text is informative.

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; all 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.

[1] ITU-T Recommendation G.707 (1996), *Network node interface for the Synchronous Digital Hierarchy (SDH).*

[2] ITU-T Recommendation G.774 (1992), *Synchronous Digital Hierarchy (SDH) management information model for the network element view.*

[3] ITU-T Recommendation G.774.01 (1994), *Synchronous Digital Hierarchy (SDH) performance monitoring for the network element view.*

[4] ITU-T Recommendation G.774.02 (1994), *Synchronous Digital Hierarchy (SDH) configuration of the payload structure for the network element view.*

[5] ITU-T Recommendation G.774.03 (1994), *Synchronous Digital Hierarchy (SDH) management of multiplex-section protection for the network element view.*

[6] ITU-T Recommendation G.774.04 (1995), *Synchronous Digital Hierarchy (SDH) management of the subnetwork connection for the network element view.*

[7] ITU-T Recommendation G.774.05 (1995), *Synchronous Digital Hierarchy (SDH) management of connection supervision functionality (HCS/LCS) for the network element view.*

[8] ITU-T Recommendation G.783 (1997), *Characteristics of Synchronous Digital Hierarchy (SDH) equipment functional blocks.*

[9] ITU-T Recommendation G.784 (1994), *Synchronous Digital Hierarchy (SDH) management.*

[10] ITU-T Recommendation G.805 (1995), *Generic functional architecture of transport networks*.

[11] ITU-T Recommendation M.3100 (1995), *Generic network information model.*

[12] ITU-T Recommendation M.3010 (1996), *Principles for a telecommunications management network.*

[13] CCITT Recommendation X.208 (1988), *Specification of Abstract Syntax Notation One (ASN.1).*

[14] CCITT Recommendation X.701 (1992), *Information Technology – Open Systems Interconnection – Systems management overview.*

[15] CCITT Recommendation X.720 (1992), *Information Technology – Open Systems Interconnection – Structure of management information: Management information model.*

[16] CCITT Recommendation X.721 (1992), *Information Technology – Open Systems Interconnection – Structure of management information: Definition of management information*.

[17] CCITT Recommendation X.722 (1992), *Information Technology – Open Systems Interconnection – Structure of management information: Guidelines for the definition of managed objects.*

3 Definitions

None.

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 Multiplexer Section

NE Network Element

OS Operation System

OSI Open System Interconnection

PDH Plesiochronous Digital Hierarchy

RS Regenerator Section

SDH Synchronous Digital Hierarchy

SPI Synchronous Physical Interface

TMN Telecommunication Management Network

TP Termination Point

TTP Trail Termination Point

TU Tributary Unit

TUG Tributary Unit Group

VC-n Virtual Container n

5 Lower Order Path Trace and Interface Labelling Information Model

5.1 Overview

Labelling of electrical and optical SDH physical interfaces is done using the following managed object classes which contain the Recommendation M.3100 [11] userlLabel attribute.

New Managed Object Classes
labelledElectricalSPITTPBidirectional
labelledElectricalSPITTPSink
labelledElectricalSPITTPSource
labelledOpticalSPITTPBidirectional
labelledOpticalSPITTPSink
labelledOpticalSPITTPSource

Configuration of the SDH lower order path trace function is done using the following managed object classes and packages which contain attributes to provide access to and control of the j2PathTrace bytes in the SDH lower order path.

New Managed Object Classes
vc11PathTraceTTPBidirectional
vc11PathTraceTTPSink
vc11PathTraceTTPSource
vc12PathTraceTTPBidirectional
vc12PathTraceTTPSink
vc12PathTraceTTPSource
vc2PathTraceTTPBidirectional
vc2PathTraceTTPSink
vc2PathTraceTTPSource
modifiableVC2PathTraceTTPSink
modifiableVC2PathTraceTTPSource
modifiableVC2PathTraceTTPBidirectional
modifiableVC12PathTraceTTPSink
modifiableVC12PathTraceTTPSource
modifiable VC12PathTraceTTPBidirectional
modifiableVC11PathTraceTTPBidirectional
modifiableVC11PathTraceTTPSink
modifiableVC11PathTraceTTPSource

New Packages
vc11-2PathTraceSinkPackage
vc11-2PathTraceSourcePackage

5.2 Requirements

The information model must satisfy the following requirements:

- the ability to set and get the value a user specific label associated with an individual electrical SDH physical interface;
- the ability to set and get the value a user specific label associated with an individual optical SDH physical interface;
- the ability to set and get the value of the transmitted path trace identifier for an individual SDH lower order path;
- the ability to set and get the value of the expected path trace identifier for an individual SDH lower order path;
- the ability to get the value of the received path trace identifier for an individual SDH lower order path.

6 Object Classes

6.1 Labelled Electrical SPI Trail Termination Point Object Classes

```
labelledElectricalSPITTPBidirectional MANAGED OBJECT CLASS
        DERIVED FROM
                labelledElectricalSPITTPSink,
                labelledElectricalSPITTPSource;
REGISTERED AS { g774-7ObjectClass 1 };

labelledElectricalSPITTPSink MANAGED OBJECT CLASS
        DERIVED FROM   "Recommendation G.774":electricalSPITTPSink;
        CHARACTERIZED BY
                labelledElectricalSPITTPSinkPkg PACKAGE
                BEHAVIOUR
                        labelledElectricalSPITTPSinkPkgBehaviour BEHAVIOUR
                        DEFINED AS
                        *This object class provides the ability to label electrical SDH
                        physical trail termination points.*
                ;;
                ATTRIBUTES
                "Recommendation M.3100:1992":userLabel    GET-REPLACE;
        ;;
REGISTERED AS { g774-7ObjectClass 2 };

labelledElectricalSPITTPSource MANAGED OBJECT CLASS
        DERIVED FROM
                "Recommendation G.774":electricalSPITTPSource;
        CHARACTERIZED BY
                labelledElectricalSPITTPSourcePkg PACKAGE
                BEHAVIOUR
                        labelledElectricalSPITTPSourcePkgBehaviour BEHAVIOUR
                        DEFINED AS
                        *This object class provides the ability to label electrical SDH
                        physical trail termination points.*
                ;;
                ATTRIBUTES
                "Recommendation M.3100:1992":userLabel    GET-REPLACE;
        ;;
REGISTERED AS { g774-7ObjectClass 3 };
```

6.2 Labelled Optical SPI Trail Termination Point Object Classes

```
labelledOpticalSPITTPBidirectional MANAGED OBJECT CLASS
        DERIVED FROM
                labelledOpticalSPITTPSink,
                labelledOpticalSPITTPSource;
REGISTERED AS { g774-7ObjectClass 4 };

labelledOpticalSPITTPSink MANAGED OBJECT CLASS
        DERIVED FROM   "Recommendation G.774":opticalSPITTPSink;
        CHARACTERIZED BY
                labelledOpticalSPITTPSinkPkg PACKAGE
                BEHAVIOUR
                        labelledOpticalSPITTPSinkPkgBehaviour BEHAVIOUR
                        DEFINED AS
                        *This object class provides the ability to label optical SDH
                        physical trail termination points.*
                ;;
                ATTRIBUTES
                "Recommendation M.3100:1992":userLabel    GET-REPLACE;
        ;;
REGISTERED AS { g774-7ObjectClass 5 };

labelledOpticalSPITTPSource MANAGED OBJECT CLASS
        DERIVED FROM
                "Recommendation G.774": opticalSPITTPSource;
        CHARACTERIZED BY
                labelledOpticalSPITTPSourcePkg PACKAGE
                BEHAVIOUR
                        labelledOpticalSPITTPSourcePkgBehaviour BEHAVIOUR
                        DEFINED AS
                        *This object class provides the ability to label optical SDH
                        physical trail termination points.*
                ;;
                ATTRIBUTES
                "Recommendation M.3100:1992":userLabel    GET-REPLACE;
        ;;
REGISTERED AS { g774-7ObjectClass 6 };
```

6.3 Virtual Container 11 Path Trace Object Classes

```
vc11PathTraceTTPBidirectional MANAGED OBJECT CLASS
        DERIVED FROM
                "Recommendation G.774":vc11TTPBidirectionalR1,
                vc11PathTraceTTPSink,
                vc11PathTraceTTPSource;
REGISTERED AS { g774-7ObjectClass 7 };

vc11PathTraceTTPSink MANAGED OBJECT CLASS
        DERIVED FROM          "Recommendation G.774":vc11TTPSinkR1;
        CHARACTERIZED BY
                vc11-2PathTraceSinkPackage,
                vc11TTPSinkPathTracePkg PACKAGE
                BEHAVIOUR
                        vc11TTPSinkPathTracePkgBehaviour BEHAVIOUR
                        DEFINED AS
                        *This object class supports the SDH lower order path trace
                        function. This CLASS shall be instantiated when lower order
                        path trace is supported.*
                ;;
```

```
        ;;
REGISTERED AS { g774-7ObjectClass 8 };

vc11PathTraceTTPSource MANAGED OBJECT CLASS
        DERIVED FROM            "Recommendation G.774":vc11TTPSource;
        CHARACTERIZED BY
                vc11-2PathTraceSourcePackage,
                vc11TTPSourcePkgR1 PACKAGE
                BEHAVIOUR
                        vc11TTPSourcePkgR1Behaviour BEHAVIOUR
                        DEFINED AS
                        *This object class supports the SDH lower order path trace
                        function. This CLASS shall be instantiated when lower order
                        path trace is supported.*
                ;;
        ;;
REGISTERED AS { g774-7ObjectClass 9 };
```

6.4 Virtual Container 12 Object Classes

```
vc12PathTraceTTPBidirectional MANAGED OBJECT CLASS
        DERIVED FROM   "Recommendation G.774":vc12TTPBidirectionalR1,
                       vc12PathTraceTTPSink,
                       vc12PathTraceTTPSource;
REGISTERED AS { g774-7ObjectClass 10 };

vc12PathTraceTTPSink MANAGED OBJECT CLASS
        DERIVED FROM   "Recommendation G.774":vc12TTPSinkR1;
        CHARACTERIZED BY
                vc11-2PathTraceSinkPackage,
                vc12TTPSinkPathTracePkg PACKAGE
                BEHAVIOUR
                        vc12TTPSinkPathTracePkgBehaviour BEHAVIOUR
                        DEFINED AS
                        *This object class supports the SDH lower order path trace
                        function. This CLASS shall be instantiated when lower order
                        path trace is supported.*
                ;;
        ;;
REGISTERED AS { g774-7ObjectClass 11 };

vc12PathTraceTTPSource MANAGED OBJECT CLASS
        DERIVED FROM   "Recommendation G.774":vc12TTPSource;
        CHARACTERIZED BY
                vc11-2PathTraceSourcePackage,
                vc12TTPSourcePkgR1 PACKAGE
                BEHAVIOUR
                        vc12TTPSourcePkgR1Behaviour BEHAVIOUR
                        DEFINED AS
                        *This object class supports the SDH lower order path trace
                        function. This CLASS shall be instantiated when lower order
                        path trace is supported.*
                ;;
        ;;
REGISTERED AS { g774-7ObjectClass 12 };
```

6.5 Virtual Container 2 Object Classes

```
vc2PathTraceTTPBidirectional MANAGED OBJECT CLASS
        DERIVED FROM   "Recommendation G.774":vc2TTPBidirectionalR1,
                       vc2PathTraceTTPSink,
                       vc2PathTraceTTPSource;
REGISTERED AS { g774-7ObjectClass 13 };

vc2PathTraceTTPSink MANAGED OBJECT CLASS
        DERIVED FROM   "Recommendation G.774":vc2TTPSinkR1;
        CHARACTERIZED BY
                vc11-2PathTraceSinkPackage,
                vc2TTPSinkPathTracePkg PACKAGE
                BEHAVIOUR
                        vc2TTPSinkPathTracePkgBehaviour BEHAVIOUR
                        DEFINED AS
                        *This object class supports the SDH lower order path trace
                        function. This CLASS shall be instantiated when lower order
                        path trace is supported.*
                ;;
        ;;
REGISTERED AS { g774-7ObjectClass 14 };

vc2PathTraceTTPSource MANAGED OBJECT CLASS
        DERIVED FROM   "Recommendation G.774":vc2TTPSource;
        CHARACTERIZED BY
                vc11-2PathTraceSourcePackage,
                vc2TTPSourcePkgR1 PACKAGE
                BEHAVIOUR
                        vc2TTPSourcePkgR1Behaviour BEHAVIOUR
                        DEFINED AS
                        *This object class supports the SDH lower order path trace
                        function.This CLASS shall be instantiated when lower order path
                        trace is supported.*
                ;;
        ;;
REGISTERED AS { g774-7ObjectClass 15 };
```

6.6 Modifiable Virtual Container 2 Path Trace Object Classes

```
modifiableVC2PathTraceTTPBidirectional MANAGED OBJECT CLASS
        DERIVED FROM vc2PathTraceTTPBidirectional;
        CHARACTERIZED BY
                "Recommendation M.3100:1992": supportableClientListPackage,
                modifiableVC2PathTraceTTPBidPackage PACKAGE
                        BEHAVIOUR
                        modifiableVC2PathTraceTTPBidBehaviour  BEHAVIOUR
                        DEFINED AS
                        *This CLASS shall be instantiated when change of the SDH
                        frame structure by management operation is supported and lower
                        order path trace is supported.*
                ;;
                ACTIONS
                        "Recommendation G.774.2:1993":defineClientType;;;
REGISTERED AS {  g774-7ObjectClass 16  };

modifiableVC2PathTraceTTPSink MANAGED OBJECT CLASS
        DERIVED FROM vc2PathTraceTTPSink;
        CHARACTERIZED BY
                "Recommendation M.3100:1992": supportableClientListPackage,
```

```
            modifiableVC2PathTraceTTPSinkPackage PACKAGE
            BEHAVIOUR
                  modifiableVC2PathTraceTTPSinkBehaviour  BEHAVIOUR
                  DEFINED AS
                  *This CLASS shall be instantiated when change of the SDH
                  frame structure by management operation is supported and lower
                  order path trace is supported.*
            ;;
            ACTIONS
                  "Recommendation G.774.2:1993":defineClientType;;;
REGISTERED AS {  g774-7ObjectClass 17  };

modifiableVC2PathTraceTTPSource MANAGED OBJECT CLASS
      DERIVED FROM vc2PathTraceTTPSource;
      CHARACTERIZED BY
            "Recommendation M.3100:1992": supportableClientListPackage,
            modifiableVC2PathTraceTTPSourcePackage PACKAGE
            BEHAVIOUR
                  modifiableVC2PathTraceTTPSourceBehaviour  BEHAVIOUR
                  DEFINED AS
                  *This CLASS shall be instantiated when change of the SDH
                  frame structure by management operation is supported and lower
                  order path trace is supported.*
            ;;
            ACTIONS
                  "Recommendation G.774.2:1993":defineClientType;;;
REGISTERED AS {  g774-7ObjectClass 18  };
```

6.7 Modifiable Virtual Container 12 Path Trace Object Classes

```
modifiableVC12PathTraceTTPBidirectional MANAGED OBJECT CLASS
      DERIVED FROM vc12PathTraceTTPBidirectional;
      CHARACTERIZED BY
            "Recommendation M.3100:1992": supportableClientListPackage,
            modifiableVCPathTrace12TTPBidPackage PACKAGE
            BEHAVIOUR
                  modifiableVC12PathTraceTTPBidBehaviour  BEHAVIOUR
                  DEFINED AS
                  *This CLASS shall be instantiated when change of the SDH
                  frame structure by management operation is supported and lower
                  order path trace is supported.*
            ;;
            ACTIONS
                  “Recommendation G.774.2:1993”:defineClientType;;;
REGISTERED AS {  g774-7ObjectClass 19  };

modifiableVCPathTrace12TTPSink MANAGED OBJECT CLASS
      DERIVED FROM vc12PathTraceTTPSink;
      CHARACTERIZED BY
            "Recommendation M.3100:1992": supportableClientListPackage,
            modifiableVC12PathTraceTTPSinkPackage PACKAGE
            BEHAVIOUR
                  modifiableVC12PathTraceTTPSinkBehaviour  BEHAVIOUR
                  DEFINED AS
                  *This CLASS shall be instantiated when change of the SDH
                  frame structure by management operation is supported and lower
                  order path trace is supported.*
            ;;
```

```
            ACTIONS
                "Recommendation G.774.2:1993":defineClientType;;;
REGISTERED AS {  g774-7ObjectClass 20  };

modifiableVC12PathTraceTTPSource MANAGED OBJECT CLASS
        DERIVED FROM vc12PathTraceTTPSource;
        CHARACTERIZED BY
                "Recommendation M.3100:1992":  supportableClientListPackage,
                modifiableVC12PathTraceTTPSourcePackage PACKAGE
                BEHAVIOUR
                        modifiableVC12PathTraceTTPSourceBehaviour  BEHAVIOUR
                        DEFINED AS
                        *This CLASS shall be instantiated when change of the SDH
                         frame structure by management operation is supported and
                        lower order path trace is supported.*
                ;;
                ACTIONS
                        "Recommendation G.774.2:1993":defineClientType;;;
REGISTERED AS {  g774-7ObjectClass 21  };
```

6.8 Modifiable Virtual Container 11 Path Trace Object Classes

```
modifiableVC11PathTraceTTPBidirectional MANAGED OBJECT CLASS
        DERIVED FROM vc11PathTraceTTPBidirectional;
        CHARACTERIZED BY
                "Recommendation M.3100:1992": supportableClientListPackage,
                modifiableVC11PathTraceTTPBidPackage PACKAGE
                BEHAVIOUR
                        modifiableVC11PathTraceTTPBidBehaviour  BEHAVIOUR
                        DEFINED AS
                        *This CLASS shall be instantiated when change of the SDH
                        frame structure by management operation is supported and lower
                        order path trace is supported.*
                ;;
                ACTIONS
                        "Recommendation G.774.2:1993":defineClientType;;;
REGISTERED AS {  g774-7ObjectClass 22  };

modifiableVC11PathTraceTTPSink MANAGED OBJECT CLASS
        DERIVED FROM vc11PathTraceTTPSink;
        CHARACTERIZED BY
                "Recommendation M.3100:1992": supportableClientListPackage,
                modifiableVC11PathTraceTTPSinkPackage PACKAGE
                BEHAVIOUR
                        modifiableVC11PathTraceTTPSinkBehaviour  BEHAVIOUR
                        DEFINED AS
                        *This CLASS shall be instantiated when change of the SDH
                        frame structure by management operation is supported and lower
                        order path trace is supported.*
                ;;
                ACTIONS
                        "Recommendation G.774.2:1993":defineClientType;;;
REGISTERED AS {  g774-7ObjectClass 23  };

modifiableVC11PathTraceTTPSource MANAGED OBJECT CLASS
        DERIVED FROM vc11PathTraceTTPSource;
        CHARACTERIZED BY
                "Recommendation M.3100:1992": supportableClientListPackage,
                modifiableVC11PathTraceTTPSourcePackage PACKAGE
```

```
        BEHAVIOUR
            modifiableVC11PathTraceTTPSourceBehaviour  BEHAVIOUR
            DEFINED AS
            *This CLASS shall be instantiated when change of the SDH
            frame structure by management operation is supported and lower
            order path trace is supported.*
        ;;
        ACTIONS
            "Recommendation G.774.2:1993":defineClientType;;;
REGISTERED AS {  g774-7ObjectClass 24  };
```

7 Packages

7.1 Virtual Container 11-2 Path Trace Packages

```
vc11-2PathTraceSinkPackage PACKAGE
        BEHAVIOUR
            vc11-2PathTraceSinkPackageBehaviour BEHAVIOUR
                DEFINED AS
                    *When 16 bytes are supported, the 16 bytes of the path trace shall be
                    conveyed at the management interface in both ways. This is a local
                    issue whether the NE recompute the CRC7 under a replace operation.*
        ;;
        ATTRIBUTES
            "Recommendation G.774.5":j2pathTraceExpected
            DEFAULT VALUE SDHPTLASN1.Null
            GET-REPLACE REPLACE-WITH-DEFAULT,
            "Recommendation G.774.5":j2PathTraceReceive                GET;
;

vc11-2PathTraceSourcePackage PACKAGE
        BEHAVIOUR
            vc11-2PathTraceSourcePackageBehaviour BEHAVIOUR
                DEFINED AS
                    *When 16 bytes are supported, the 16 bytes of the path trace shall be
                    conveyed at the management interface.*
        ;;
        ATTRIBUTES
            "Recommendation G.774.5":j2pathTraceSend  GET-REPLACE;
;
```

8 Attributes

None.

9 Actions

None.

10 Notifications

None.

11 Parameters

None.

12 Name Bindings

None.

13 Constraint Rules

None.

14 Subordination Rules

None.

15 Supporting ASN.1 Productions

This clause contains all the ASN.1 definitions required to support all the new GDMO definitions within this Recommendation.

```
SDHPTLASN1 { itu-t(0) recommendation(0) g(7) g774(774) hyphen(127) ptl(7)informationModel(0)
        asn1Module(2) sdhptl (0) }
DEFINITIONS IMPLICIT TAGS ::=
BEGIN
- - EXPORTS everything
sdhPTL OBJECT IDENTIFIER ::= { itu-t(0) recommendation(0) g(7) g774(774)
hyphen(127) ptl(7) informationModel(0) }
g774-7MObjectClass OBJECT IDENTIFIER ::= { sdhPTL managedObjectClass(3) }
g774-7Action OBJECT IDENTIFIER ::= { sdhPTL action(9) }
g774-7NameBinding OBJECT IDENTIFIER ::= { sdhPTL nameBinding(6) }
g774-7Parameter OBJECT IDENTIFIER ::= { sdhPTL parameter(5)}
g774-7Notification OBJECT IDENTIFIER ::= { sdhPTL notification(10) }
g774-7Package OBJECT IDENTIFIER ::= { sdhPTL package(4) }
g774-7Attribute OBJECT IDENTIFIER ::= { sdhPTL attribute(7) }
Null ::= NULL
END
- - end of supporting asn.1 productions
```

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