



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

G.774.7

(11/96)

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

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

**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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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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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] userLabel 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
modifiableVC12PathTraceTTPBidirectional
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
```

ITU-T RECOMMENDATIONS SERIES

- Series A Organization of the work of the ITU-T
- Series B Means of expression: definitions, symbols, classification
- Series C General telecommunication statistics
- Series D General tariff principles
- Series E Overall network operation, telephone service, service operation and human factors
- Series F Non-telephone telecommunication services
- Series G Transmission systems and media, digital systems and networks**
- Series H Audiovisual and multimedia systems
- Series I Integrated services digital network
- Series J Transmission of television, sound programme and other multimedia signals
- Series K Protection against interference
- Series L Construction, installation and protection of cables and other elements of outside plant
- Series M Maintenance: international transmission systems, telephone circuits, telegraphy, facsimile and leased circuits
- Series N Maintenance: international sound programme and television transmission circuits
- Series O Specifications of measuring equipment
- Series P Telephone transmission quality, telephone installations, local line networks
- Series Q Switching and signalling
- Series R Telegraph transmission
- Series S Telegraph services terminal equipment
- Series T Terminals for telematic services
- Series U Telegraph switching
- Series V Data communication over the telephone network
- Series X Data networks and open system communication
- Series Z Programming languages