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**Transmission and Multiplexing (TM);
Multiplex section protection information model
for the Network Element (NE) view**

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Foreword

This European Telecommunication Standard (ETS) has been produced by the Transmission and Multiplexing (TM) Technical Committee of the European Telecommunications Standards Institute (ETSI).

The ETS describes the information model for Network Elements (NEs), which perform the multiplex section protection function.

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1 Scope

This European Telecommunication Standard (ETS) provides an information model, as related to the multiplex section protection function for the Synchronous Digital Hierarchy (SDH) as defined in ITU-T Recommendations G.707 [1], G.708 [2] and G.709 [3].

This ETS identifies the Telecommunications Management Network (TMN) object classes required for the management of the protection function for SDH Network Elements (NEs). These objects are relevant to information exchanged across standardised interfaces defined in the CCITT Recommendation M.3010 [8] TMN architecture.

This ETS applies to SDH NEs which support the multiplex section protection switching function, as defined in CCITT Recommendation G.783 [6]. Performance monitoring requirements for multiplex section protection (for the management of SDH equipment with this capability) are provided in CCITT Recommendation G.784 [7], however, the information model which supports these can be found in ITU-T Recommendation G.774.1 [4].

This ETS defines:

- an information model, as related to the protection function for the SDH.

This ETS does not define:

- the protocol stack to be used for message communication;
- the network level management processes;
- the application contexts;
- the conformance requirements to be met by an implementation of this information model;
- information models for other systems or equipment.

The information model defined here (and the corresponding message set) is concerned with the management of NEs, the equipment by which they are implemented and the functions contained within them. More precisely, it applies to an equipment domain visible at the element manager to element interface and is only concerned with information available within that domain. Information proper to the domain of a network level management process is not included within this model.

2 Normative references

This ETS incorporates by dated and undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

- [1] ITU-T Recommendation G.707 (1993): "Synchronous digital hierarchy bit rates".
- [2] ITU-T Recommendation G.708 (1993): "Network node interface for the synchronous digital hierarchy".
- [3] ITU-T Recommendation G.709 (1993): "Synchronous multiplexing structure".
- [4] ITU-T Recommendation G.774.1 (1994): "Synchronous digital hierarchy (SDH) performance monitoring for the network element view".
- [5] ITU-T Recommendation G.774.3 (1994): "Synchronous digital hierarchy (SDH) management of multiplex-section protection for the network element view".
- [6] CCITT Recommendation G.783 (1990): "Characteristics of synchronous digital hierarchy (SDH) multiplexing equipment functional blocks".
- [7] CCITT Recommendation G.784 (1990): "Synchronous digital hierarchy (SDH) management".
- [8] CCITT Recommendation M.3010 (1992): "Principles for a telecommunications management network".

3 Abbreviations

For the purposes of this ETS, the following abbreviations apply:

APS	Automatic Protection Switching
AUG	Adaptation Unit Group
CTP	Connection Termination Point
MS	Multiplex Section
NE	Network Element
Pkg	Package
SDH	Synchronous Digital Hierarchy
TTP	Trail Termination Point

4 Multiplex-section protection management model

The SDH multiplex section protection requirements are described in ITU-T Recommendation G.774.3 [5], § 5.

5 Managed object class definitions

In the context of this ETS, the IMPORTS clause specifies the object classes which can be instantiated in the scope of this ETS. The IMPORTS clause does not include uninstantiated superclasses.

```
BEGIN
IMPORTS
apsReportRecord,
protectedTTPBidirectional,
protectedTTPSink,
protectedTTPSource,
sdhMSPProtectionGroup,
sdhMSPProtectionUnit,
unprotectedCTPBidirectional,
unprotectedCTPSink,
unprotectedCTPSource
FROM {itu(0) recommendation(0) g(7) g774(774) hyphen(127) prot(03) informationModel(0)
managedObjectClass(3) }
;
END
```

6 Packages

```
BEGIN
IMPORTS
extraTrafficControlPkg,
lastAttemptResultPkg,
protectionSwitchExercisePkg,
protectionMismatchStatusPkg,
priorityPkg,
sdhPriorityPkg
FROM {itu(0) recommendation(0) g(7) g774(774) hyphen(127) prot(03) informationModel(0)
package(4) }
;
END
```

7 Attributes

```
BEGIN
IMPORTS
channelNumber,
lastAttemptResult,
priority,
protectedTTPId,
protectingUnit,
protectionGroupId,
protectionGroupType,
protectionMismatchStatus,
protectionStatus,
protectionSwitchMode,
protectionUnitId,
protecting,
reliableResourcePointer,
revertive,
sdhPriority,
unprotectedCTPId,
unreliableResourcePointer,
waitToRestoreTime
FROM {itu(0) recommendation(0) g(7) g774(774) hyphen(127) prot(03) informationModel(0)
attribute(7) }
;
END
```

8 Actions

```
BEGIN
IMPORTS
invokeExercise,
invokeProtection,
releaseProtection
FROM {itu(0) recommendation(0) g(7) g774(774) hyphen(127) prot(03) informationModel(0)
action(9) }
;
END
```

9 Notifications

```
BEGIN
IMPORTS
protectionSwitchReporting
FROM {itu(0) recommendation(0) g(7) g774(774) hyphen(127) prot(03) informationModel(0)
notification(10) }
;
END
```

10 Parameters

```
BEGIN
IMPORTS
invokeProtectionError,
releaseProtectionError,
protectionStatusParameter
FROM {itu(0) recommendation(0) g(7) g774(774) hyphen(127) prot(03) informationModel(0)
parameter(5) }
;
END
```

11 Name bindings

```
BEGIN
IMPORTS
protectedTTPBidirectional-sdhNE,
protectedTTPSink-sdhNE,
protectedTTPSource-sdhNE,
protectionGroup-managedElement,
augBidirectional-protectedTTPBidirectional,
augSink-protectedTTPSink,
augSource-protectedTTPSource,
protectionUnit-protectionGroup,
unprotectedCTPBidirectional-msTTPBidirectional,
unprotectedCTPSink-msTTPSink,
unprotectedCTPSource-msTTPSource
FROM {itu(0) recommendation(0) g(7) g774(774) hyphen(127) prot(03) informationModel(0)
namebinding(6) }
;
END
```

Annex A (informative): Bibliography

The following references are supplied for informative purposes.

- 1) ETS 300 304 (1994): "Transmission and Multiplexing (TM); Synchronous Digital Hierarchy (SDH) information model for the Network Element (NE) view".
- 3) ITU-T Recommendations G.803 (1993): "Architectures of transport networks based on the synchronous digital hierarchy".
- 4) CCITT Recommendation M.3100 (1992): "Generic network information model".
- 5) CCITT Recommendation X.208 (1990): "Specification of Abstract Syntax Notation One (ASN.1)".
- 6) CCITT Recommendation X.720 (1992): "Information technology - Open Systems Interconnection - Structure of management information: Management information model".
- 7) CCITT Recommendation X.721 (1992): "Information technology - Open Systems Interconnection - Structure of management information: Definition of management information".
- 8) CCITT Recommendation X.722 (1992): "Information technology - Open systems interconnection - Structure of management information: Guidelines for the definition of managed objects".

History

Document history	
May 1995	First Edition
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