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**Transmission and Multiplexing (TM);  
Synchronous Digital Hierarchy (SDH) information model  
of the Sub Network Connection Protection (SNCP)  
for the Network Element (NE) view**

**ETSI**

European Telecommunications Standards Institute

**ETSI Secretariat**

**Postal address:** F-06921 Sophia Antipolis CEDEX - FRANCE

**Office address:** 650 Route des Lucioles - Sophia Antipolis - Valbonne - FRANCE

**X.400:** c=fr, a=atlas, p=etsi, s=secretariat - **Internet:** secretariat@etsi.fr

Tel.: +33 92 94 42 00 - Fax: +33 93 65 47 16

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## Foreword

This final draft European Telecommunication Standard (ETS) has been produced by the Transmission and Multiplexing (TM) Technical Committee of the European Telecommunications Standards Institute (ETSI), and is now submitted for the Voting phase of the ETSI standards approval procedure.

This ETS describes the information model for the management of Sub Network Connection Protection (SNCP) of Synchronous Digital Hierarchy (SDH) sub network.

<b>Proposed transposition dates</b>	
Date of latest announcement of this ETS (doa):	3 months after ETSI publication
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Date of withdrawal of any conflicting National Standard (dow):	6 months after doa

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## 1 Scope

This final draft European Telecommunication Standard (ETS) addresses the management of the automatic protection switching within network element at the high and low order path layers. It covers the Sub Network Connection Protection (SNCP) as described in ITU-T Recommendations G.803 [2] and G.841 [4].

This ETS provides an information model, for the SNCP of Synchronous Digital Hierarchy (SDH) network. This model describes the managed object classes and their properties for the management of the sub network connection protection function for SDH network elements. These objects are relevant to information exchanged across standardised interfaces defined in the ITU-T Recommendation M.3010 [1].

This ETS applies to SDH network elements which perform the sub network connection protection function and those systems in the Telecommunication Management Network (TMN) that manage SDH network elements.

This ETS defines:

- an information model, as related to the sub network connection 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 network elements, 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 M.3010 (1992): "Principles for a telecommunications management network".   |
| [2] | ITU-T Recommendation G.803 (1993): "Architectures of transport networks based on the Synchronous Digital Hierarchy (SDH)".                                      |
| [3] | ITU-T Recommendation G.774-04 (1995): "Synchronous Digital Hierarchy (SDH) - Management of the sub network connection protection for the network element view". |
| [4] | ITU-T Recommendation G.841 (1995): "Types and characteristics of SDH network protection architectures".   |

### 3 Abbreviations

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

APDU	Application Protocol Data Unit
APS	Automatic Protection Switching
BSHR	Bi-directional Self Healing Ring
CMIP	Common Management Information Protocol
CMIS	Common Management Information Service
CTP	Connection Termination Point
ISO	International Organisation for Standardisation
ITU	International Telecommunications Union
LOS	Loss Of Signal
MS	Multiplex Section
MSP	Multiplex Section Protection
NE	Network Element
OS	Operation System
OSI	Open System Interconnection
Pkg	Packages
RDN	Relative Distinguished Name
RRP	Reliable Resource Pointer
SD	Signal Degrade
SDH	Synchronous Digital Hierarchy
SF	Signal Fail
SNCP	Sub Network Connection Protection
STM-N	Synchronous Transport Module N
TMN	Telecommunication Management Network
TP	Termination Point
TSS	Telecommunication Standardisation Sector
TTP	Trail Termination Point
URP	Unreliable Resource Pointer
WTR	Wait-To-Restore

### 4 Sub network connection protection management model

The SDH sub network connection protection requirements are described in section 5 of ITU-T Recommendation G.774-04 [3].

### 5 Managed object class definitions

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

The connectionProtectionGroup object class can be used to model an automatic 1+1 single ended protection system for sub network connection protection.

```

BEGIN
IMPORTS
connectionProtectionGroup,
connectionProtection,
mpConnectionProtection,
sncpFabric
FROM {itu(0) recommendation(0) g(7) g774(774) hyphen(127) sncp(04) informationModel(0)
managedObjectClass(3) }
;
END

```

### 6 Packages

```

BEGIN
IMPORTS
holdOffTimePackage
FROM {itu(0) recommendation(0) g(7) g774(774) hyphen(127) sncp(04) informationModel(0) package(4)
}
;
END

```



## 7 Attributes

```
BEGIN
IMPORTS
holdOffTime,
protectionCriteria,
switchStatus
FROM {itu(0) recommendation(0) g(7) g774(774) hyphen(127) sncp(04) informationModel(0)
attribute(7) };
END
```

## 8 Actions

```
BEGIN
IMPORTS
protectedConnect,
protectUnprotect
FROM {itu(0) recommendation(0) g(7) g774(774) hyphen(127) sncp(04) informationModel(0) action(9)
}
;
END
```

## 9 Parameters

```
BEGIN
IMPORTS
switchStatusParameter
FROM {itu(0) recommendation(0) g(7) g774(774) hyphen(127) sncp(04) informationModel(0)
parameter(5) }
;
END
```

## 10 Name bindings

```
BEGIN
IMPORTS
connectionProtection-connectionProtectionGroup,
connectionProtectionGroup-sncpFabric,
crossConnection-mpConnectionProtection,
crossConnection-sncpFabric,
mpConnectionProtection-connectionProtectionGroup,
mpCrossConnection-sncpFabric
FROM {itu(0) recommendation(0) g(7) g774(774) hyphen(127) sncp(04) informationModel(0)
nameBinding(6) }
;
END
```

## Annex A (informative): Bibliography

- ITU-T Recommendation G.707 (1993): "Synchronous digital hierarchy bit rates".
- ITU-T Recommendation G.708 (1993): "Network-node interface for the synchronous digital hierarchy".
- ITU-T Recommendation G.709 (1993): "Synchronous multiplexing structure".
- ITU-T Recommendation M.3100 (1992): "Generic network information model".
- ITU-T Recommendation G.774 (1992): "Synchronous Digital Hierarchy (SDH) management information model for the network element view".
- ITU-T Recommendation G.774.01 (1994): "Synchronous Digital Hierarchy (SDH) performance monitoring for the network element view".
- ITU-T Recommendation G.774-03 (1994): "Synchronous Digital Hierarchy (SDH) management of the multiplex-section protection for the network element view".
- ITU-T Recommendation G.783 (1994): "Characteristics of Synchronous Digital Hierarchy (SDH) equipment functional blocks".
- ITU-T Recommendation G.784 (1994): "Synchronous Digital Hierarchy (SDH) management".
- ITU-T Recommendation X.722 (1992): "Information technology - Open System Interconnection - Structure of management information: Guidelines for the definition of managed objects".
- ITU-T Recommendation X.208 (1988): "Specification of Abstract Syntax Notation One (ASN.1)".
- ITU-T Recommendation X.720 (1992): "Information technology - Open System Interconnection - Structure of management information: Management information model".
- ITU-T Recommendation X.721 (1992): "Information technology - Open System Interconnection - Structure of management information: Definition of management information".

**History**

<b>Document history</b>			
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