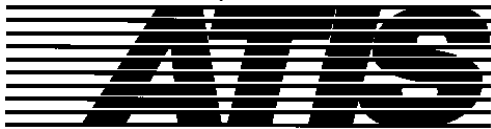# T1X1

Digital Hierarchy and
Synchronization

A Technical Subcommittee of
Standards Committee T1
Telecommunications

Accredited by the American National
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IEEE 802.17 Resilient Packet Ring Working
Group Chair Mike Takefman
(email tak@cisco.com)

Mr. Mike Takefman,

T1X1.5 understands that 802.17 is defining a new ring-based MAC and intends to use SONET/SDH and OTN physical layers (among others) for this new MAC. We wish to inform you that T1X1.5 has recently drafted a standard adaptation method called Generic Framing Procedure (GFP) for mapping of variable length data frames into SONET/SDH and OTN. This draft is being forwarded to the ITU SG15/Q11 interim group meeting in June.

The purpose of GFP is to provide a single flexible mechanism to map/adapt any client signal into SONET/SDH and OTN. It supports both point-to-point and ring applications.

GFP provides frame delineation using a length/HEC mechanism. This mechanism is more robust than single octet flag based delineation and eliminates the need for byte/bit stuffing and the resulting payload specific frame expansion.

GFP mandatory fields are divided into a Core Header and a Payload Header. The Core Header is used for frame delineation. The Payload Header is primarily used to identify the presence and format of an Extension Header and which client protocol is being carried. The Extension Header mechanism allows for topology/application specific information to be added to the GFP frame.

The following is a list of features of GFP:

1. More robust frame delineation than flag-based mechanisms such as HDLC
2. No payload dependent frame expansion (no byte stuffing)
3. Flexibility of Extension Headers. This is allows for topology/application specific fields to be defined without affecting frame delineation functions.
4. Ability to identify the encapsulated client protocol separately from the Extension Header. This could be used for example to allow frame forwarding based on Extension Header fields without requiring recognition of the encapsulated client protocol.
5. GFP FCS. This allows for fault location on a GFP frame basis without requiring recognition of the encapsulated client protocol. It also provides a data integrity mechanism for encapsulation of protocols which may not have such a mechanism.

We believe that these features make GFP ideally suited for the carriage of variable length frames over SONET/SDH and OTN rings.

T1X1 has begun definition of an Extension Header which may be appropriate for ring applications. Further study of the contents and format of this Extension Header is required. Two possible ways for 802.17 to make use of GFP could be:
1. Provide T1X1 with input for the fields and format of an Extension Header currently under study.
2. Define a new Extension Header and co-ordinate with T1X1 to obtain an Extension Header Type field value to identify the 802.17 Extension Header.
We anticipate that the work from 802.17 will become a very important client for SONET/SDH and OTN networks. We would like to collaborate with 802.17 to understand your particular requirements and ensure that GFP is further developed with these in mind in order realize Resilient Packet Rings over SONET/SDH and OTN as quickly as possible.

Sincerely,

Albert White

Chair, T1X1