

Source: SA&A/The ATM Forum  
Title : Liaison regarding need for FEC in H.222.1  
Purpose: for action

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February 10, 1995

To: Michael Zeug, Chair T1S1.5

From: George Dobrowski, Chair, ATM Forum Technical Committee

Liaison to T1S1.5 Regarding need for FEC in H.222.1

It was recently brought to the attention of the ATM Forum that the ITU SG 15 Video and Systems Experts Group has agreed on the need for Forward Error Correction (FEC) and FEC framing in the H.222.1 layer above the adaptation layer. This is of concern for the following reasons:

- This requires additional hardware in ATM endsystems: both AAL1 and AAL5 implementations would need to add FEC hardware
- The current I.363 Recommendation does not support forwarding of corrupted AAL5 data
- Additional protocol overhead is introduced
- To our knowledge, the error characteristics that have been used to motivate this decision have not been justified
- It is recognized that FEC, if required, is most appropriate on the physical links that require it. The different physical media (e.g. satellite, coax, twisted pair) have different error characteristics and hence the type of FEC will vary.

We believe that the analysis of error behavior is based on the assumption that errors are independent and identically distributed. Under this assumption, and given that the error rates are 10 to the minus 7 or better, it is likely that only single, double or a small number of contiguous bit errors will occur in a PDU. Under such assumptions, the FEC mechanism will correct the errors.

Unfortunately, the detailed error behavior of transmission links is difficult to characterize. Evidence of this is the continuing discussions, over many years, that have not yielded any definitive answers. Nevertheless, it is generally recognized that the random error model is not applicable. Since it appears impossible to characterize the error behavior, especially with a single model that is applicable to all transmission systems, the best approach would be to detect for the presence of errors, and then attempt to conceal their effects rather than directly correct the bit errors.

Based on this, we believe that the ITU SG 15 Video and Systems Expert Group should reconsider their decision to include FEC at the H.222.1 layer.

We would appreciate the T1S1.5 Committee reviewing this assessment and if you agree, please forward this liaison to SG 15. A reply identifying your disposition is kindly requested.

Thank You,

George Dobrowski