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Advanced Video Coding Expert Group

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Title: **Should we use SAC with Slice?**

Purpose: Discussion

When Slice Structured Mode (Annex K) is used with Syntax-based Arithmetic Coding mode (Annex E), the complete decoding of a slice depends on two factors:

1. Detection of the Slice Start Code of the next slice.
2. The knowledge of where the current slice terminates.

Unlike GOB, a slice can terminate at any macroblock. To find out the exact position, the author is aware of only one method : the Macroblock Address of the next slice. If this is the case, there are at least two consequences :

1. When Arbitrary Slice Ordering submode is used, the complete decoding of every slice must wait until the entire picture arrives unless some sequencing mechanism beyond H.263+ is used.
2. In packet-based network where most packets contain integral number of slices, losing one packet will render other correctly received packets not able to be decoded completely.

This may not be too severe a problem because the decoder is fully aware of the termination of coded macroblocks. So the uncertainty at the end of the slice can only contribute to the number of non-coded macroblocks. In the case of packet loss, those macroblocks are assumed to be non-coded anyway by common error concealment methods. Nonetheless, it can be difficult to determine the size of region for intra fast update or containment of error propagation.

If the above analysis is correct, the author would like to propose prohibiting SAC when Slice Structure mode is used.