STATISTICAL TIME DIVISION MULTIPLEXING ARCHITECTURES AND DESIGN

A2   15 mV

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200mV   20mV   0.1 500ns

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22. Energy as a Criterion for Frame Discarding and Multiplexing efficiency

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22.0 Abstract

To design a STDM on the criterion of energies of each frame is one of the popular methods. In this each frames energy is calculated, a frame with lower energy is the best candidates among all users' speech frames. Dropping the frame with lowest energy may degrade quality at its minimum as compared to the higher energy signals. This is also perceptually less important. Such frames of speech can be utilised to maximize the users on the link. This chapter talks about energy criterion as packet discarding for STDM designs.

22.1 Energy differences

Energy differences of both, original speech s (n) and reconstructed srec (n) is another criterion for frame discarding. It provides a support to the mean square error as a criterion but also is an evaluating method of perceptually importance of the speech frames. It is believed that those reconstructed frames provide less difference of energies with original frame are the best candidates for discarding these frames. If those frames are discarded during congestion over the link, the higher percentage of frames can be tolerated.

$$Diff_{energy} = \sum_{n=1}^{N} s(n)^2 - s_{rec}(n)^2$$

Equation 22-1

The less difference of the original and reconstructed speech frame can be interpreted such that, most of the energy of that particular frame can be recovered by the reconstruction. That means the information loss could be less if those frames are discarded.