

ABSTRACT

An Optimizing Variable Power

Data Compression Method. (December 1976)

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Data compression, the reduction of the size of the physical representation of data being stored or transmitted, has long been of interest to managers of large computer-based information processing systems. Decreases in the cost of auxiliary storage space brought about by recent advances in storage technology have called into question the cost-effectiveness of data compression methods.

This paper presents the model of a system for data compression in which the data compression technique which will result in the minimum total cost for an information processing application can be selected from a set of candidate data compression methods. Implementation of the model consisted of two major tasks: identification of a set of candidate data compression methods and development of an optimization strategy for choosing the most cost-effective data compression method to employ in a given application.

Components that formed the basis of the set of candidate compression methods were chosen in order to represent a broad spectrum of compression and cost values for a given application and to adapt readily to a wide range of information types and data

processing environments. The optimization strategy involved an estimate of the compression effectiveness and efficiency of each of the candidate methods based on characteristics of the data and the compression method as well as cost factors inherent in the application.

Compression experiments were performed on three basic types of data: a FORTRAN source program, printed English text, and a file of business-type information. In addition, evaluation of the data compression system in typical data processing applications was performed using sensitivity analysis.