

**CHENNAI – PONDICHERRY**

**DELAY-OPTIMIZED FILE RETRIEVAL UNDER LT-BASED**

**CLOUD STORAGE**

**Abstract:**

Fountain-code based cloud storage system provides reliable online storage solution through placing unlabeled content blocks into multiple storage nodes. Luby Transform (LT) code is one of the popular fountain codes for storage systems due to its efficient recovery. However, to ensure high success decoding of fountain codes based storage, retrieval of additional fragments is required, and this requirement could introduce additional delay. In this paper, we show that multiple stage retrieval of fragments is effective to reduce the file-retrieval delay. We first develop a delay model for various multiple stage retrieval schemes applicable to our considered system. With the developed model, we study optimal retrieval schemes given requirements on success decodability. Our numerical results suggest a fundamental tradeoff between the file-retrieval delay and the target probability of successful file decoding, and that the file-retrieval delay can be significantly reduced by optimally scheduling packet requests in a multi-stage fashion.