Erasure Coding Meets Three Screens and the Cloud

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Abstract

The demand for smooth experience cross three screens (PC, TV and Phone) is all-time high. This becomes possible with the rapid advancement of the Cloud. Three screens and the cloud together unleash tremendous opportunities by enabling new application scenarios and services. However, the expectation of such applications and services is also more demanding than ever – snappy responsiveness and superior quality at extremely affordable costs. Erasure coding is being rediscovered as a crucial technology to meet the high expectation of these emerging application scenarios and services.

In this tutorial, I will cover the basics of erasure coding and introduce several popular classes of erasure codes, including MDS codes (Reed-Solomon codes and array codes), network codes and storage codes. We walk through a series of application scenarios and services, where erasure coding is innovatively applied to derive solutions offering snappy responsiveness and superior quality at extremely affordable costs. The application scenarios and services cover i) social gaming; ii) content distribution; iii) vehicle communication; iv) virtualization and consolidation; and v) cloud storage.