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Improvements in ROOT I/O's Functionality and Performance

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For the last several months the main focus of development in the ROOT I/O package has been code consolidation and performance improvements.

Access to remote files is affected both by bandwidth and latency. We introduced a pre-fetch mechanism to minimize the number of transactions between client and server and hence reducing the effect of latency. We will review the implementation and how well it works in different conditions (gain of an order of magnitude for remote file access).

We will also review new utilities, including a faster implementation of TTree cloning (gain of an order of magnitude), a generic mechanism for object references, and a new entry list mechanism tuned both for small and large number of selections.

In addition to reducing the coupling with the core module and becoming its own library (libRIO) (as part of the general restructuration of the ROOT libraries), the I/O package has been enhanced in the area of XML and SQL support, thread safety, schema evolution, TTreeFormula, and many other areas.

We will also discuss various ways, ROOT will be able to benefit from multi-core architecture to improve I/O performances.

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