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XTNetFile, a fault tolerant extension of ROOT TNetFile

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This paper describes XTNetFile, the client side of a project conceived to address the high demand data access needs of modern physics experiments such as BaBar using the ROOT framework. In this context, a highly scalable and fault tolerant client/server architecture for data access has been designed and deployed which allows thousands of batch jobs and interactive sessions to effectively access the data repositories basing on the XROOTD data server, a complex extension of the rootd daemon. The majority of the communication problems are handled by the design of the client/server mechanism and the communication protocol.

This allows us to build distributed data access systems which are highly robust, load balanced and scalable to an extent which allows 'no jobs to fail'.
Furthermore XTNetFile ensures backward compatibility with the 'old' rootd server by using same API as the existing ROOT TFile/TNetFile classes.
The code is designed with a high degree of modularity that allows to build other interfaces, such as administrative tools, based on the same communication layer. In addition the client plugin can also be used to readother types of (non-ROOT I/O) data files, providing the same benefits.

Primary authors: DORIGO, A. (INFN PADOVA); HANUSHEVSKY, A. (SLAC); FURANO, F. (INFN Padova); ELMER, P. (Princeton University)

Presenter: FURANO, F. (INFN Padova)

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