ROOT5/6 analysis comparision in ATLAS

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Introduction I

Comparison of different input file protocols and ROOT 5 vs. 6:

- Access via nfs, dcap, xrootd/FAX, webdav/Davix on same Munich node with access to LRZ-LMU dCache SE and local nfs
- 5 files (25k events) from some $t\bar{t}$ MC simulation sample for analysis (a), (b), (d) ; analysis (c) uses newer reconstruction version
- Use "real-life" analysis based on new ATLAS xAOD data format, EventLoop framework, reads/processes muons, jets, stores some output
- Same "fast" analysis as presented in webdav talk at CHEP15: `link`http://indico.cern.ch/event/304944/session/3/contribution/157
- ROOT 5.34.24-x86_64-slc6-gcc48-opt vs. 6.02.05-x86_64-slc6-gcc48-opt
- Access with xAOD `class` or `branch` access mode

Introduction II

- `TTreeCache` is enabled with in the analysis with 10 events/10 MB learning in code
- Using in addition: `ROOT_TTREECACHE_PREFILL=1` `ROOT_TTREECACHE_SIZE=1` to "patch" missing pre-fetch buffer in Davix
- Using different ATLAS analysis releases (same last digit equivalent to same version of physics object correction packages):
  - (a) 2.0.22 (ROOT5), (b) 2.1.32 (ROOT6), (c) 2.3.11 (ROOT6), (d) 2.1.22 (ROOT6)
  - Direct comparision between (a) and (d)
  - (b) newer correction package version but same input files
  - (c) newer reconstruction version of input files

Results

- Measured event rate for local access at LRZ-LMU
- Repeated several times, uncertainties $\sim$ 10%

class access [Hz]	nfs	dcap	webdav	xrootd/FAX
(a) 2.0.22/ROOT5	326	244	247	244
(d) 2.1.22/ROOT6	322	218	232	238
(b) 2.1.32/ROOT6	315	219	218	222
(c) 2.3.11/ROOT6	289	223	223	234
branch access [hz]				
(a) 2.0.22/ROOT5	1064	940	947	984
(d) 2.1.22/ROOT6	1029	755	817	895
(b) 2.1.32/ROOT6	834	848	742	809
(c) 2.3.11/ROOT6	772	660	769	783

- 1-10% and 3-20% for (a) vs. (d)
- $\sim$ 10% difference for (a) vs. (c) or (d) but here probably due to different correction package or input file version