Testing non-proprietary transport mechanisms for WLCG SRMs

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Background

- (Physics) Grid Data Management historically based around weird, proprietary transfer protocols (GridFTP, xrootd, rfio, dcap)
- Damages interoperability and ease of integration with non-Grid people, risks Ghettoization
- EMI Data Management group policy is to phase in support for open standard protocols - such as WebDAV/HTTP(S) and NFS4.1/pNFS.

WebDAV

- (RFC 4918, RFC 5689) extends HTTP(S).
- Write support, other filesystem functionality.
- OS support is wide, not deep (inconsistent authentication, or redirection etc).
- ROOT supports HTTP(S) but imperfectly. These graphs generated with a patched ROOT fixing TWebFile() functionality over SSLSockets.
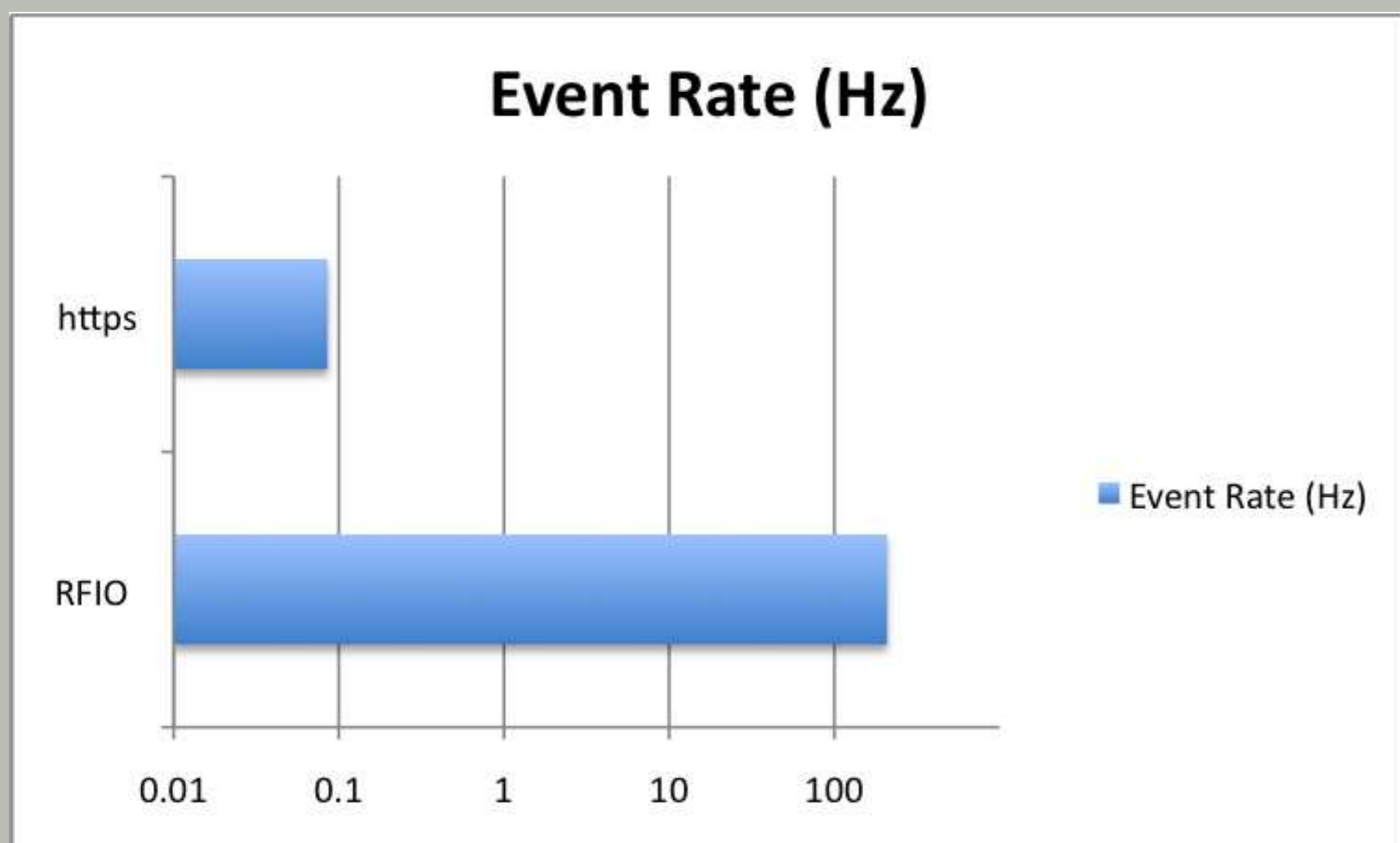
Event Rate (Hz)

HTTPS SSL overhead terrible for event rate, as expected. NULL encryption mechanism would provide AuthN without encryption, but not widely supported. ROOT also cannot rewrite redirection URLs to use the http endpoint if available.
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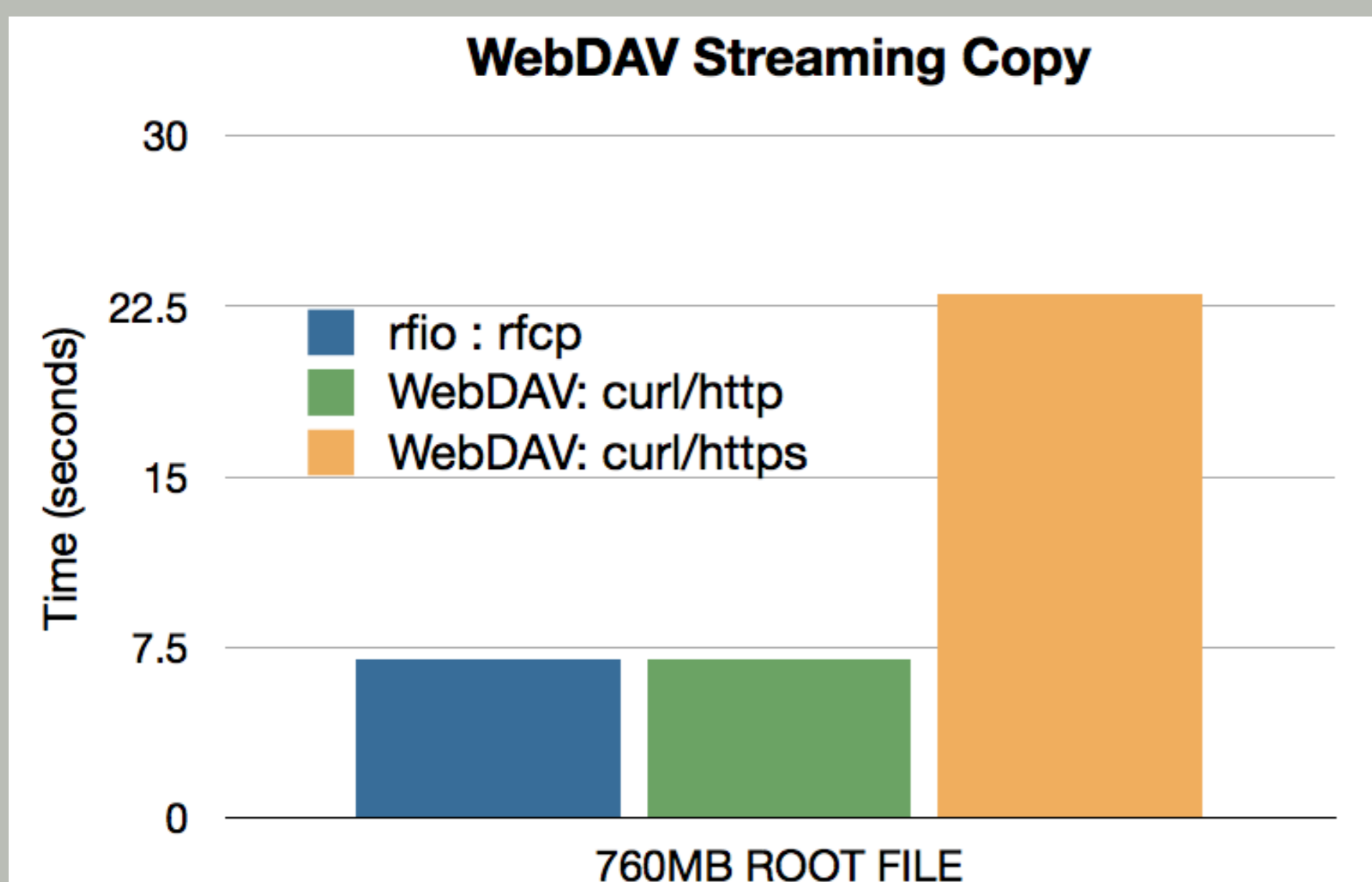
Test with CURL shows http rates equiv to rfio. Further work to test this in ROOT.

NFS4.1/pNFS

- (RFC 3530 , RFC 5661) extends NFS
- Parallel distributed data support, via layout files.
- Clients in kernel 2.6.38+ (inc. RHEL6.2)
- DPM pNFS server is not stable, despite being marked in production.
- These results via a bleeding-edge release, which only allowed read tests, and not consistently.

IOZONE pNFS TRANSFER TESTS
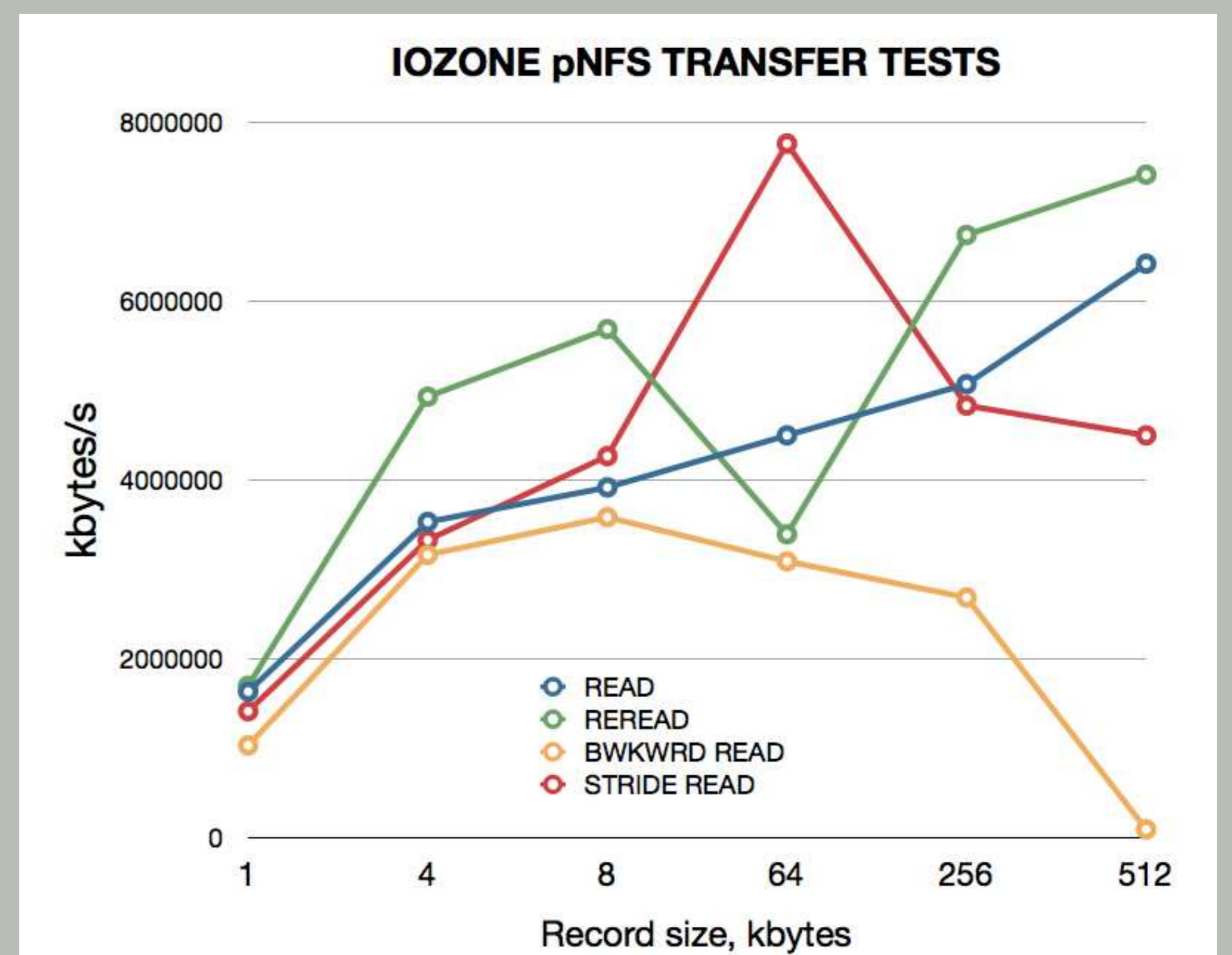
Seeking Read tests show good streaming performance, poor with seeking (cache thrashing for backward reads?)

pNFS v HTTP Streaming Copy Test