

# A performance study of WebDav access to storages within the Belle II collaboration

S. Pardi<sup>1</sup>

On behalf of the Belle II Computing Group

<sup>1</sup>INFN-Napoli Unit - Italy

## Introduction

The use of WebDav protocol to access at large storage areas is becoming popular in the High Energy Physics community. All the main Grid and Cloud storage solutions provide such kind of interface, in this scenario, tuning the storage systems and performance evaluation became crucial aspects to promote the adoption of this protocols within the Belle II community. In this work, we present the results of a large-scale test activity, made with the goal to evaluate performances and reliability of the WebDAV protocol, and study a possible adoption for the user analysis, in integration or in alternative of the most used protocols.

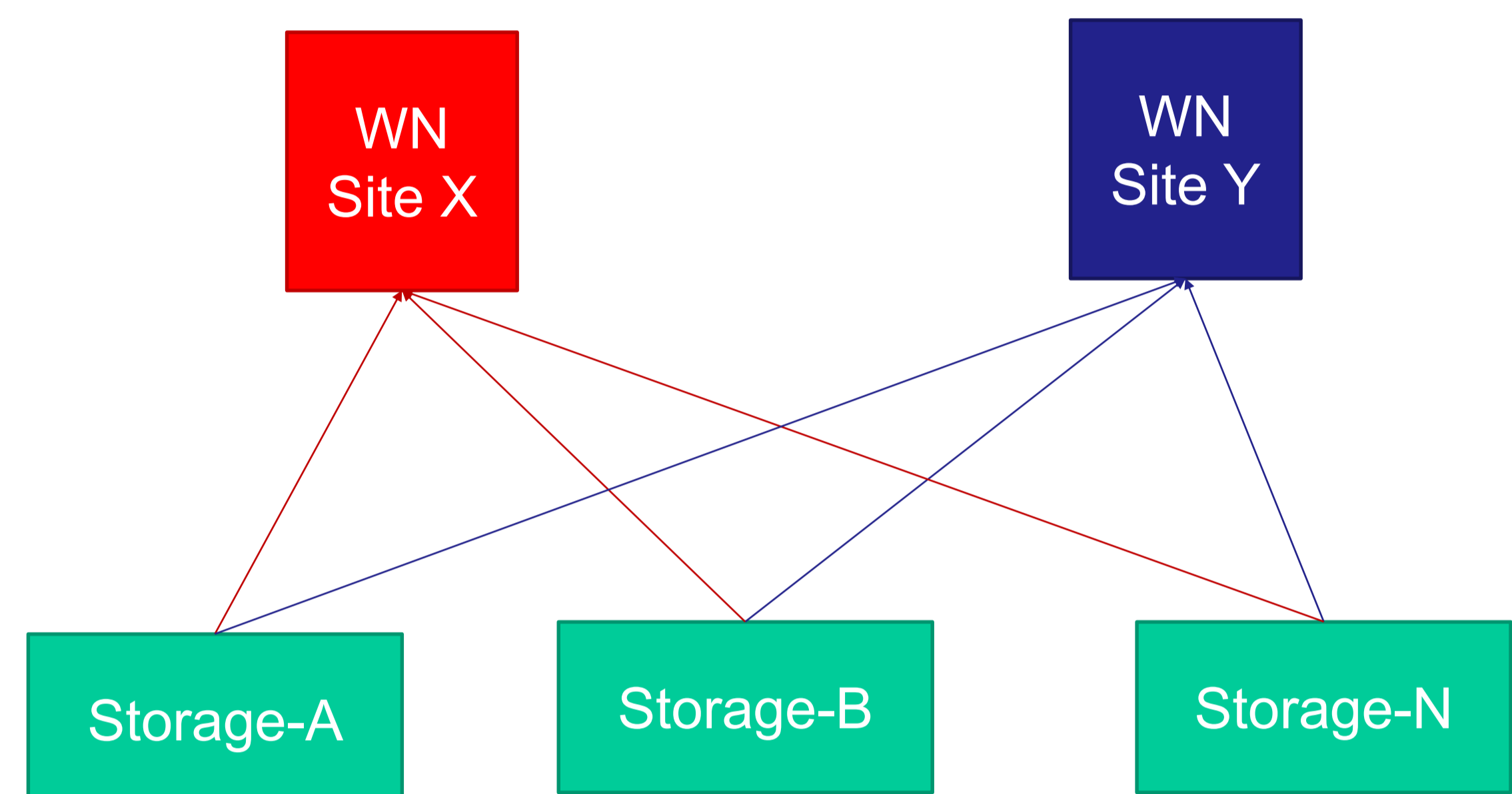
## EVALUATION METHDODOLOGY

We considered a test infrastructure composed by 14 storage elements configured with the WebDav interface, hosted at the Belle II sites.

As reference tests, we used a set of analysis jobs running in the Belle II software framework, accessing the input data with the ROOT I/O library, in order to simulate as much as possible a realistic user activity.

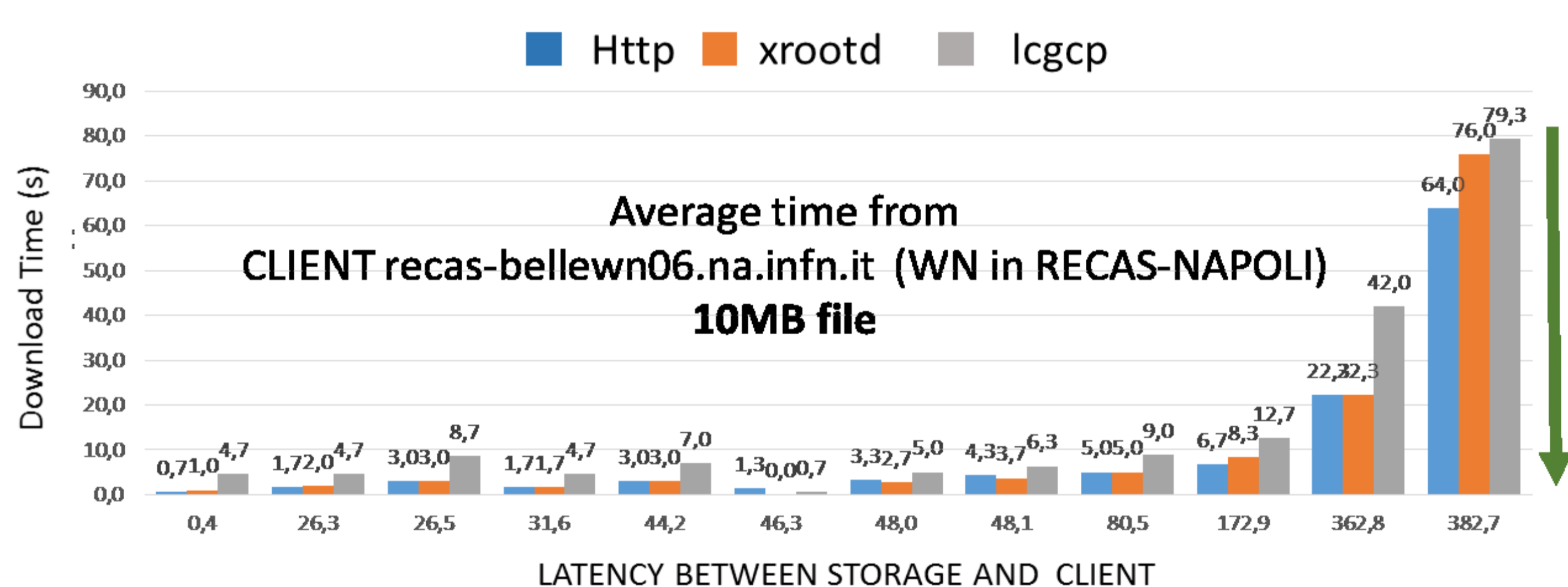
5 different tests done analysing 1 single file (1000 events, size 10MB)

- Local input (download via http)
- Local input (download via xrootd)
- Local input (download via lcg-cp)
- Input via http streaming
- Input via xrootd streaming



Tests are performed from Grid WorkerNodes in different sites vs All the storage of type DPM and dCache, while storage running STORM are still in evaluation.

## File Transfer TEST



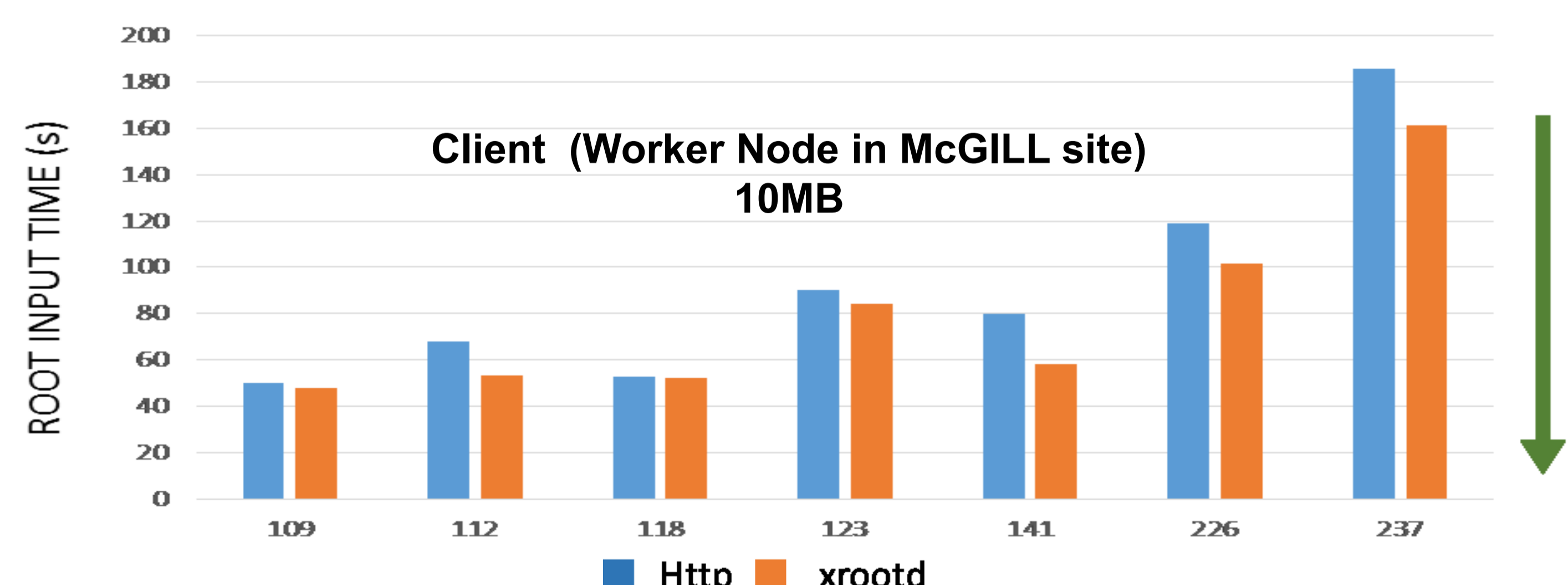
### Description

File download performances in function of the latency from the two different Sites.

### Test Analysis

http, xrootd performs quite similar in the case of file download. Graphs show the overhead added by the SRM interface using lcg-cp command with gridftp.

## Streaming with HTTP vs xrootd



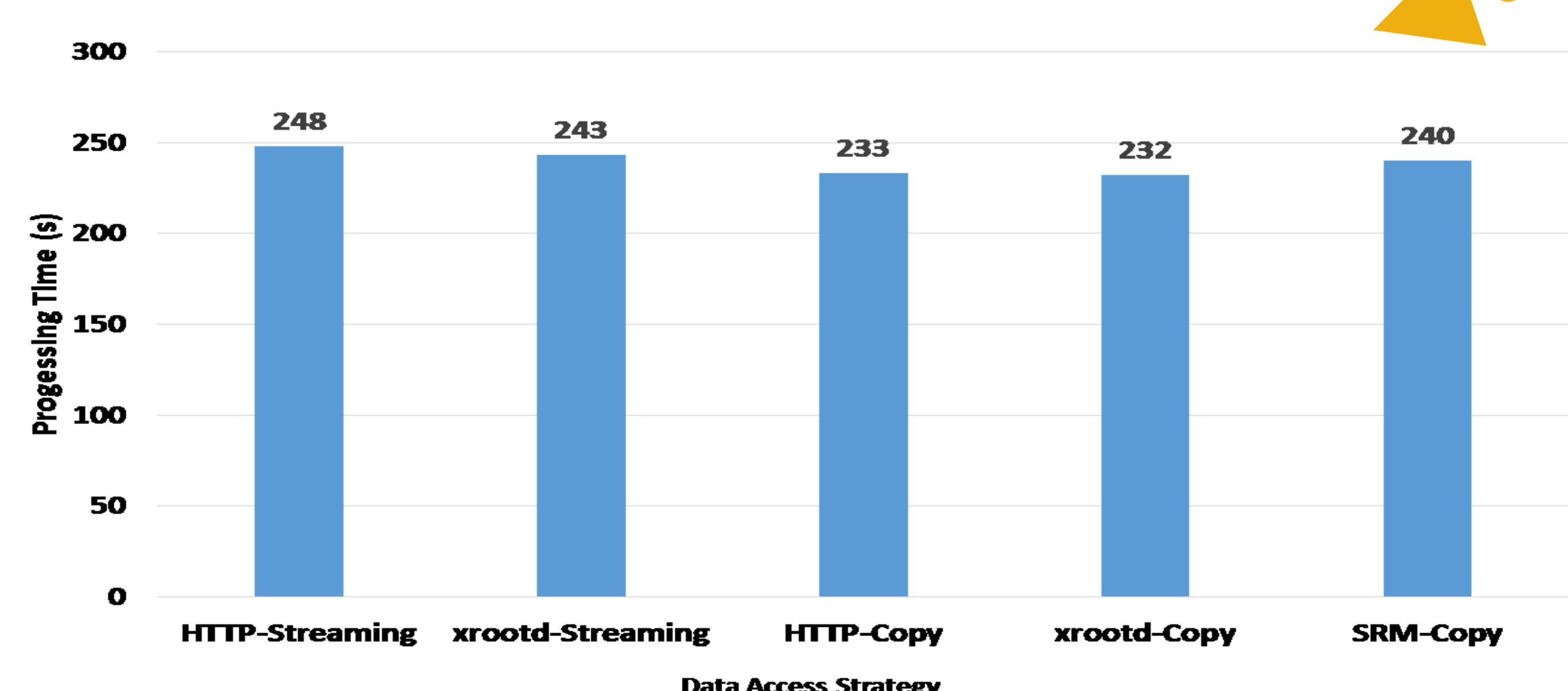
### Description

File streaming performances, using a basf2 analysis job.

### Comments

In case of DPM Storages the two protocols perform quite similar in most cases.

## Analysis Job with 500MB files



### Description

Client in Napoli vs Server in Napoli – 500MB file, different analysis strategies: Download and Process, and Streaming.

### Comments

HTTP and xrootd streaming differ of less than 0,05%

## CONCLUSION

The final analysis shows the possibility to achieve promising performances with webdav on different storage systems, and gives an interesting feedback, for Belle II community and for other high energy physics experiments.