Cover Letter

We thank the reviewers for their hard work and genuinely helpful suggestions. In addition to this cover letter, we have posted a PDF online explicitly showing additions in **red** and deletions in **blue**. Three issues were common across reviewer feedback; Reviewer 1 and 3's comments are addressed in issues I and II, Reviewer 2's comments are addressed in issues I and III, and Reviewer 4's comments are addressed in issues II and III.

Issue I: No Experimental Setup (Reviewers 1, 2, and 3)

We apologize for the omission of experimental setup and source code details. To provide a more comprehensive view of our experiments, we added text to the paper and made paper artifacts available online. For the experimental setup, we describe the cluster setup (hardware, software, etc.) in Section §V. We have also made the infrastructure code available and added links after each figure to show exactly how experiments are run. This infrastructure code contains scripts to deploy the system, run experiments, and gather results. This process follows the Popper Convention[1] [1], which aims to make research reproducible. For the source code, we have added code snippets to the evaluation to concretize what was actually done and made the source code available online. A link is provided in a footnote in Section §V.

Issue II: Structure and Layout of Evaluation (All Reviewers)

All reviewers note that the results and contributions we cite in the introduction are not validated, explained, or even mentioned in the evaluation. One confusing component of this issue is that we mixed future work with the contributions of this paper; to make the contributions more explicit we remove future work from the introduction and add it to the future work section in Section §VI. We also connect all numbers we cite in the introduction to the evaluation. To further clarify the evaluation, we:

- added raw numbers (as annotations) to the baselines in each figure. This helps the reader calculate the raw numbers instead of just relying on overhead and speedup numbers.
- re-organized the section to make experiments more independent and removed cross-references. Experiments are now self-contained so the reader can see the effects of different API configurations and we do a better job of explaining how results are derived.
- removed the "major takeaways". We deleted the headings but left the conclusions we make as transitions. We also add insights into the results by analyzing the raw numbers we observe in comparison to hardware capabilities.

Issue III: Synthetic and/or Irrelevant Use Cases (Reviewers 2 and 4)

We add a section to the introduction that scopes the importance of storage for large scale runtimes and workflows. Parallel and distributed jobs (whether they are MPI-based, MapReduce-based, etc.) need parallel and distributed storage systems that keep up with the computation. Furthermore, we highlight the parallel and distributed computing themes and cast light on them from the context of our prototype. We also add the Spark discussion proposed by to the evaluation. The goal is to show how a system such as Cudele would benefit from more general runtimes. We also move the discussion about the potential for HDFS and CephFS subtrees in the same namespace and the cost of dynamically changing consistency and durability semantics on a subtree.

Cosmetic Fixes

- Reviewer 1: fixed user vs. client terminology in Section §III
- Reviewer 1: clarified that the cost of dynamically changing semantics is future work Sections §III and §V.E
- Reviewer 1: added source code pointer in Section §IV
- Reviewer 2: remove major takeways in Section §V
- Reviewer 2: remove major cross-references in Section §V
- Reviewer 3: quantified speedups with figure annotations in Section §V
- Reviewers 1 and 3: add servers, network, and storage setups in Section §V
- Reviewer 4: add new section (§V.F) describing how Cudele would work with a system like Spark

References

[1] I. Jimenez, M. Sevilla, N. Watkins, C. Maltzahn, J. Lofstead, K. Mohror, R. Arpaci-Dusseau, and A. Arpaci-Dusseau, "Popper: Making Reproducible Systems Performance Evaluation Practical," UC Santa Cruz, Technical Report UCSC-SOE-16-10, May 2016.

[1] http://falsifiable.us/