Parallel Computing and I/O

Interactive Layout Visualization of Distributed Storage

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As high-performance computing systems have evolved over the years to address increasingly complex questions, the speed of storage access has fallen behind and often poses a potential bottleneck, particularly in scientific computing. But existing command-line tools for analyzing the storage layout are largely textual, which can be unintuitive and makes it difficult to recogniz suboptimal data distributions and find their underlying causes. To counteract this issue, I developed interactive visualizations tha provide an intuitive way of detecting and exploring these inefficiencies in four steps: First, the existing textual representations are extracted from the system and afterwards parsed into usable formats. Subsequently, a visualization library is used to transform t parsed data into graphs, multiple of which can finally be connected to create an interactive visualization. Interactive visualization serve as a good tool for illustrating storage imbalances and finding potential causes. However, effectiveness can vary depending on the distributed system, use case, and user.