
Article Improvements

Current article (submitted manuscript)

Anderson Chaves Carniel, Ricardo Rodrigues Ciferri, and Cristina Dutra de Aguiar Ciferri, “An Experimental Analysis of Spatial Indexing on Hard Disk Drives and Flash-based Solid State Drives”.

Previous article (preliminary version)

[1] Anderson Chaves Carniel, Ricardo Rodrigues Ciferri, and Cristina Dutra de Aguiar Ciferri, "The Performance Relation of Spatial Indexing on Hard Disk Drives and Solid State Drives", *Proceedings of the Brazilian Symposium on Geoinformatics*, 2016, pp. 263-274.

Summary of the Differences

In this article, we analyze if a spatial index shows the same performance behavior on Hard Disk Drives (HDDs) and flash-based Solid State Drives (SSDs). That is, we conduct experimental evaluations to determine the performance relation of spatial indexing on HDDs and SSDs. A preliminary version of this work was presented in [1]. In this article, the main difference is that we also conduct experiments on virtual machines of Microsoft Azure varying buffering schemes of this environment, which provide support for storage data on HDDs and SSDs on the cloud. In addition, we introduce the following contributions, as follows.

- We have revisited the literature and added more related work in Section 2.
- We extended needed underlying concepts from the spatial indexing. Further, we extend needed concepts from flash memories with focus on the Microsoft Azure environment. These aspects are described in Section 3 and 4, respectively.
- We provide a better description of the evaluation setup, as described in Section 5.1. It includes figures of the query windows employed on the spatial query pro-

cessing, details of the local machines used on the experiments, and details of the virtual machines of the Microsoft Azure used on the experiments.

- We discuss the obtained results on all (virtual) machines, as described in Sections 5.2.2 and 5.3.2.
 - We correlate the obtained results of the local machines with the virtual machines, in order to discuss the performance relation of HDDs and SSDs on different environments. This correlation is discussed in Sections 5.2.3 and 5.3.3.
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