

Information Science and Technology Institute



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"A Graph Model And Query Language Approach To File Systems Metadata Services"

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Center, 3rd Floor, Suite 300, Conference Room 301**

Abstract: Despite continual improvements in the performance and reliability of large-scale file systems, the management of user-defined file system metadata has changed little in the past decade. While applications may rely on file systems with metadata services, they are limited to the POSIX definitions for file metadata, namely hierarchical directory structures and a limited attribute interface. Moreover, applications need efficient means to identify their files and access associated file metadata. Without such a service within the file system, applications rely on ad-hoc approaches, often using RDBMS for file metadata. These database systems are a poor match for hierarchical file organizations and introduce an additional management overhead of the database on top of the file system

To address this problem, we advocate the integration of application-defined metadata management into the metadata services of distributed file systems. Such improved services provide a common, convenient interface for applications' file metadata management needs, including file search based on attributes. In contrast to hierarchical file systems and relational databases, our approach employs a graph data model with attributes on file nodes and edges connecting files. Our approach provides navigation-oriented query language (Quasar) for file identification and attribute retrieval. Our prototype implementation, (QFS) provides answers to queries through an integrated Quasar query processor and metadata indexing. In addition to describing the design of the above aspects of our system, we will present in this talk some of our performance results from our FUSE-based QFS prototype, based on a text document analysis case study.

Biography: Sasha Ames is a PhD candidate in Computer Science at University of California, Santa Cruz, advised by Professor Carlos Maltzahn. He pursues his graduate studies while working at Lawrence Livermore National Laboratory under the supervision of Dr. Maya Gokhale, through the Lawrence Scholar Program. Prior to his graduate studies, he earned a B.A. in Computer Science at Columbia University and spent several years working in New York City industry.