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• SPECIAL FOCUS•

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Editor's note

Recent years see explosive data growth and rapid enhancement of computing powers. Under this background, file and storage technologies play a decisive role in business development and social progress, functioning as the master wand of diverse organizations, as well as a barometer of the performances of most computer systems in our information age.

Storage is one of the keys to data availability, involving multiple disciplines in such areas as network protocols, resource management, data backup, replication, recovery, devices, security, theory of data coding, densities, and energy-efficiency. It is a topic full of wonderful opportunities. Designing and developing storage systems continue to be a challenge due to the heterogeneity of both software and hardware in enterprise environments and data centers.

It is my great pleasure to introduce this special focus of *Science China Information Sciences*. This is an attempt to exhibit the latest research achievements, findings and ideas in the file and storage technologies, bringing together relevant ideas and experiences in exploring new directions in the design, implementation, evaluation, and deployment of storage systems.

In this special focus, five interesting papers are provided. The scope of them includes:

• Storage system architecture, design, and validation: One paper focuses on parallel, distributed, and peer-to-peer storage systems, performance monitoring and evaluation.

• Storage security: One paper presents a new architecture to secure file storing and sharing efficiently over untrusted shared storage and network environments.

• Storage media and devices: One paper describes a parallel SSD architecture that utilizes the module- and bus-level parallelisms to increase the average bandwidth, and employs the chip-level interleaving to hide the I/O latency.

• Operating system and application support: One paper involves caching, memory allocation, file systems, and design of application programming interfaces.

• Replication, backup, and recovery: One paper presents a method to automate the replication process in P2P storage systems. This method employs two key techniques to enable cost-effective replication.

Please enjoy these fine articles and start making plans to cultivate this interesting research field!

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