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Network of Caches a way to enhance network’s performance

سید مصطفی سید رضازاد، پژوهشگاه دانش‌های بنیادی (IPM)

Abstract

The growth of the Internet in both size and usage is beyond expectations. New ideas and techniques have emerged to facilitate end-users to receive seamless services. One of the significant successful solutions is caching multiple data copies in the network as a Content Delivery Network service. Content Delivery Network is an application service that redirects the clients' requests toward a closer copy of data. A network of caches is a finer granularity service that provides a caching system at the network level. Some of the service's benefits are reduction in the network load, less download latency, and a means to ease mobile communications. However, searching the memory, especially when data is not available, is a waste of bandwidth and router's resources. Therefore, enhancing the performance of the network of caches is a challenge to overcome.

In this talk, we first introduce the Named Data Networking platform to enable caching capability at the network layer. Then we investigate the challenges that need to be addressed to provide caching at this level. A review of solutions will be discussed before introducing the LRU-Lock cache policy that we suggested to effectively distribute content in the network based on content popularity without measuring it. By locking data in a cache, LRU-Lock prolongs its lifetime to allow it to reach its potential cache hit.

Biography

Mostafa Rezazad is a postdoc fellow at the Institute for Research in Fundamental Sciences (IPM). He received his Ph.D. in computer science from the National University of Singapore (NUS) in 2015. He served as a postdoc at Singapore University of Technology and Design (SUTD) for two years before joining IPM as a postdoc in 2018. His research interests include new architectures for the Internet, applying AI techniques in networking subjects such as QoS routing, cybersecurity, etc. He also has a strong background in computer architecture with reliable publications in this domain.

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