

Session-persistent Load Balancing without Acting as a Reverse-proxy

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Abstract A Load balancer is an essential component of a data center which distributes requests among servers. Layer-4 load balancers, which deal with network-level connection information, process requests faster than Layer-7 ones, but they cannot provide session-persistent load balancing. Session-unaware load balancing imposes latency at the application layer because information of a session must be stored in a shared database while the session is open. On the other side, layer-7 load balancers can direct all requests of an application-level session to the same server, but they impose a high processing cost due to acting as a reverse-proxy and processing requests at the application level. Hence, there is no session-persistent load balancer as fast as layer-4 ones. In this presentation, first, I talk about layer-4 and layer-7 load balancers and I discuss how they work. I illustrate the pros and cons of them by an example of a Web load balancer. Then, I present a session-persistent load balancing approach which uses TLS session data instead of processing at the application level. The proposed method, which does not act as a reverse-proxy, outperforms existing approaches in terms of transaction rate and response time. Moreover, while each layer-7 load balancer works only for a specific application (for example Web), the solution provides session persistence load balancing for all applications that make use of TLS.

Biography

[Mohammad Hosseini](#) received his Ph.D. degree in computer engineering from Sharif University of Technology (SUT) in September 2019. He has carried out his research activities around computer networking under the supervision of Dr. Amir Hossein Jahangir since his MSc program. As part of his MSc thesis, he has designed and implemented various high-speed network equipment such as, "performance tester for 10G optical switches", which resulted in high-end products sold by the university. In his PhD thesis, he developed network traffic digesting methods for forensic applications. After receiving his Ph.D., he pursued his academic research activities as a postdoctoral researcher at SUT for a year, where he focused on modern computer networking topics, especially SDN and NFV. In the spring semester of 2021-2022, he co-taught the SDN course with Prof. Ali Movaghar for graduate students at the Computer Engineering Department of SUT. His research interests include SDN, NFV, and data center networking.

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