Abstract

The increase of digital data between content's servers and clients in a network causes congestion problems when downloading big web contents including files, streaming media, etc. The problem becomes pronounced when a narrow bandwidth or unexpected termination of streaming services is appeared. Content Delivery Network (CDN) is introduced to overcome such problems by redirect client's request to the best server which proximal and least loaded. However, with intensity increase of people accessing a particular content, the
performance of CDN is reduced and sometimes congested. We propose an architecture to solve such problems with a new method to redirect client's request through a special router called Service-oriented Router (SoR). In this paper, several analytical studies and experiments have been conducted and the result show that router-based redirection is more effective than DNS-based redirection that is currently being used. SoR has been introduces as a content-based router and has capability to do deep packet inspection (DPI) into the packet streams and analyze them. We use SoR in our proposed method as a CDN's core-router to redirect client's request to the best server. Our experiment conducted with model and numerical analytic supported by optimal redirection probability based on delay between router and server. The experiment result confirmed that the router-based redirection reduced the response time by 23.3% compared to the DNS-based redirection.

References

- New Generation Network enabled by Service-oriented Router, [Online]. Available:
- B. Krishnamurthy, C. Wills, Y. Zhang, On the use and performance of Content Delivery Networks; in ACM SIGCOMM Internet Measurements Workshop, San Diego (USA), August, 2001.
- P. S. M. Sayal, P. Vingralek, Selection algorithms for replicated web servers; in ACM SIGMETRICS Internet Server Performace Workshop, Madison (USA), June, 1998.
- C. Cameron, S. Low, D. Wei, High-density model for server allocation and placement; in ACM SIGMETRICS 2002, Marina del Rey CA (USA), June, 2002.
- Kazuki Masuda, Shinichi Ishida, Hiroaki Nishi, Cross-site recommendation application based on the viewing time and contents of webpages captured by a Network Router; in ICOMP, Las Vegas, 2013.
- E. Harahap, W. Sakamoto, H. Nishi, Failure prediction method for network

Index Terms

  Computer Science  Communication Systems

Keywords

  modeling  content delivery networks  service-oriented router  queuing networks  content distributions network
request routing
request redirection