

Abstract: A Dynamic Caching Algorithm based on the Pheromone for Content Distribution Networks

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Abstract

A content distribution network (CDN) is a system to improve the delivery of content to the end users on the Internet, in which popular content may be cached or replicated at a number of servers, placed closer to some client populations. The design of a CDN consists of defining which content should be replicated at each server, the number of servers, where they should be placed in the network, which server a client's requests should be sent to, and how server responses should be routed to the clients. CDNs were originally designed for traditional web files. However, given the increase in streaming media content on the Internet, the development of efficient CDN design methods that take into account the special characteristics of media objects, is of great interest. These characteristics include sustained high bandwidth requirements and faster response time by multicast delivery. The main goal of this paper is to propose an algorithm for designing a streaming media CDN with the efficient byte hit ratio and fast response time. We propose the segment-based dynamic caching mechanism with the pheromone that is defined a kind of lifetime of each segment. We evaluate this algorithm in simulations using CDNSim.

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