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EFFECTIVE IMPLEMENTATION OF LOAD STABILIZATION IN OVERLAY OF SERVERS

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ABSTRACT:

By replication of content on several servers, a content delivery network is able to partly resolve congestion issues because of high client request rates, as a result dropping latency while at the same moment rising content accessibility. Usually the system of content delivery network comprises an innovative server containing novel data to be diffused, mutually with one or additional distribution servers, known as surrogate servers. In our work, we face challenging issue of applying an effective law in support of load balancing within content delivery networks. We put forward a new mechanism for redirecting requests of incoming client to the most suitable server, thus balancing overall requests of system load. Our proposal is on the basis of familiar study of a content delivery networks system that is carried out through exploitation of a fluid flow model description of the network of servers. Our method leverage local balancing to achieve global balancing which is carried out all the way through an intermittent interaction between the system nodes.

Keywords: Content delivery networks, Load balancing, Surrogate, Fluid flow model, Congestion.

1. INTRODUCTION:

In most of the literature work, designing of an appropriate network management law is performed by means of assuming a constant fluid flow representation of the network. Quite a lot of mechanisms were put forward in literature which can be typically classified as moreover static or else dynamic, depending on policy that is adopted for server selection [1]. The algorithms of Static choose a server devoid of relying on any information in relation to the status of system at decision time. These algorithms do not require any data retrieval method in system, which denotes that no communication transparency is introduced. Strategies concerning dynamic load-balancing correspond to a suitable substitute to static algorithms. These methods make usage of information coming moreover from network or from servers to get better request assignment procedure. The selection of suitable server is made all the way through analysis of quite a lot of parameters that are extracted from network elements. Therefore, a data exchange procedure between the servers is essential, which inevitably incurs in a communication transparency. A content delivery network characterizes a popular and constructive solution to maintain promising Web applications in an effective means by means of adopting a distributed overlay of servers. An important unit concerning the structure of content delivery network is the mechanism of request routing which permits to forward users' requests for a content to suitable server on the basis of a particular set of parameters. Based on the network layers as well as mechanisms that are involved in the procedure, usually the techniques of request routing are classified as DNS request routing, application-layer request routing and transport-layer request routing. In our work, we spotlight on application layer request routing method and we provide an explanation for load balancing in circumstance of HTTP redirection methods [2][3]. We design an applicable load-balancing law that guarantee equilibrium of queues in a balanced content delivery network by means of fluid flow representation of the network servers.

2. METHODOLOGY:

The redirection mechanisms are put into practice moreover in a centralized or else in a distributed method. Both solutions of centralized as well as distributed provide pros and cons on considered situation and particular evaluated performance parameters. By means of replicating content on a number of servers, a content delivery network is able to partly resolve congestion issues because of high client request rates, as a result dropping latency while at the same moment rising content availability. Request routing within a content delivery network is typically concerned with issue of appropriately distributing client requests to attain load balancing between the servers that are involved in distribution network. Typically, a content delivery network consists of an innovative server containing novel data to be diffused, mutually with one or additional distribution servers, known as surrogate servers. At regular intervals, the surrogate servers are keenly updated by means of the back-end server. Surrogate servers are normally used to accumulate static information, while dynamic information is just stored within a minute number of back-end servers [4]. In several typical situations, there is a server known as redirector, which dynamically redirects client requests on the basis of selected policies. The most significant improvements of performance that are derived from adoption of network concern two aspects: such as overall system throughput, to be precise average number of requests that are served in a time unit; and the response time that is experienced by means of clients subsequent to issuing of a request. In our work, we face challenging issue of applying an effective law in support of load balancing within content delivery networks. Our proposal is based on recognized study of a content delivery networks system that is carried out through exploitation of a fluid flow model description of the network of servers. We present a novel mechanism for redirecting requests of incoming client to the most suitable server, thus balancing overall requests of system load. Our mechanism leverage local balancing to attain global balancing which is carried out all the way through an intermittent interaction between the system nodes.

3. AN OVERVIEW OF DISTRIBUTED LOAD-BALANCING ALGORITHM:

We initiate a continuous model of a content delivery networks infrastructure, used to propose a novel load-balancing law. The content delivery networks can be measured as a set of servers with own queue. We imagine a fluid representation approximation for active behaviour of each queue. We broaden this model to the overall content delivery networks system and such approximation of a stochastic scheme by a deterministic process is extensively accepted in literature. We monitor that it is a tough task to describe a scheme in an actual content delivery networks environment that is totally compliant with proposed representation. Such a representation deals with constant time systems, which is not accurately the situation in a real packet network in which processing of arriving requests is not constant over time. In our work, we face challenging issue of applying an effective law in support of load balancing within content delivery networks. It is based on recognized study of a content delivery networks system that is carried out through exploitation of a fluid flow model description of the network of servers. We aim an appropriate load-balancing law that guarantee equilibrium of queues in a balanced content delivery network by means of fluid flow representation of the network servers. The executed algorithm consists of two separate components such as: a process that is in charge of renewing status of neighbours' load, and the other is a mechanism that represent core of the algorithm, which is accountable for distributing requests towards nodes neighbours [5]. Although the communication protocol employed for status information exchange is essential for balancing process, in our work we will not spotlight on it. A common update interval has to be adapted to assurance synchronization between the entire interacting peers. Hence several alternative solutions can be applied. We assume the entire of information regarding peers' load is already obtainable throughout such a process. In fact status data inconsistencies between peers may happen because of delays in the status exchange procedure. To get more or less such an issue, we can believe the most current peer information for the balancing procedure; even though this may influence the performance of algorithm, such effects are mitigated by dropping the update interval. Depending on the type of interval produced number falls in, algorithm selects the equivalent peer for redirecting incoming request [6].

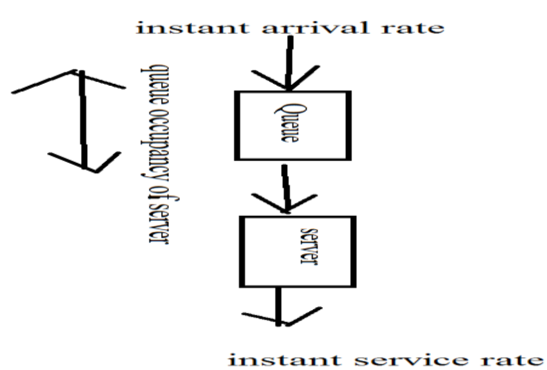

Fig1: An overview of Fluid queue model

4. CONCLUSION:

A content delivery network distinguishes a beneficial solution to maintain promising Web applications in an effective means by means of adopting a distributed overlay of servers. Request routing in a content delivery network is normally associated with issue of appropriately distributing client requests to attain load balancing between the servers that are involved in distribution network. Here in our work, we face challenging issue of applying an effective law in support of load balancing within content delivery networks. We introduce an effective mechanism for redirecting requests of incoming client to the most suitable server, thus balancing overall requests of system load. It is on the basis of recognized study of a content delivery networks system that is carried out through exploitation of a fluid flow model description of the network of servers. Our method leverage local balancing to accomplish global balancing which is carried out all the way through an intermittent interaction between the system nodes. The implemented algorithm consists of two independent components such as: a process that is in charge of renewing status of neighbours' load, and the other is a mechanism that represent core of the algorithm, which is accountable for distributing requests towards nodes neighbours.

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