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A system and method for throttling down network traffic on slow connections

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Abstract

To better serve cloud computing users, this study introduces PACK (Predictive ACKs), a unique end-to-end traffic redundancy elimination (TRE) system. In order to maximize the benefits of reduced bandwidth costs and the lower overall cost of cloud-based TRE's computation and storage, careful management of cloud resources is required. To reduce the processing expenses brought on by the TRE algorithm, PACK's key benefit is its ability to fload the cloud-server TRE effort to end-clients. PACK eliminates the need for the server to constantly monitor client activity, unlike earlier systems. Because of this, PACK is well-suited for cloud-elastic ubiquitous computing architectures that combine client mobility with server relocation.To identify previously received chunk chains, apps, and network-based devices, PACK makes use of a revolutionary TRE approach. Using traces of traffic from a number of different origins, we conclude our analysis of the benefits PACK offers cloud users.

Search Terms: caching, cloud computing, network optimization, and eliminating duplicate traffic.

INTRODUCTION

Pay as you go, or usage-based pricing, is the service model offered by CLOUD computing providers to their consumers. By taking use of the cloud's scalable and elastic computational capabilities, cloud customers1 only have to pay for the computing resources, storage, and band-width that they actually utilize. One area where spending should be kept to a minimum is in data transmission (or bandwidth) expenditures. This means that cloud users that make efficient use of the cloud's resources would seek out and implement different traffic reduction measures, most notably traffic redundancy elimination (TRE), to cut down on their bandwidth expenses. When redundancy is found, the sender stops sending those chunks and instead sends its own robust signature for each one.CommercialTR Esolutionsarepopularatenterprisenetworks,

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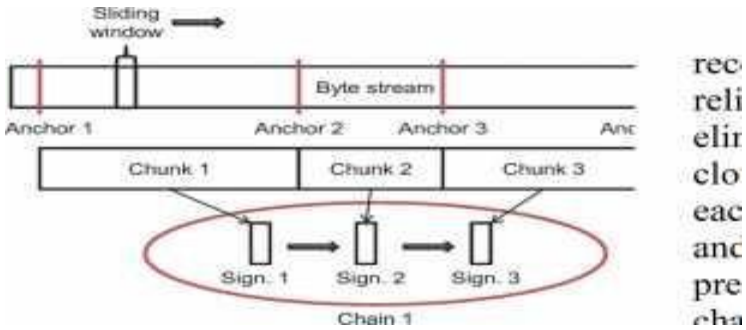

Fig. 1. From stream to chain. PACK uses a new *chains* scheme,

seen in Fig. 1, whereby chunks are connected to other chunks in the sequence in which they were last received. The PACK receiver keeps a chunk store, which is essentially a massive cache of chunks and the information that describes them. The data associated with a chunk is called "metadata," and it consists of the chunk's signature and a (single) reference to the next chunk in the most recently received stream. The chunks, signatures, and chains resulting from the traversal are all cached and indexed for quick and easy access. In addition, the preceding chunk's stream information is modified to include a reference to the present chunk.

EXISTING SYSTEM

Traffic redundancy stems from common end-users' activities, such as repeatedly accessing, downloading, uploading (i.e., backup), distributing, and modifying the same or similar information items (documents, data, Web, and video).TRE is used to eliminate the transmission of redundant content and, therefore, to significantly reduce the network cost. In most common

PROPOSED SYSTEM

To reduce unnecessary data transfer between the cloud and its users, we provide a unique receiver-based end-to-end TRE solution that makes use of predictions. Each receiver in this approach monitors the incoming stream and searches for matching chunks among those it has already received or among those in a local file. Using locally stored metadata about long-term chunks, the client sends the server predictions that contain the signatures of individual chunks and other easily verifiable signals about what to expect from the sender in the future. We present a novel receiver-side chunking (fingerprinting) approach called PACK chunking, which requires minimal computing resources. Rabin fingerprinting has been widely utilized in RE applications, but PACK chunking offers an exciting new option.

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CONCLUSION

In this research, we offer PACK, an end-to-end TRE that operates in the cloud and relies on unique speculative ideas to lower latency and cloud operating cost. PACK allows for cloud flexibility and user mobility while maintaining redundancy over the long run since the server is not required to constantly update client status. On top of that, PACK may eliminate content redundancy when data is received by the client from various servers without the need for a three-way handshake.
There are two promising future additions that can improve the PACK idea. To begin, our approach uses LRU to keep track of chains by retaining just the most recently seen chunk in a sequence for every given chunk.