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## **MAINTAINING INTEGRITY OF EFFECTIVE COMMUNICATION BASED ON PROXY FIREWALLABSTRACT**

The dynamic redistribution of filtering rules between firewalls, which are located in the same network, is a technical solution that can cope with temporary changes in the traffic load processed by the firewalls themselves. This paper presents a novel formal model for networks including multiple cascaded firewalls, that can be leveraged to enable the transfer of a set of rules from a firewall to its downstream neighbours when the changes in the input traffic profile suggest to do so. With respect to other solutions appeared in the literature a formal approach, besides providing unambiguous specifications and mathematical proofs of correctness, also enables the computation of theoretical bounds for the expected performance before the scheme is actually deployed in the target network.

With the growing amount of data, the demand of big data storage significantly increases. Through the cloud center, data providers can conveniently share data stored in the center with others. However, one practically important problem in big data storage is privacy. During the sharing process, data is encrypted to be confidential and anonymous. Such operation can protect privacy from being leaked out.

To satisfy the practical conditions, data transmitting with multi receivers is also considered. Furthermore, this work proposes the notion of pre-authentication for the first time, i.e., only users with certain attributes that have already.