主 論 文 要 旨

論文題名

Studies on User-Behavior Driven Content Distribution Environments

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主論文要旨

In recent years, handheld terminals like smartphones have spread into our lives and user-generated content has become dominant in the Web. This kind of content is mainly distributed by SNS which often distributes content to outside of targeted areas, because it is hard to control the extent of content distribution in SNS. Meanwhile, the author of content is one of the most important factors of UGC. Most existing services require mutual user evaluation with a voting mechanism or other reputation mechanisms which tend to increase the load of central servers. In addition, large size content like videos increases a traffic load on networks.

In this thesis, to resolve the problems of such content distribution environments, three approaches are proposed: (1) a method to create user clusters which enables the control of the geographical extent of content distribution, (2) a method to distribute content and aggregate reputation without central servers, and (3) a method to redirect content requests at layer-2. In the first method, the clustering method organizes places where content is exchanged into hierarchies so that the extent of content distribution can be controlled with its parameters to swap user records among nodes organizing clusters. The second method makes content distribution and reputation aggregation work efficiently in a P2P manner. The simulation results provide insights on trade-offs between consumed network resource and required time for content distribution and reputation aggregation. As the third method, a layer-2 redirect method is implemented on top of the OpenFlow programmable switch platform. It shows a better performance compared with a conventional redirect system working at layer-3. Simulation results conducted in random networks also show that the proposed system works collaboratively on user demands, which reduces the load of central servers and improves the user experience.