TECHNOLOGY

Bistro: A System for Building Scalable Wide-Area Upload Applications

OVERVIEW

Tremendous increases in network traffic are a major obstacle to achieving scalability in the Internet and other large networks. At the application layer, hot spots are usually caused by either (a) high demand for some data or (b) high demand for a certain service. Hot spots in download applications mostly result from a demand for popular data objects. In contrast, hot spots in upload applications mainly result from a demand for a popular service, e.g., the income tax submission service.

There are two main characteristics that make upload applications different from download applications. First, in the case of uploads, the real-life event (e.g., deadline for filing taxes) often causes the hot spots imposes a hard deadline on the data transfer service, whereas in the case of downloads, the real-life event (e.g., an important new Supreme Court opinion) translates into a desire for low latency (i.e., immediate or almost immediate) data access. Second, uploads are inherently data writing applications, whereas downloads are data reading applications.

At the application layer, hot spot problems have traditionally been dealt with using some combination of (1) increasing capacity and (2) spreading the load over time, space or both. Some examples of these are data replication (e. g., web caching), data replacement (e. g., multi-resolution images, audio, video), service replication (e. g., DNS lookup, Network Time Protocol) and server push (e. g., news download, software distribution). However, these solutions are not scalable and efficient when dealing with hotspot problems in upload applications, where many clients upload to a single server simultaneously

Researchers at the University of Maryland have developed an infrastructure design for handling high capacity, wide-area uploads over the Internet or similar networks. The structure allows many clients to send data intended for a common destination server at about the same time without overloading the common destination server and its link to the Internet or similar network.

For further information, please contact the Office of Technology Commercialization, (301) 405-3947 E-mail: otc@umd.edu.

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Additional Information

INSTITUTION

University of Maryland, College Park

PATENT STATUS

Patent(s) pending

LICENSE STATUS

Available for exclusive or non-exclusive license

CATEGORIES

- Information Technology
- Software + Algorithm

EXTERNAL RESOURCES

- US Patent 7,181,623

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