

Maintaining strong cache consistency in the World Wide Web

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Abstract:

As the Web continues to explode in size, caching becomes increasingly important. With caching comes the problem of cache consistency. Conventional wisdom holds that strong cache consistency is too expensive for the Web, and weak consistency methods, such as Time-To-Live (TTL), are most appropriate. This study compares three consistency approaches: adaptive TTL, polling-every-time and invalidation, through analysis, implementation, and trace replay in a simulated environment. Our analysis shows that weak consistency methods save network bandwidth mostly at the expense of returning stale documents to users. Our experiments show that invalidation generates a comparable amount of network traffic and server workload to adaptive TTL and has similar average client response times, while polling-every-time results in more control messages, higher server workload, and longer client response times. We show that, contrary to popular belief, strong cache consistency can

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be maintained for the Web with little or no extra cost than the current weak consistency approaches, and it should be maintained using an invalidation-based protocol.

Published in: IEEE Transactions on Computers (Volume: 47 , Issue: 4, April 1998)

Page(s): 445 - 457 **INSPEC Accession Number:** 5915498

Date of Publication: April 1998 **DOI:** 10.1109/12.675713

ISSN Information: **Publisher:** IEEE

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References 

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Patent Citations (22) Patent Links Provided by 1790 Analytics

1.

Menai, Alexandre; Dublin, Charles Patrick, " Automated TTL adjustment using cache performance and purge data"

▶ Patent No. 10440142

[View at Patent Office](#) 

[Google Scholar](#)
2.

Cheng, Qi Jian; Li, Qining; Sun, Jing; Sun, Lei; Wang, Tianyi; Zhao, Yan; Zheng, Chuan Jie, " Data consistency maintenance for sequential requests"

▶ Patent No. 10140330

[View at Patent Office](#) 

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3.

Cheng, Qi Jian; Li, Qining; Sun, Jing; Sun, Lei; Wang, Tianyi; Zhao, Yan; Zheng, Chuan Jie, " Data consistency maintenance for sequential requests"

▶ Patent No. 10129364

[View at Patent Office](#) 

[Google Scholar](#)
4.

Lowery, Keith A.; Davidson, David K.; Saxena, Avinash C., " Method and apparatus for content synchronization"

▶ Patent No. 10114903

[View at Patent Office](#) 

[Google Scholar](#)
5.

Flack, Martin T.; Ludin, Stephen L.; Steiner, Moritz M., " Systems and methods for caching content with notification-based invalidation with extension to clients"



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► Patent No. 9813515 View at Patent Office   Google Scholar

6. Lowery, Keith A.; Davidson, David K.; Saxena, Avinash C.,
"Method and apparatus for dynamic data flow control using prioritization of data requests"
- Patent No. 9124594 View at Patent Office   Google Scholar
-

7. Lowery, Keith A.; Davidson, David K.; Saxena, Avinash C.,
"Method and apparatus for content synchronization"
- Patent No. 8756342 View at Patent Office   Google Scholar
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8. Lowery, Keith A.; Davidson, David K.; Saxena, Avinash C.,
"Method and apparatus for content synchronization"
- Patent No. 8725836 View at Patent Office   Google Scholar
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9. Lowery, Keith A.; Davidson, David K.; Saxena, Avinash C.,
"METHOD AND APPARATUS FOR DYNAMIC DATA FLOW CONTROL USING PRIORITIZATION OF DATA REQUESTS"
- Patent No. 8296451 View at Patent Office   Google Scholar
-

10. Lowery, Keith A.; Davidson, David K.; Saxena, Avinash C.,
"METHOD AND APPARATUS FOR DYNAMIC DATA FLOW CONTROL USING PRIORITIZATION OF DATA REQUESTS"
- Patent No. 8099457 View at Patent Office   Google Scholar
-

11. Bhanoo, Hemant Madhav; Erdogan, Ozgun A.; Holgers, Tobias; Shah, Nevil A.; Snodgrass, Ryan J., "PROBABILISTIC TECHNIQUE FOR CONSISTENCY CHECKING CACHE ENTRIES"
- Patent No. 7734872 View at Patent Office   Google Scholar
-

12. Bhanoo, Hemant Madhav; Erdogan, Ozgun A.; Holgers, Tobias; Shah, Nevil A.; Snodgrass, Ryan J., "PROBABILISTIC TECHNIQUE FOR CONSISTENCY CHECKING CACHE ENTRIES"
- Patent No. 7461206 View at Patent Office   Google Scholar
-

13. Lowery, Keith A.; Davidson, David K.; Saxena, Avinash C.,
"METHOD AND APPARATUS FOR DYNAMIC DATA FLOW CONTROL USING PRIORITIZATION OF DATA REQUESTS"
- Patent No. 7454457 View at Patent Office   Google Scholar
-

14. Bulka, Dov; Ramakrishnan, Ashok; Hinton, Jr., Phillip Ray; Wagner, Eric, "METHOD AND SYSTEM OF COMPACTING SPARSE DIRECTORIES IN A FILE SYSTEM"
▶ Patent No. 7287046 View at Patent Office  
Google Scholar

15. Bulka, Dov; Nair, Manoj, "FILE ACCESS SYSTEM"
▶ Patent No. 6990493 View at Patent Office  
Google Scholar

16. Bulka, Dov; Nair, Manoj, "METHOD AND SYSTEM FOR IDENTIFYING MEMORY COMPONENT IDENTIFIERS ASSOCIATED WITH DATA"
▶ Patent No. 6928466 View at Patent Office  
Google Scholar

17. Lea, Rodger James; Lau, Clement Ka-Mun, "SYSTEM AND METHOD FOR LOCALLY CACHING REMOTE QUERY REPLIES IN AN ELECTRONIC NETWORK"
▶ Patent No. 6560635 View at Patent Office  
Google Scholar

18. DAVIDSON, David, K.; LOWERY, Keith, A.; SAXENA, Avinash, C., "METHOD AND APPARATUS FOR CONTENT SYNCHRONIZATION"
▶ Patent No. EP1259908 View at Patent Office  Google Scholar

19. LOWERY, Keith, A.; DAVIDSON, David, K.; SAXENA, Avinash, C., "METHOD AND APPARATUS FOR CONTENT SYNCHRONIZATION"
▶ Patent No. WO2001057729 View at Patent Office 
Google Scholar

20. SCHARBER, John, M., "CONTENT DELIVERY SYSTEM"
▶ Patent No. WO2000073922 View at Patent Office 
Google Scholar

21. LEA, Rodger; LAU, Clement, "SYSTEM AND METHOD FOR LOCALLY CACHING REMOTE QUERY REPLIES IN AN ELECTRONIC NETWORK"
▶ Patent No. WO2000062185 View at Patent Office 
Google Scholar

22. Lin, Chueng-Hsien; Paul, Sanjoy; Sabnani, Krishan K., "EFFICIENT UNIFIED REPLICATION AND CACHING PROTOCOL"
▶ Patent No. 6088721 View at Patent Office  
Google Scholar

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