PostgreSQL Memory Management Retrofit

Benoît Hudson and David McWherter

April 1, 2004

Group Info

Benoît Hudson (bhudson@cs.cmu.edu)
David McWerther (cache@cs.cmu.edu)

Web page: http://www.cs.cmu.edu/~bhudson/projects/dbase

What we promised

We will have implemented a centralized memory allocation service for PostgreSQL, including facilities for considering the experimental options of:

- Overcommit amount (how much to overcommit memory)
- Abort vs Suspend overcommit avoidance policy
- Locking of critical buffers into physical memory

What we’ve done

- There is a centralized memory allocation service works on the current policy.
- There is a facility in the code for easily adding new policies.
- We can run a test suite to automatically vary the policy and number of concurrent threads. This will be useful for testing, if not for final experimental results.

What we haven’t done

- Implemented all the policies we wanted (we have only one).
- Implemented a way of deciding to abort a transaction based on lack of memory.
- Implemented locking of memory into physical RAM.

Revised schedule

Weeks 1-3  spring break, assignment 2, and then class presentation. In that time we designed the centralized allocator.

Week 4  David was out of town, so Benoît implemented the design and wrote the milestone report.

Weeks 5-6  David will implement memory locking. Benoît will implement the various policies we discussed in the proposal. We both will take the exam.

Week 7  both: run experiments.

Week 8  both: write final report and presentation.