General

Zilla is a "community supercomputer" application. The idea is that volunteered machines are used to participate in parallel computations.

Zilla loves to devour research problems, such as analyzing large numbers or doing quantum-theoretic calculations or modelling black hole collapse or designing medicines or simulating a living brain, and so on. But Zilla also likes to be taken to the movies. RenderMan from Pixar runs nicely on Zilla, so one can make a synthetic movie by doing, say, one frame per machine. Zilla is also capable of generating symphony orchestration, say with one instrument synthesized per machine. It might occur, for example, that the Western Sales Building is doing all the violins.

Above all, Zilla does somethRS6that computers were designed to do and are supposed to do, which is to work all night every night.

Etiquette

Zilla is possessed of an ecological and humane disposition. Volunteered machines (see Security & Permission help for how to volunteer your machine) run when their human owners are not present. Zilla effects this politesse by checking to see if the machine's screen is lit. Thus, if you volunteer your machine, all you should ever see is this: when you arrive in the morning and touch your keyboard/mouse, Zilla will "back off" in just a few seconds.

A matter of scale

To convey the scale of Zilla, we define one Zilla Unit (Z.U.) as 100 NeXTstations. The performance of one Z.U. is roughly equal to an account on a modern Cray-YMP supercomputer. If you like numbers, then 1 Z.U. is about 1.5 GIP (1.5 billion instructions per second) and 200 megaflop (200 million floating-point instructions per second).

What has been discovered already

Zilla has made several numerical discoveries. Please observe that some of these results
need to be reviewed and are therefore unofficial at present. Publications for some of the
results are being prepared as of this writing (Apr 1991).

January 1990: Zilla establishes "Fermat's 'Last Theorem'" to exponent 1,000,000.
Previous published research had put the limit at 150,000. This all means that
the equation x^n + y^n = z^n has no positive solutions for n > 2 and n < 1000000.
A descriptive paper is: Buhler, Crandall, Sompolski, "Irregular primes to 1000000,"
Mathematics of Computation, to appear 1992.

August 1990: Zilla finds a factor of the Mersenne Number M500249, that is,
13364077516908463 divides 2^500249±1. This is the largest factor found for
a Mersenne number lying in the region above the Mersenne prime
M216091. The method was the Pollard (p±1) method with second stage.

January 1991 and May 1991 : Two new factors of F13 were discovered, namely
2663848877152141313, and
3603109844542291969, of 2^(2^13) + 1.

8 Feb 1991: Brent's number was factored (Zilla found the last three factors):
13^101 + 1 = 2 * 7 * 3327037RS764439 * 7425107270430419 *
93206155312790272218 53 *
14560861044113847497319380951 *
68668644542501603075722872 7087

Spring 1991: Zilla factored several of the RSA "Challenge partition numbers."

Number theory is our primary testing motif so far. We have, however, determined that RenderMan makes good movies, and that the Mathematica kernel (executable) can indeed be launched on Zilla machines.

For help or commentary of any flavor in any direction, contact:

jdoenias@next.com
richard_crandall@next.com