

## PUBLISHER'S VIEW

# Intel's Handling of Bug Is the Real Problem

## Incident Illustrates Need for Prompt Disclosure of Bugs

by Michael Slater

The revelation of a bug in Intel's Pentium processor (see *081702.PDF*) has turned into the company's worst nightmare. Intel has only itself to blame, of course—especially for the way its executives chose to handle the situation once the bug was detected.

That the bug (which Intel carefully calls a "flaw") occurred is understandable. It is an unfortunate fact of life that microprocessors are designed by people, and people make mistakes. Every microprocessor has bugs, and much effort goes into eliminating as many of them as possible during a chip's development. It is possible that Intel's testing was not as thorough as it should have been, due to competitive pressures to get into production quickly, but it is understandable that such an obscure bug was missed.

It is equally easy to understand, but much harder to accept, the way Intel chose to handle the bug. Intel says that it found the bug last summer, months before it was independently discovered and published on the Internet. The company chose not to inform the public, or even its customers, no doubt because of a fear that disclosure would suppress Pentium sales. Intel probably never would have disclosed the bug if it had not been independently found, leaving millions of faulty Pentium processors in the hands of unsuspecting users.

This irresponsible attitude ultimately weakens Intel's position. In an attempt to protect its near-term sales, the company potentially contaminated the work of scientists and engineers, who could have avoided the problem had it been promptly disclosed. The company also lost control of the way the bug was reported and allowed a firestorm of criticism to spread.

All microprocessor vendors have an obligation to inform their customers and, when appropriate, end users of bugs in their chips. That Intel failed to do so will only deepen the widely felt distrust of the company. Even now, with all the press scrutiny, Intel is being less than forthright, giving vague answers about when the bug was found, when corrected chips will begin shipping, and just who will get them.

Intel argues that an average PC user is less likely to encounter this bug than to experience failures due to DRAM errors or other causes. To be sure, failures due to software bugs are far more frequent. This does not, however, excuse Intel's handling of the situation. If Intel had been forthright about reporting the bug,

users might have been more willing to accept Intel's analysis. Now, however, Intel's credibility is weak, since the company obviously wants to make the bug seem as insignificant as possible. IBM's decision to stop shipments of Pentium systems further undermines Intel's position.

Intel's analysis is that a heavy spreadsheet user will encounter the bug only once in 27,000 years, on average. This means that, if there are 270,000 such users, 10 per year will encounter the bug. In most instances, the bug won't produce a noticeable difference in the result. But how many errors are acceptable? None, if you are the one affected. In large part, it is an emotional issue—people expect their computers to do math right. The biggest problem is the uncertainty the bug creates, requiring many users to examine their work to determine whether or not they might be affected.

Years ago, *Microprocessor Report* began a campaign to get microprocessor vendors to publish their errata lists, as bug reports are commonly known. We had very few takers; MIPS was one notable exception. Intel argued that the press and competitors would misuse the information, exaggerating the importance of minor bugs. Intel also claimed that all chip purchasers got the errata lists anyway, and they were the only ones that needed them. Motorola said, in essence, if Intel discloses theirs then we'll disclose ours.

It is important to distinguish between bugs that affect only hardware designers (because they have hardware workarounds or just prevent certain hardware features from being used) and bugs that potentially affect all users. For bugs in the first category, the argument that errata lists are provided to all chip purchasers makes some sense—except that this often does not seem to be the case, as chips are spread throughout a company or sold through distributors. For bugs in the latter category, which clearly includes the Pentium FPU bug, there is no excuse for not immediately making public a complete description of the bug.

We repeat our "Call for Honesty Among Microprocessor Manufacturers." Send us your errata lists and show the world that you aren't ashamed of the state of your silicon. ♦



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