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## Market Roundup

July 30, 2004

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### eFUSE: IBM Introduces Autonomic Chip Morphing Technology

*By Charles King*

IBM has revealed a new patented chip morphing technology that the company indicated would enable a new class of autonomic semiconductor products that can monitor and adjust their functions to improve their quality, performance, and power consumption without human intervention. By putting to positive use the phenomena of electromigration, IBM's eFUSE combines software algorithms and microscopic electrical fuses that can dynamically sense when a chip needs a tune-up, then allow the chip to alter its configuration and efficiency of circuitry to enhance performance or avoid potential problems. eFUSE is part of a built-in self-repair system that constantly monitors a chip's functionality, and the morphing process can be repeated several times, even after the chip has been packaged and shipped in a product. The company is currently implementing eFUSE in a variety of applications, such as high-performance microprocessors based on IBM's Power Architecture, including POWER5 and other chips used in IBM eServer systems, as well as low-power IBM silicon germanium (SiGe) chips. IBM's eFUSE-enabled chips are also available to the company's foundry customers, and are being utilized in all IBM 90-nanometer chips. No pricing or availability information was included in the announcement.

In April 2001 IBM embarked on its Autonomic Computing initiative, which aimed to extend self-monitoring, self-managing, and self-healing technologies across hardware platforms and entire IT infrastructures. IBM was in a good position to pursue this effort, since such technologies were already established features of the company's well-known mainframe solutions. Over time, increasingly robust autonomic capabilities have become one of the signature elements of IBM's On Demand effort, and a differentiator between the company's products and those of its competitors. However, in eFUSE we believe IBM has successfully set the autonomic bar, from a nanometric perspective anyway, far lower than any competing processor developer has yet achieved. By delivering workable commercial solutions that harness the previously detrimental effects of electromigration, the company's out-of-the-box effort has resulted in unique features for IBM's own solutions.

What does eFUSE mean for IT customers who, frankly, neither understand nor particularly care about what is happening in their systems at the wafer level? A couple of things. First, eFUSE should notably enhance the overall performance and reliability of systems where it is deployed. At a time when IT down time has literal financial implications, processor improvements can be measured in hard cash. In addition, we expect future generations of eFUSE to incorporate new or enhanced autonomic functions, along with tools for better optimizing processor power and performance. Most important, though, is the fact that eFUSE is not just an engineer's pipedream or R&D project, but a successfully developed technology that is being used today in IBM's commercial solutions. In general, an often immeasurably long distance exists between something that can be done and one that is being done. eFUSE falls into the latter, happy category, and proves, among other things, that IBM's On Demand philosophy can successfully fit into the tiniest of packages.

## Moore Is Less?

*By Jim Balderston*

Microsoft announced this week that availability of 64-bit versions of its Windows Server 2003 and Windows XP desktop operating system would be delayed until the first half of 2005. Both products were expected to ship this year, with the XP client available in the first half of 2004 and the server due out in the second half. Microsoft indicated the delay was due to the need to test the new versions with large service packs that are due out in August. The two new versions are designed to take advantage of 64-bit extension chips now available from AMD and Intel. In a separate news development, Intel CEO Craig Barrett bluntly chastised 80,000 Intel employees for poor execution and demanded that all employees work to improve the company's performance. Barrett cited recent delays in product releases, as well as problems with manufacturing new products, as example of the types of issues the company needs to correct. Barrett's memo comes on the heels of a warning to financial analysts from Intel that the upcoming two quarters could see a slackening in demand.

As any professional comic will tell you, the secret to a good joke is timing. While there is no doubt that 64-bit computing will make its way into the market and eventually eclipse 32-bit computing's long reign, we suspect that many vendors are going to have a difficult task in determining just how the timing of such a market changeover will take place. Those who miscalculate will find themselves standing in front of a room full of hostile patrons who paid good money to laugh the night away, not to groan in agony. There is, of course, no question that 64-bit computing environments will offer sizable advantages to users. But the question now in play is whether or not for most there is any particular need for that increased power on desktops or in server closets. We suspect that any increase in performance on the desktop with Windows XP 64-bit will be largely wasted on most users, who have more than enough horsepower to accomplish their daily tasks of reading and sending email, browsing the Web, creating documents and/or using spreadsheets. Will the needs of those users change in the coming years? Certainly, especially as operating systems and applications become more complex and demand more processing power. Nevertheless, for the time being, it appears that industry hopes pegged on the continued reliability of Moore's law and an eager market to consume its results, is doomed itself to bear the brunt of many a bad joke.

## Sun Announces JES Extensions to Windows and HP-UX

*By Charles King*

Sun Microsystems has announced that it will extend its Java Enterprise System (JES) offerings and business model to support third-party operating systems and hardware including HP-UX on the PA-RISC architecture and Windows on x86 architecture, including AMD's Opteron. According to Sun, JES provides a simple, predictable, and affordable means for businesses to reduce the costs and complexity of their IT hardware infrastructures. The company said the new JES offerings will be available in the first calendar quarter of 2005. In addition, Sun announced a special systems promotion in which qualified customers who purchase JES licenses will also receive a Sun Fire V20z (two-way) Opteron-based server, a Solaris 9 license, and one year of Sun Spectrum Silver support, as well as a free upgrade to Solaris 10. The company is also extending a promotion that offers free JES licenses for one year to qualifying SMBs with fewer than 100 employees. The Java Enterprise System is priced at \$100 per employee per year, and is currently available directly through Sun and Sun iForce partners for Solaris and Linux operating environments on Sun and non-Sun SPARC, AMD Opteron, and x86-based systems.

Originally launched in September 2003, Sun's JES (formerly Project Orion) bundled a host of infrastructure solutions including the Sun ONE application server, portal server, directory server, clustering software, and calendar and messaging products, along with an OS, into a single package. By pricing JES on an annual \$100 per employee basis and updating offerings quarterly, Sun hoped to make its multitudinous infrastructure solutions easier to comprehend and manage, inspiring customers to sign on. To date, this approach appears to be working pretty well, with Sun claiming over 300,000 employee subscriptions, and with good reason. By charging a flat, employee-based fee and delivering updates on a fixed schedule, Sun is helping enterprises deal with one of their pet high-tech peeves: predictably calculating IT costs. Sun's background and position in corporate datacenters

makes JES an intelligent methodology for providing additional actual and perceived value to the company's enterprise customers.

The larger question, however, is whether Sun's plan to offer JES as the solution that will set PA-RISC and x86 customers free from their HP-UX and Windows shackles and lead them into the Promised Land of Solaris will resonate among non-Sun customers. A year or so ago, such a suggestion might have elicited hoots and guffaws among even the most amusement-tolerant IT followers, but the past twelve months have witnessed some interesting events. In one corner of the market, HP has struggled to get customers to take the Itanium migration story as seriously as the company itself does. In the x86 world, the success of AMD's Opteron has forced Intel to alter its 64-bit go-to-market strategy and left Windows customers in the lurch as Microsoft has slipped delivery of its 64-bit operating systems for Opteron and Intel's Nocona. These events offer Sun substantial competitive openings. Perhaps most importantly, businesses are waking up to the fact that IT speeds and feeds are not the be-all/end-all high-tech nirvana they once assumed. In fact, incompatible, badly integrated systems represent a literal sort of IT purgatory most companies would love to escape. Sun aggressively embraced Opteron, coalesced its UltraSPARC development efforts with Fujitsu, and generally tried to reinvent itself as a software visionary. If the company can deliver JES as an affordable, workable, heterogeneous IT lingua franca, the enterprise computing market could become a far more interesting and volatile place than it already is.

## Bloggers and Pamphleteers

*By Jim Balderston*

Both U.S. political conventions have extended press credentials to selected keepers of Weblogs, or Blogs. Many of the Webloggers are presently cranking out their observations of the dervish of events in and surrounding the Democratic Convention, and for the most part they have been given full journalist credentials, giving them unfettered access to the convention. Bloggers from a number of well-known Weblogs are posting the observations of the candidates, the media, and the general goings-on in Boston on a regular basis. The accreditation of Webloggers as full-fledged journalists caused some grumbling among so-called professional journalists who are associated with specific news organizations; the same organizations that the Webloggers often criticize for political bias (of one type or another) or for general incompetence.

Press credentials for political party conventions are not thrown around with little regard for who is granted entry into the great hot air generator known as the political convention. Those applying for such credentials must show they work for a reputable publication and show, to some effect, that they are not going to use their credentialed status as a means to be disruptive to the events at hand. The fact that the proprietors of political Web sites — with no connection to major media operations — have been given these valuable passes is yet another indication of the revolutionary reach and impact of the Internet. Just as pamphleteers of earlier generations could manage much mischief with printing press-generated broadsides at the powers that be, so Webloggers can unleash their fulminations to a worldwide audience. The barriers of entry to a worldwide audience have dropped dramatically.

But before we go too far in extolling the wondrous impact of Internet technology, we have to remember that the technology itself does not make Weblogging individuals credible, competent or responsible in how or what they report. Unlike news organizations, there are no enterprise-wide rules of conduct; Webloggers can — and often do — make up the rules as they go. In essence, a Weblog is about the person or persons involved in writing it, and their skills or lack thereof are only magnified by the opportunity to reach that worldwide audience. But reach is not ownership, however: that audience that may be built up over a few years can be lost in a matter of weeks if the proprietor loses his or her credibility. Large news enterprises must promulgate rules that apply to a wide spectrum of talent levels, and these rules can help one individual and hinder another who may find them constraining. The Weblogger has no such restraints, and as such determines his or her future by how well they restrain themselves. We suspect Weblogs will be around for a very long time. Some will grow and flourish just as some pamphleteers transformed into publications, while others will watch their soap box's relevance wither and eventually decompose into desperate anonymity.

## M-Systems Speeds Up USB Drive, but Is It Secure?

By Rob Kidd

M-Systems has introduced a 2GB USB flash drive based on the company's high-speed DOK T5 processor that will provide the equivalent storage of 1,400 floppy diskettes, or roughly thirty minutes of compressed video. The company claims this latest addition to the DiskOnKey product line is the fastest flash drive on the market, with read rates as high as 23 MBps and writes at 15 MBps. True Flash File System (TrueFFS) is integrated into this USB drive offering to provide full block device (hard drive) functionality that can be partitioned into private (secure, hardware based, password-protected encryption) and public space. The product comes standard with M-System's KeySafe application that facilitates the administration and management of the product's security functions. M-Systems makes OEM USB flash drives for Hewlett-Packard, Apple, IBM, Iomega, and others for sale in North America, Asia, and Europe. The 2GB DiskOnKey product is initially expected to be priced at \$500.

Most laptops and many desktops today rely on CD-RW or DVD-RW for removable, portable storage. These solutions offer the lowest price per MB of storage; however, they are relatively slow to write data. USB drives, with their increasing capacity and speed, are becoming a viable but still considerably more expensive alternative. The cost per megabyte of the new M-systems offering is \$.25/megabyte; however, over time we expect that this price will drop as the last year alone has seen a 30% drop in USB storage prices. While not the price leader, USB drives offer a convenience and speed that optical solutions cannot match.

With this announcement M-Systems is aggressively addressing several major barriers to the more widespread adoption of USB drives: security and cost. For the immediate future, we believe that USB drives will remain a niche product with a broadening tactical appeal for mobile workers, and as a very secure mobile records retention vehicle. For these audiences the practicality, convenience, and packaging of USB drives outweigh the higher cost. With its hardware-based encryption M-Systems has addressed many of the security issues associated with mobile storage and differentiated itself from other USB drive vendors that offer only software encryption. Any attempt to compromise the private key would require physically breaking and examining the DOK T5 processor. This would be a very resource-intensive operation that would likely be within the capabilities of the likes of national or international law enforcement agencies. Enterprises that incorporate these drives as tools for their workforce can be assured that the encrypted information that leaves their four walls will not be compromised if the device is lost or stolen. Those who need the convenience of USB drives and who feel that price is not an problem, may find this solution to be a viable portable secured records storage option.