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LINUX AND THE FUTURE OF UNIX

From: Andrew Allison, "Inside the New Computer Industry"

Depend upon it, Sir, when a man knows he is to be hanged in a fortnight, it concentrates his mind wonderfully. (Samuel Johnson, September 19, 1777)

THE HIGH LEVEL OF ACTIVITY on both the Unix "Classic" and Linux fronts during the past few weeks has, I believe, made the future direction of Unix/Linux rather clear. One of the key shifts which have occurred is that Linux has clearly established itself as a dialect of mainstream Unix. It's also begun to look as though Linux is eventually going to be transformed into a full-fledged enterprise-class operating system, although that's not yet a certainty. What is certain is that those vendors, notably SGI, who are betting that this will come to pass in time for deployment on the first generation of IA-64 systems are making a mistake even more serious than that being made by the RISC/Unix vendors (other than IBM) who are porting their proprietary implementations to IA-64. It's become pretty obvious that, barring a muck-up of truly monumental proportions, the dominant implementation of Unix for IA-64 in the near-term will be the IBM/Intel/SCO version currently known as Monterey/64.

Longer term, it now appears as though the Monterey distributions and Linux will fight it out for leadership of the Unix-on-IA market. The implications for TOSFKANT5, which looks increasingly unlikely to achieve readiness for enterprise-class prime time much before Linux does (if ever!), are ominous. The capabilities needed by Linux are not just the provision of SMP scaling and applications, but the achievement of POSIX and UNIX 98 compliance within the open source environment. Without these, the high-end application base simply will not develop.

It's Happening in Monterey

The real action on the Unix front is within Project Monterey. Last month's status report from its organizers revealed that Monterey is not, as previously thought, the code name for the AIX-based implementation of Unix for IA-64 being developed by IBM with a little help from Intel, SCO, and Sequent. Rather, it is a broadly based, single source-tree initiative encompassing POWER/PowerPC, IA-32, and IA-64, and, so far, Alpha. In reality, Project Monterey is nothing less than an across-the-board, frontal assault on NT, the 64-bit OS component of which is Monterey/64. Among second-tier suppliers, in addition to Sequent, Acer, Bull, Fujitsu/ICL, and Unisys have already signed up.

The aforementioned update also revealed that the efforts to integrate AIX, UnixWare and Dynix/ptx (Sequent's ccNUMA version) and port key IBM middleware for both the IA-32 and IA-64 platforms is moving right along: The first releases of UnixWare 7 (the IA-32 Monterey platform) incorporating the new features are scheduled for the fourth quarter of this year. Sequent will provide API and ABI compatibility with the UnixWare family of products and re-brand its Dynix/ptx operating system UnixWare ptx. SCO will supplement its UnixWare 7 products with initial AIX libraries and headers for application support, as well as AIX system management enhancements. These releases will be preceded by one in the third quarter incorporating Compaq's NonStop Cluster capability. With the first IA-64 system

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prototype now anticipated to appear next quarter, the IA-32 market is looking increasingly attractive, and the Monterey offering is maturing rapidly.

Meanwhile, just five months after the initial announcement, the first pass of Monterey/64 is up and running on the Merced simulator and is anticipated to be running on a prototype IA-64 platform in the third quarter. Migration guides for the AIX and UnixWare transitions are scheduled to appear this quarter or next. First customer shipment of Monterey/64, however, is currently scheduled for around the end of the third quarter of next year. This gives IBM a year-and-a-half to sell Monterey/64-ready AIX systems to those customers who don't want to wait. Of course, they can also get 64-bits from any of the other RISC system vendors, but which Unix is likely to provide the smoothest transition?

The update also disclosed for the first time the specifics of the IBM middleware to be ported. At present, this consists of DB2, Domino, Comm Server, Tivoli, ADSM, MQ Series, the increasingly open-source Websphere, Visual Age, Intelligent Miner, Notes, and last but not least, IBM's extensive Java stack.

Coming this month is the Monterey OEM Council, a forum for the OEMs who have announced plans to support Monterey to cooperate on product development and marketing issues. For more information on Project Monterey, see ibm.com/servers/monterey and sco.com/monterey.

Also announced last month, with even broader support than that for Monterey itself, was a separate initiative to develop a standard Unix-on-IA Developers Guide (UDG). This will result not merely in a common API but also a common ABI for the implementations from most Unix system vendors and SCO. In addition to the Project Monterey ringleaders, Compaq, HP, and Bull signed on, as did several leading ISVs. The good news (for customers and ISVs anyway) is that applications written strictly to the standard API and ABI will run under any compliant OS, not just UnixWare or Monterey/64. With IBM, HP, and Unix-on-Intel market leader Compaq (with 37 percent of the Unix-on-Intel market server) already committed, the choice for Unix-on-Intel suppliers is pretty simple: endorse Monterey

(which Compaq did last month), incorporate the Monterey API/ABI, or die a slow death. The specification is due to be submitted to The Open Group for fast track review around the end of next quarter.

Conveniently for those wishing to provide a bridge from IA-32 and -64 to their proprietary implementations or foolish enough to continue with plans to port their proprietary implementations to IA-64 in the teeth of the Monterey gale, the Developers Guide will come in two pieces, the application-independent UDG Programming Interfaces (UDG-PI -- I trust the reason it's not the Unix Programming Interface Guide is obvious!) and the OS-independent common OS and Driver Interface Guide (UDIG). As this was being written, it wasn't clear in which of the two foregoing categories Compaq is in. The company announced last month both that it would incorporate the UDG-PI into Tru64 Unix, thus allowing it to compile for Alpha from the Monterey source tree, and that Tru64 Unix was up and running on the Merced simulator.

Winners and Losers

The big winner in Project Monterey is SCO, which has been rescued from the proverbial fate worse than death by IBM and Intel. As noted in my original commentary on Monterey (It Happened In Monterey, December 1998), IBM also wins. The company is in a position today to offer ISVs and other developers an extremely robust Unix environment providing API compatibility with the ephemeral IA-64 platform. Of the other two major Unix-based system vendors, HP appears to me to be the biggest loser despite having signed up for the UDG initiative and the fact that Solaris-on-Intel is clearly in headless chicken mode, i.e., still moving, but dead nonetheless. HP, which is losing Unix system market share, is clearly vulnerable and Monterey kicks out one of the three legs of the company's strategy for differentiation in the IA-64 space, namely HP-UX (the other two, compilers and system logic, are also looking a bit shaky). Why would HP-UX users move to a proprietary implementation on IA-64 when there's an open standard supported by multiple platform vendors available? Because it's the best implementation around? Hardly. Has the best transition story? No

longer. They are locked into HP-UX applications? Maybe, but Monterey represents a very juicy target for ISVs. I predict that attempting to market HP-UX-on-IA-64 against Monterey will prove even harder than today's losing battle against Solaris.

Speaking of Sun, the last RISC purist standing is only indirectly affected by Monterey. If the initiative is successful, it will significantly broaden the Unix market and thus provide more opportunity for Sun, if not, the participants will be vulnerable to Sun's single-minded pursuit of business. Meanwhile, as noted below, the OpenServer market represents low-hanging fruit which I expect to see Sun aggressively pursue. The biggest danger Sun faces on the OS front is getting distracted by the Solaris-on-Intel mirage instead of focusing its energies on SPARC.

The big loser in all of this is Microsoft, which seems likely to be faced with a more-or-less united Unix-on-IA-64 front based on AIX in the short term and Linux in the long term. As last month's nonsense about the possibility of making some undefined pieces of NT open source makes clear, this has not been lost on the company. That Microsoft thinks the market so fictile suggests to me that the company has completely lost touch with reality. The big

challenge for SCO, and hence for Project Monterey, is to move the OpenServer customer base to UnixWare before they go elsewhere. It's not Linux, which while not yet ready for the more demanding applications served by enterprise-class Unix implementations is demonstrably ready for the replicated application market which accounts for much of SCO's business, or NT that represent the primary threat: Sun's low-end server strategy, recently enhanced by a very capable NT interoperability capability (see Sun Spot, this issue) represents a clear and present danger to the SCO market. SCO is encouraging its customers and ISVs to move to UnixWare by promising a seamless transition from UnixWare to Monterey/64. The UnixWare roadmap, however, currently extends to 2001 and, given that general release of IA-64 systems is now anticipated in the third quarter of next year, it's likely to go further.

Suddenly, the Unix community seems to have the best chance it has ever had to provide the kind of open, cross-platform environment necessary for it to beat back the NT and Linux hordes.

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