

■ THE EDITOR'S VIEW

Bringing High Availability to the Masses

Commodity Technology (Intel and Microsoft) Invades Another Market Niche

At last month's WinHEC show, Microsoft demonstrated a new technology code-named Wolfpack. This little puppy allows one Windows NT system to back up another; if one crashes, its workload is seamlessly picked up by the other. Although this capability is not yet available in NT, it is expected to be soon—allowing the Wintel standard to encroach on another high-margin niche: fault tolerance.

Many corporations rely on their computer systems as the heart of their business; for these companies, when computers go down, revenues go down. Off-the-shelf systems are inadequate, creating a niche for vendors such as Tandem and Stratus that specialize in fault-tolerant systems. Originally, these vendors designed their own software, systems, and in some cases processors to achieve designs that would rarely, if ever, go down. The standard methods were double, triple, even quadruple redundancy. Naturally, this level of redundancy, along with the custom design work, caused the price of fault-tolerant systems to skyrocket, but big companies were willing to pay to reduce their downtime.

Like many system makers, fault-tolerant vendors saw their technology as being applicable to a broad range of systems. After all, not just big companies but you and I hate it when our systems stop working. Few buyers, however, are willing to pay much of a premium for fault tolerance.

That's where Wolfpack comes in. The software allows a group of systems to communicate over a high-speed link (e.g., SCSI) as they execute tasks. If one system fails to respond, its tasks (including the task that was not completed due to the failure) are reassigned to other systems in the group. In fact, another system can even take over the network address of the failed system, transparently accepting its accesses. Microsoft demonstrated an AVI video being displayed across the network to a remote system; when the plug was pulled on the originating system, another system in the group picked up the video decoding with only a slight delay at the remote end.

Although Wolfpack requires some redundant storage and a special communications link, the cost overhead is small. In a cluster of systems, all are available for processing during normal operation; if one fails, performance is degraded, but all tasks can continue. The systems use standard processors, standard interface cards, and a standard Microsoft operating system.

Technically, this arrangement provides high availability (average downtime of a few minutes per year) rather than true fault tolerance (average downtime of nearly zero). For example, Wolfpack won't detect a transient math error gen-

erated by a processor, while a fault-tolerant design with two processors in lockstep would. But such errors are extremely rare, and most companies are willing to accept high availability rather than pay for true fault tolerance.

Once Microsoft delivers Wolfpack, scheduled for delivery in early 1997, it will lower the barrier for companies to deliver highly available systems. Many vendors that currently offer Windows NT systems are likely to offer such configurations. Because x86 vendors have dominated the NT market, most of these Wolfpack systems will use Intel processors or compatible devices.

Mainframe vendor Amdahl has already announced plans to build highly available systems using Windows NT and Pentium Pro processors (see [1007MSB.PDF](#)). Without Wolfpack, Amdahl is offering other software for hot failover, but the vendor is likely to offer Wolfpack when it is available. In addition, fault-tolerant leader Tandem announced it will adopt Wolfpack, running the software on its MIPS-based systems that already support Windows NT.

Although these vendors have adopted commodity software and, in Amdahl's case, processors, they will still find it difficult to compete with new entrants in the high-availability market. These new vendors are already using commodity technology throughout their systems, lowering manufacturing cost. In addition, their business models demand lower overhead than do the traditional high-end vendors'. These low-cost highly available systems will broaden the market for high availability but will also eat into the customer base of the existing fault-tolerant vendors.

Tandem, Amdahl, and similar companies can address a small high-end niche by offering service, support, and management software that PC vendors can't match. They may also put even more commodity technology into their designs to further reduce costs. The margins of these vendors will be stressed during this transition, and some may not survive. In any case, we foresee this market moving away from RISC processors and custom hardware toward x86 chips and other high-volume products.

We also see similar problems for workstation makers as commodity Pentium Pro/NT systems invade their turf. Vendors that have been exploiting small high-margin niches for years should be very scared when the Wintel duopoly, with its huge economies of scale, comes to visit. ■

