

Mini-NAS: an unfinished masterpiece?

D-Link's (www.dlink.com) DSM-604H Central Home Drive was, as its name implied, one of the first NAS (network-attached-storage) devices that targeted home and SOHO (small-office/home-office) users. Its compact chassis befitted D-Link's stated long-term ambition to append the NAS function to a router. What's under the DSM-604H's hood, and what clues to D-Link's possible future plans does it reveal?

A 266-MHz Intel (www.intel.com) iXP420 network processor constitutes the brains of the now-discontinued DSM-604H, which D-Link introduced in September 2003. D-Link's follow-on DSM-622 and -624 are also obsolete, although D-Link still sells the iXP420-based DSM-G600 NAS device. The iXP420 has also found use in the 100d NAS device from Iomega (www.iomega.com) and in the hacker-embraced NSLU2 Storage Link from Linksys (www.linksys.com).

The other important NAS-device-memory feature is its magnetic rotating storage. The Central Home Drive family came in 20- and 40-Gbyte variants, which the company implemented using 2.5-in., 4200-rpm PATA (Parallel Advanced Technology Attachment) hard-disk drives (whose standoffs are visible in the picture), thereby explaining the unit's svelteness. An Acard ATP865-A PCI-to-IDE controller connects the hard-disk drive to the iXP420. Because the ATP865-A handles two PATA channels, each with primary and secondary drive slots, D-Link conceivably could have developed a multidrive Central Home Drive variant.

Note the prominent, unpopulated IC footprint next to the IDE controller, along with the numerous test points scattered across both sides of the board. Did D-Link have plans for this hardware design, beyond the initial DSM-604H implementation? Was this board an initial-production prototype that the company planned to reduce the cost of in the future? Did D-Link take directly to production an Intel reference design? Or is there another explanation for the hardware exorbitance?

A 64-Mbit, 120-nsec, 3.3V Intel 28F640 StrataFlash memory and two 3.3V, 128-Mbit, 133-MHz Samsung (www.samsung.com) SDRAMs constitute the semiconductor-memory subsystem. There's no EEPROM or battery-backed RAM; perhaps one of the flash-memory blocks or a portion of the hard-disk drive serves the nonvolatile-data-memory function. Note the significant percentage of board space D-Link devoted to analog functions. The backside of the system board contains additional passive components, along with traces, test points, and a few small ICs.

The Central Home Drive has sparse ornamentation; four front-panel LEDs alert the user to active power and device status, along with the presence of active LAN and hard-drive traffic. The back panel encompasses a 5V, 2.5A power plug; a 10/100-Mbit wired-Ethernet connector; and a reset button. Micrel Semiconductor's (www.micrel.com) Kendin KS8721B PHY (physical-layer) chip implements the Ethernet interface with the MAC (media-access-control) transceiver built into the iXP420.

