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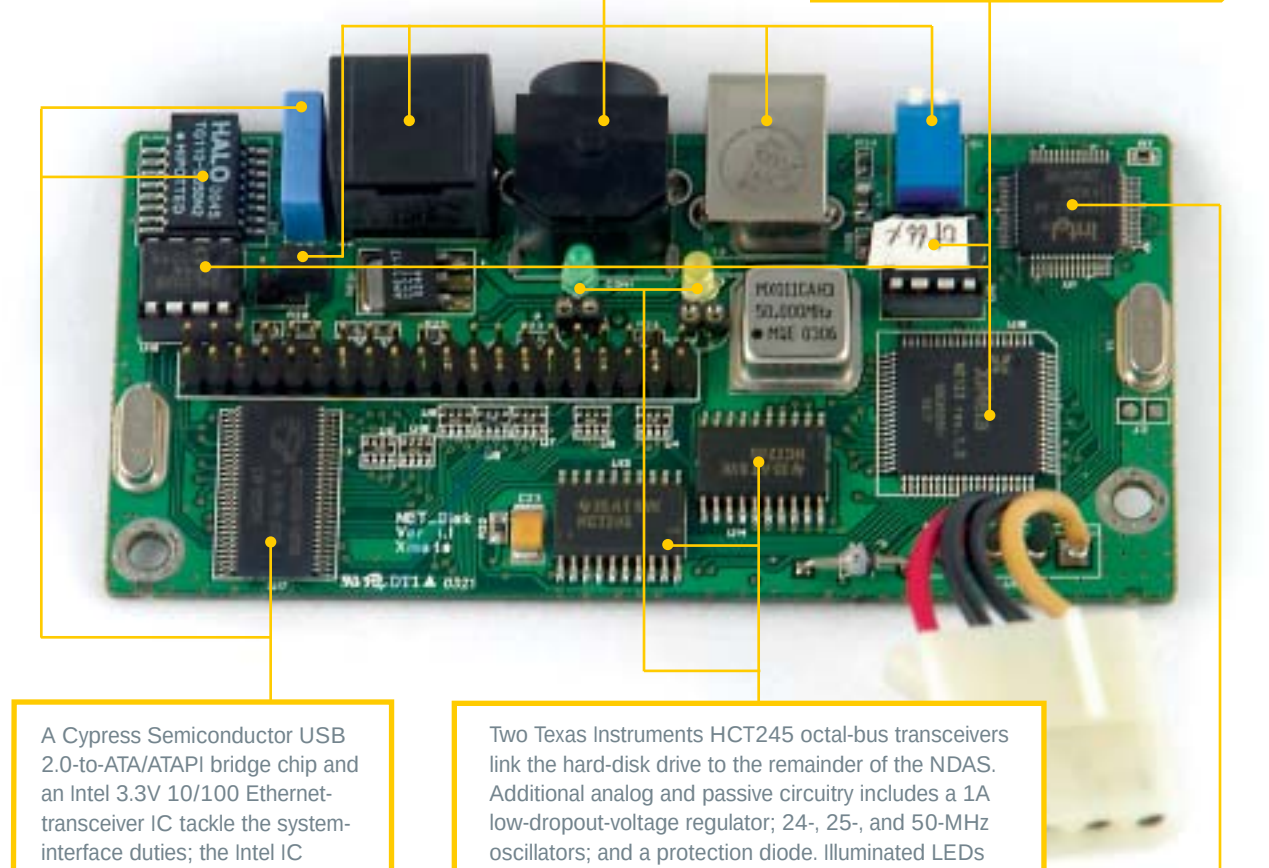
For expanded analysis and additional internal pictures of two first- and second-generation Ximeta NetDisks, visit www.edn.com/060511pry.

NDAS undressed: dissecting a NAS substitute

Ximeta's NDAS (network-direct-attached-storage) NetDisks sell for less than "pure" NAS (network-attached-storage) drives. To do so, they shift some of the processing burden to the PCs that connect to them. What's inside the enclosure, and how does the parts list differ from what you'd find in a fuller-featured alternative?

Back-panel connections support USB, wired-Ethernet, and dc power. First-generation units relied on user-controlled manual switches to toggle between USB and Ethernet; second-generation devices automatically select the proper system connection. A pc-board-mounted jumper is also missing from the second-generation device.

A NAS incorporates a stand-alone or core-in-SOC (system-on-chip) microprocessor, running an operating system such as Linux, along with many dozens or hundreds of megabytes of nonvolatile and volatile system memory. NDAS makes do with a proprietary 80-lead TQFP ASIC, whose myriad functions you can decipher at www.ximeta.com/files/01453436.pdf, along with socketed 2- and 16-kbit serial EEPROMs. The 16-kbit EEPROM sports a handwritten ROM-code sticker.



A Cypress Semiconductor USB 2.0-to-ATA/ATAPI bridge chip and an Intel 3.3V 10/100 Ethernet-transceiver IC tackle the system-interface duties; the Intel IC works with a Halo magnetic-isolation module and Pilkor 275V-tolerant, electromagnetic-interference-suppressing capacitor.

Two Texas Instruments HCT245 octal-bus transceivers link the hard-disk drive to the remainder of the NDAS. Additional analog and passive circuitry includes a 1A low-dropout-voltage regulator; 24-, 25-, and 50-MHz oscillators; and a protection diode. Illuminated LEDs indicate active-power and hard-disk-drive accesses.