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## Analyzing a NAS

**M**ake it better, but make it cheaper, too. This seeming contradiction confronts consumer-electronics engineers designing each new generation's worth of hardware in comparison with its predecessor. How did Western Digital address the disparity? And how far has single-drive consumer NAS (network-attached-storage) technology progressed in the past few years? (See "Mini-NAS: an unfinished masterpiece?" *EDN*, Oct 26, 2006, pg 40, [www.edn.com/article/CA6382651](http://www.edn.com/article/CA6382651).)

Western Digital's My Book World Edition NAS device is so named because users can potentially access it from anywhere in the world. Befitting its front-panel illumination scheme, the second-generation iteration is commonly known as the "white-light" model, which follows the initial "blue-ring" version from two years before. This highly integrated design includes only a few chips. The backside (not shown) of the PCB (printed-circuit board) is virtually bare.

The heart of the My Book World Edition is Oxford Semiconductor's OXE810 SOC (system on chip), now known as the PLX810 because PLX Technology acquired the company a year ago. This SE version of the IC supports single-drive configurations; Western Digital's My Book World Edition II contains the PLX810DSE, which handles two hard-disk drives and optionally implements RAID (redundant-array-of-inexpensive-disk) 0 and RAID 1 drive configurations.

The PLX810 contains an ARM9 core running at 367 MHz versus 200 MHz on the PLX800 used in the first-generation My Book World Edition NAS. The PLX810 also mates to 1 Gbit of DDR2 SDRAM with a 16-bit interface, whereas the PLX800 used DDR SRAM. The end results of these SOC enhancements are claimed 39-Mbyte/sec read and 25-Mbyte/sec write speeds, versus 7.5-Mbyte/sec reads and writes on the PLX800.



The air-cooling vents arrange in Morse Code patterns that spell out words such as "personal," "reliable," "innovative," "simple," and "design." The My Book World Edition includes a USB (Universal Serial Bus) port, but the factory-supplied firmware enables its use only to augment the NAS' internal memory, not as a print-server portal.

You waste intra-NAS performance if the network connection is the speed bottleneck. The PLX800 integrated only a 10/100-Mbps Ethernet PHY (physical) layer, so Western Digital bolted an external 1-GbE (gigabit-Ethernet) transceiver to the SOC's PCI (peripheral-component-interconnect) port. The PLX810 integrates 1-GbE MAC (media-access-controller) capabilities. LSI Logic's ET1011C2-C 1-GbE PHY completes the Ethernet picture.

