



# Marketing Bulletin

AMB2006-03

February 15, 2006

## **Direct NTFS File Access For LightningBASIC™** *Significantly Faster Disk Performance Now Available*

Dear Alpha Micro Dealer:

Is your application constrained by disk I/O access? Do you need to attain the utmost in file access speed? Alpha Micro can help: You can now locate your data files on the NTFS side of an AMOS 8.1 server.

### **Overcoming the Overhead of Emulation**

With the introduction of the AM-8000™ and Eagle 800™ servers, Alpha Micro has gradually been moving more and more of the operating system from emulated 68000 code into native x86 code. All things being equal, the less emulation layers, the better the performance you will experience.

LightningBASIC is the most tangible product of this design evolution: By moving the functions of the RUN.LIT AlphaBASIC® runtime library into native x86 code, BASIC programs can now run substantially faster than ever before.

So far, however, little has been done to improve disk performance, and for good reason: To achieve full compatibility with both 68000 series systems and the Falcon product family, AMOS 8.x uses the established AMOS file system inside Windows “.AMD” file(s). This allows established .LITs to execute without modification down to the smallest detail, using the expected PPN structure, bitmap system, and 6.3 file naming/UFD convention that most AMOS applications expect to see.

Preserving this compatibility comes at a price: Whenever an AMOS file is accessed, the CPU must “reach” it by first accessing the .AMD file in Windows, and then using emulated 68000 code in the AMOS monitor to get to the MFD, UFD, and finally the file itself. Thus, there is the overhead of two file systems plus the emulation of the 68000 code, all working to impact CPU performance.

### **Eliminating AMOS File Access Overhead**

In a future release of AMOS, Alpha Micro intends to allow AMOS and all of its files to reside natively within the NTFS file system, just like a conventional Windows application. Not only will this eliminate much of the aforementioned overhead, but it will also take advantage of NTFS’ sophisticated infrastructure. NTFS directories are extraordinarily stable, and permit our notion of a “random” file to exist without disk blocks being actually contiguous. NTFS allows indexing into a file by record number, regardless of how the file may be fragmented across the disk.

During informal discussions with our dealers about this concept, some have expressed a concern that allowing AMOS to reside in native NTFS compromises security. Keeping AMOS inside AMD file(s) provides a layer of insulation to protect against viruses, worms, and the like. Rest assured that we will continue to support the .AMD file configuration after NTFS mode is developed.

Development of native NTFS mode for AMOS is a significant amount of work, as we must strive for compatibility with software that expects to see bitmaps as indices of free space, logical disks, PPNs, and RAD50 compression of file names. Alpha Micro will not compromise on compatibility just to attain speed. Our research into this area has, however, yielded its first fruit.

## **LightningBASIC Access to NTFS Files**

As a first step towards full native NTFS operation, the version of LightningBASIC distributed on the January, 2006 AMOS 8.1 Update CD now supports direct access of files residing on the NTFS side of an AMOS 8.1 system.

## **Random and Sequential Files Supported**

You can locate both random and sequential files on the NTFS side. Frequently used random files will benefit from being located there. Random files can be BASORTed, too. Large sequential files, such as Catalog Updates that need to be read into your AMOS database on a recurring basis, no longer need to be transferred into the .AMD file system. Just load them onto the NTFS side, and use LightningBASIC to read them. All you need to do is specify NTFS as the disk device, e.g. `OPEN #100,"NTFS:FILE.TXT",INPUT`

## **The Plan for ISAM and ISAM Plus**

LightningBASIC will support ISAM and ISAM Plus files in a future version. Whether they will be able to reside on the NTFS side has not yet been determined. Alpha Micro is examining options to add functionality to the ISAM products in other ways; the strategy selected will determine whether ISAM files will be able to reside in NTFS prior to all of AMOS being able to reside there.

## **A No-Charge Upgrade to LightningBASIC 1.0**

The NTFS File Access function is being distributed as an enhancement to LightningBASIC 1.0. Your existing PIC Code will work with this version.

## **Breathtaking Speed**

On an AM-8000 Series II server, a BASIC benchmark program that read a 4 GB sequential file containing over 32 million records of 100 bytes each, and wrote the records back into a 4 GB random file, took 86.57 minutes when the files were located inside an .AMD file, and only 28.51 minutes when both files were located in native NTFS! **That's over 3 times faster!**

Seeing is believing. Install the latest LightningBASIC on your system and experience the performance improvement of NTFS file access for yourself.