IDE.DSK Issues and Explanation *(Last modified: 03APR1997)*

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Issue

IDE The Misery and the Mystery

IDE.DSK for some time there have been some questions as to exactly how this driver does what it does and what has to be done to make sure that it works correctly. This document?s purpose is to hopefully shed some light on this subject and help our customers in solving some of the problems encountered with IDE drives.

A Short History:
Since Novell is a 32 bit OS with no 32 bit BIOS?s Novell drivers have always communicated directly with the hardware. This habit has lent NetWare some significant advantages over the years in performance but has also created some configuration problems and exposed some hardware deficiencies. Historically IDE drives replaced ESDI and MFM drives. IDE drives were a major step forward in that they had onboard information about the drives. System BIOS?s were very slow to take advantage of this new feature. Because NetWare customers had a habit of wanting to add new drives to old systems the IDE.DSK driver was born and rather than depending BIOS?s to keep up with new drives the IDE.DSK used the IDE Identify command to determine drive size and geometry. This allowed NetWare users to add new drives without having to reconfigure BIOS?s etc. The so called 528 MEG boundary was never a concern for NetWare as it has never been limited to 1024 Cylinders as the IBM partition table has been. Novell also implemented support for Primary, Secondary, Tertiary and Quantranary channels when IDE drives first came out and some few manufactures supported all of them most manufactures are now supporting at least Primary and Secondary channels.

IDE.DSK How it Works: 9/94 version
The IDE.DSK driver has gone through several revisions with both bug fixes and major changes. Only the ones significant to today?s operation will be mentioned here. Significant things to know about the 9/94 IDE.DSK are:
1. It does not use system BIOS for setup or for doing IO. (32 bit BIOS calls are not currently available for IO)
2. It does all of its IO using PIO not DMA. There may be some systems that have problems with DOS or Windows using DMA access and NetWare using PIO but we have never seen any problem. Setting the BIOS for DMA mode will have no affect on how NetWare runs with the drive. We suggest always using PIO mode to be safe.
3. It uses CHS (Cylinder Head Sector) addressing not LBA. Setting up the BIOS in LBA mode makes no difference to the IDE.DSK since it doesn?t use the BIOS and this merely tells the BIOS to use LBA commands when accessing the drive it does nothing to the drive itself.
4. It will use the drive in whatever mode is currently setup on the drive by the BIOS. If the BIOS sets the drive up in Mode 3 the IDE.DSK will use the drive in Mode 3. It should be noted that some drives have experienced problems in some of the advanced modes so checking with the drive manufacturer may be prudent.
5. The IDE.DSK will use the current Heads and Sectors setup on the drive. It will determine these by first checking the drives current parameters if those aren?t available it will then read the partition table and use what is shown there. It will always match it?s partition table parameters with any currently existing. Since this is the case setting a drive up to have 16 heads and 63 sectors per track (These are the maximum allowed by the IDE register set) will allow for the maximum size of drives under NetWare.
6. With the advent of ACurrent Parameters@ in IDE drives customers should not have to worry about

translating BIOS?s and HSC in the 9/94 or later IDE drivers from Novell.
6. IDEATA.HAM with the IDEHD.CDM for hard disk support and IDECD.CDM for ATAPI CDROM support. These drivers together are a replacement and enhancement to IDE.DSK and they run under the new NetWare Peripheral Architecture (NWPA). These drivers have very similar characteristics to IDE.DSK but they currently support ATAPI CDROM drives, autodetection and also run faster than IDE.DSK did. These drivers are where we will move our IDE and ATAPI support forward. They will support LBA and DMA in the future as well as some of the new SMART features that are coming forward in new devices.

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