

# Definition of a Bios Limitation or BIOS Capacity Barrier.

## IN THIS GUIDE

The BIOS in your PC may have a number of limitations due to its age. As technology has changed so have the bios instructions. But, as is so often the case, amendments to the bios have not always kept up with the pace of change. This guide describes the major bios limitations associated with hard disk drives. Other useful guides relating to the bios include 02\_001 Introduction to the BIOS and 02\_007 BIOS Explained.

File: 02\_003 BIOS limitations

Rev: 4.0 Useful reading

PDF version (24kb)

The BIOS limitation or BIOS capacity barrier is the computer's inability to recognize hard drive capacities larger than allowed by the hard-coded programming contained in your system BIOS. For example, your system BIOS might only be capable of understanding a hard drive capacity of up to 32 GB. If you then attempt to install and auto-detect a 40 GB hard drive, the system will freeze because the BIOS is not capable of understanding the capacity reported by the hard drive. In short, that particular BIOS cannot count past 32 GB.

## Major BIOS Limitations:

**Systems with BIOS dated prior to July 1994(504 MB Limitation).**

Typically these BIOS will have a 504 megabyte (1,024 cylinder) limitation. Prior to this date, most manufacturers' BIOS did not provide the Logical Block Address (LBA) feature needed for proper translation.

**Systems with BIOS dated after July of 1994 (2.048 GB Limitation).**

Typically, these BIOS provide support for hard drives with capacities larger than 504 megabytes. However, depending on the manufacturer's release date and version number, different limitations may be encountered. The major limitation that surfaces is the 4,093-4,096 cylinder limitation.

**4.2 GB Limitation.**

The maximum parameters at the 4.2 GB barrier are 8,190 cylinders, 16 heads and 63 sectors for a capacity of 4.2 GB.

**8.4 GB limitation.**

The maximum parameters at the 8.4 GB barrier are 16,383 cylinders, 16 heads and 63 sectors for a capacity of 8.455 GB. To go beyond this boundary, a new extended INT 13 function is needed from the BIOS as a support feature for the drives. The BIOS listed below are all "CORE" BIOS that will support drives larger than 8.4 GB. Even though a BIOS is dated correctly or is the current version, it may not be able to support extended interrupt 13 because of modification done to the "CORE" of the BIOS from the motherboard manufacturer. Prior to January 1996.

**32 GB limitation.**

Some BIOS's released before June 1999 stall with drives larger than 32GB. If you are installing a drive larger than 32GB and your system stalls before floppy or drive boot can take place, you may have a system BIOS that is incompatible with larger drives. Updates for the BIOS should be available from individual motherboard manufacturers' to correct this problem.

**64 GB Limitation**

There is no 64GB BIOS Capacity Barrier. If you use FDISK to format a drive that is larger than 64 GB, FDISK will report the incorrect disk size.

**137 GB Limitation**

Most system BIOSes are limited to 137 GB because it can only support 28 bit Logical Block Addressing (LBA). To overcome this capacity barrier, drives higher than this capacity have adopted a 48-bit addressing system which can be supported in newer computer systems with updated controller chips, BIOS codes, and operating system drivers.