

Why POST screen shows 4GB of RAM, OS (Win7 64bit) shows only 2.99GB of total memory installed?

It is a limitation from chipset H/W. Intel 945GM does not support memory re-map, so some memory addresses will be occupied by system device (MMIO).

Please refer to attached picture "945GM_EDS.jpg" for detail.

3.2 Main Memory Address Range (1 MB to TOLUD)

This address range extends from 1 MB to the top of physical memory that is permitted to be accessible by the (G)MCH (as programmed in the TOLUD register). All accesses to addresses within this range will be forwarded by the (G)MCH to the DRAM unless they fall into the optional TSEG, optional ISA Hole, or optional IGD stolen VGA memory.

The (G)MCH provides a maximum DRAM address decode space of 4 GB. The (G)MCH does not remap APIC or PCI Express memory space. This means that as the amount of physical memory populated in the system reaches 4 GB, there will be physical memory that exists yet is non-addressable and therefore unusable by the system.

Intel 965GM and later generations supports memory re-map which is able to eliminate this limitation. Refer to "965GM_remap.jpg" as an example.

Figure 2. System Address Ranges

