

## Not All Memory is Available when 4GB or more of Memory is Installed

Due to PC architectural requirements such as motherboard resources and OS limitations, platforms using larger memory may be unable to take full advantage of all memory populated on the system.

When systems with chipsets that support 4GB or more of system memory are populated with 4GB or more, the Operating System (OS) may report a lower amount of available memory.

Standard PC Architecture System Resources require addressing which overlaps physical memory below 4GB:

- System BIOS
- Motherboard Resources (I/OxAPIC)
- Memory Mapped I/O
- PCI Express\* Configuration Space
- Additional PCI Device Memory (Graphics Aperture)
- VGA Memory
- Others as included, etc..

These requirements may reduce the addressable memory space available to and reported by the Operating System. These memory ranges, while unavailable to the OS, are still being utilized by subsystems such as I/O, PCI Express and Integrated Graphics and are critical to the proper functioning of the PC.

### Memory System Address Map

