Computer Architectures Workshop 8

# Memory in an Acer Predator Helios 300

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| Memory | Descriptor | Capacity |
| Cache | 8-way set associative, 64-byte line size | 32KiB x 4 |
| Cache | 8-way set associative, 64-byte line size | 32KiB x 4 |
| Cache | 4-way set associative, 64-byte line size | 256KiB x 4 |
| Cache | 16-way set associative, 64-byte line size | 8MiB |
| Main Memory | DDR4 RAM | 8GB |
| Virtual Memory | Total virtual memory | 15.6GB |
| SCSI | Disk drive (HDD) | 931.51GB |
| SCSI | Disk drive (SSD) | 119.24GB |
| Graphics | GDDR5 VRAM | 6GB |

## Main memory bandwidth

DDR4 2666：21.3 GB/s  
2x DDR4 2666：42.6 GB/s

## Blocks of main memory

220 / 26 = 65536 Blocks

## Average memory access time

(0.8\*3) + (0.2\*30) = 8.4s

## Clock cycles to access a word

(500mHz / 109) \* 30 = 15 clock cycles

# I/O Devices and Buses

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| --- | --- | --- | --- |
| Name | Revision | Bandwidth (bytes/s) | Max FPS (640\*480 pixels) |
| Low-Speed | 1.0 | 1.5 Mbps | 1.63 FPS |
| Full-Speed | 1.1 | 12 Mbps | 12.98 FPS |
| High-Speed | 2.0 | 480 Mbps | 520.82 FPS |
| Super-Speed | 3.0 | 5 Gbps | 5425.35 FPS |
| Super-Speed+ | 3.1 | 10 Gbps | 10850.69 FPS |