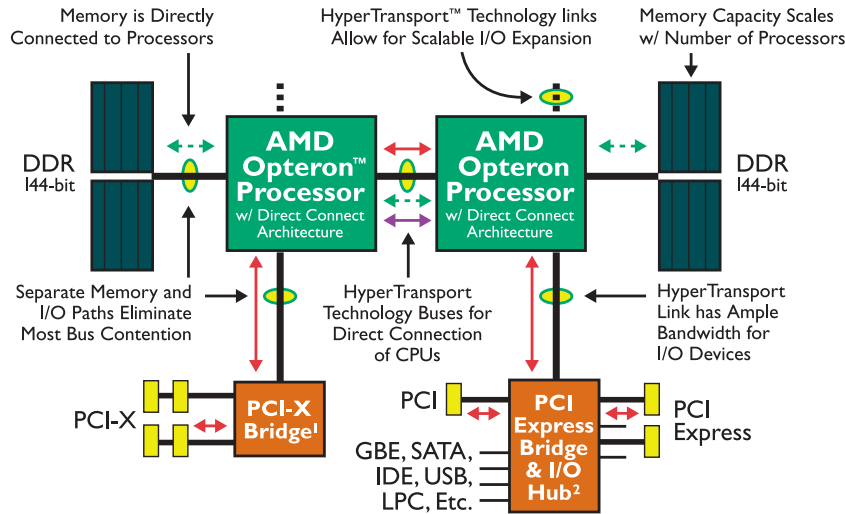




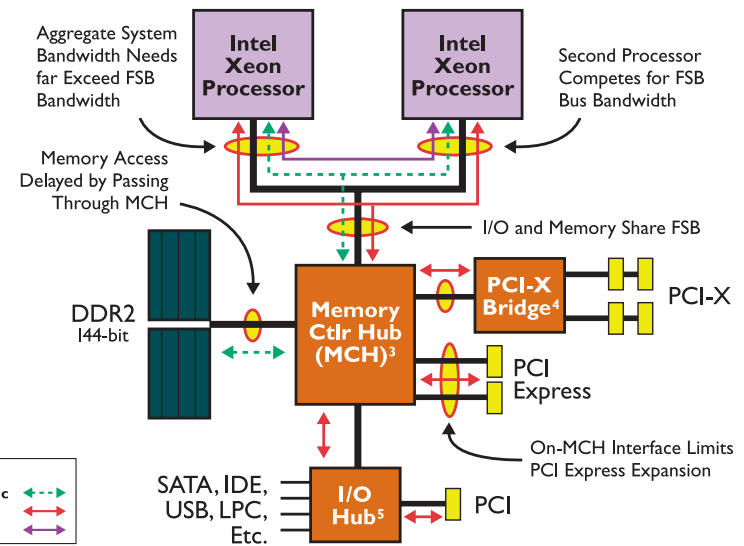
# AMD Opteron™ Processor with Direct Connect Architecture 2P Server Comparison



## AMD Opteron™ Processor-Based Server



## Intel Xeon Processor-Based Server



|                          | AMD Opteron Processor with Direct Connect Architecture   | Intel Xeon Processor  |
|--------------------------|--|---|
| Memory Access Technology | <p><b>Integrated Memory Controller directly connected to the CPU</b></p> <ul style="list-style-type: none"> <li>• Dramatically reduces latency for fast memory reads</li> <li>• Provides a dedicated path from memory to processor</li> <li>• Memory bandwidth scales as processors are added</li> <li>• Helps eliminate need for larger caches</li> </ul>   | <p><b>“Northbridge”-style Memory Controller via Front Side Bus</b></p> <ul style="list-style-type: none"> <li>• Passage through memory controller hub delays memory reads</li> <li>• Processors compete for FSB bandwidth</li> <li>• Memory and I/O must share FSB bandwidth, further reducing the efficiency of the FSB</li> </ul> |
| Primary Bus Technology   | <p><b>HyperTransport™ Technology – I/O is directly connected to the CPU</b></p> <ul style="list-style-type: none"> <li>• Helps balance throughput and enables expandable I/O</li> <li>• At up to 6.4 GB/s bandwidth per link, HyperTransport technology provides sufficient bandwidth for supporting new and existing interconnects including Fibre Channel, Gigabit Ethernet, PCI-X, PCI-Express, Serial ATA, Serial Attached SCSI, and 10G Ethernet</li> </ul> | <p><b>Multiple Hub I/O Buses</b></p> <ul style="list-style-type: none"> <li>• With one MCH per system, PCI Express interface integration onto MCH limits expansion options</li> <li>• I/O Hub<sup>5</sup> interface bus can be overloaded by the aggregate demands of its many I/O devices</li> </ul>                               |
| Architecture             | <p><b>HyperTransport™ Technology – Connecting CPUs directly to CPUs</b></p> <ul style="list-style-type: none"> <li>• Provides more linear symmetrical multiprocessing</li> </ul> <p><b>AMD64 Technology</b></p> <ul style="list-style-type: none"> <li>• Enables simultaneous high-performance 32- and 64-bit computing environments</li> <li>• Allows businesses to migrate to 64-bit computing as they require</li> </ul>                                      | <p><b>EM64T Technology</b></p> <ul style="list-style-type: none"> <li>• Allows simultaneous 32- and 64-bit computing</li> <li>• Memory addressability limited to 36-bit</li> </ul>  |

<sup>1</sup> AMD-8131™ HyperTransport PCI-X Tunnel  
<sup>2</sup> NVIDIA CK804 Professional

<sup>3</sup> Intel E7520 Chipset Memory Controller Hub (MCH)  
<sup>4</sup> Intel 6700PXH 64-bit PCI/PCI-X Controller Hub  
<sup>5</sup> Intel 82801ER I/O Controller Hub (ICH5)