

AMD Opteron™ 6200 Series Processor Feature-Function-Benefit Matrix

Feature	Function	End-user Benefit	
New 'Bulldozer' Core	Optimized performance per watt: > Full performance from each core > High frequency and low-power design > Virtualization enhancements > Shared double-sized floating point unit (FPU) > ISA enhancements	The new processor core can enhance power efficiency for server products: > Help minimize cooling solution complexities > Help reduce power at low utilization > Enable more control for IT managers	
Performance	AMD Turbo CORE Technology	Turns unused TDP headroom into added clock speed for improved performance	The industry's best full-core boost - up to a 500 MHz frequency increase, over Intel's full-core boost that reaches up to a 266 MHz frequency increase
	ISA Enhancements	In addition to baseline instruction support, added SSE4.1, SSE4.2, SSSE3, AVX, AES, PCLMULQDQ, FMA4 and XOP	Provides performance enhancements to a wide range of applications
	Flex FP	The world's only flexible 256-bit FPU. Two 128-bit FMACs shared per module, allowing for dedicated 128-bit execution per core or shared 256-bit execution per module.	Enhances flexibility and performance in technical computing
	TDP Power Cap	Allows the user to set the maximum processor power ceiling via BIOS or APML	This technology gives enterprises the ability to customize their chips to meet power and workload demands, providing: > More control over power settings > Flexibility to set power limits without capping CPU frequencies
	C6 Power State	Core power gating: When a core is halted its context is exported to system memory and voltage is removed from the core.	Reduces idle power at the module by up to 46%, compared to AMD Opteron™ 6100 Series processors
AMD-P 2.0	APML (Advanced Platform Management Link)	Provides an interface for processor and systems management monitoring and controlling of system resources (in APML-enabled platforms); Comprised of the Remote Power Management Interface (RPMI) and the Precision Thermal Monitor	Remote Power Management Interface (RPMI): > Ability to monitor and control platform power consumption via p-state limits > Access to processor identification and health Precision Thermal Monitor: > Provides accurate information about CPU thermals to closely monitor power/cooling and proactively alert the Base Management Controller (BMC) > Early notification helps save time and money by providing intelligence that can be used to more effectively monitor power and thermals to optimize cooling solutions in an IT data center
	AMD CoolSpeed Technology	Provides highly accurate thermal information and thermal protection	> Server can automatically drop into lower power mode if processor's thermal environment exceeds safe operational limits > Offers platform providers the ability to safely reduce system fan speeds, which helps deliver greater platform efficiency

	C1E	Reduces memory controller and HyperTransport™ technology links' power	This feature can equate to significant power savings in your data center, depending on system configuration, when the Northbridge and HyperTransport™ technology links are powered down and cores are at idle.
	LV-DDR3 Support	Now supports DDR3 at 1.25V in addition to 1.35V	Helps to reduce overall power consumption
Direct Connect Architecture 2.0	Higher DDR3 Frequencies	DDR3-1600 now supported for typical memory configurations; DDR3-1866 supported in lightly loaded memory configuration systems with only 1 DIMM socket per channel	Helps to improve overall system performance
	LR-DIMM Support	Support for LR-DIMM memory	LR-DIMMs provide more capacity per DIMM. This higher density means more bandwidth. Virtualization, cloud computing and other high-capacity applications greatly benefit from LR-DIMMs.
	Quad Channel Memory	Doubles the memory capacity compared to previous generations of AMD Opteron™ processors	Can increase performance especially in memory-intensive workloads
	HyperTransport™ Technology Assist (HT Assist)	Helps to increase coherent memory bandwidth and reduce latency in multi-node systems by reducing cache probe traffic between cores	Can result in faster queries that can increase performance for cache sensitive applications such as database, virtualization and compute intensive applications
	HyperTransport™ 3.0 Technology (HT3)	Provides superior system bandwidth between CPUs and I/O, increasing interconnect rate up to a maximum 6.4GT/s with HT3	Helps improve overall system balance and scalability for scale-out computing environments like HPC, database and web serving
	Cache and Core Count	Integration of up to 16 cores within the same package, 1MB L2 cache per core (up to 16MB of L2 cache per socket), and a shared 16MB L3 cache per socket	Offers improved performance and performance/watt (compared to prior generations) for multi-threaded environments like virtualization, database and web serving
AMD-V™ 2.0 Technology Features	AMD Virtualization™ (AMD-V™) 2.0 Technology	<ul style="list-style-type: none"> > Tagged TLB — efficient switching between virtual machines for better application responsiveness > Rapid Virtualization Indexing — hardware-based virtual machine memory management > AMD-V™ Extended Migration — helps enable live migration of VMs between all available AMD Opteron™ processors generations > I/O Virtualization — enables direct device access by a virtual machine for increased integrity and security 	<ul style="list-style-type: none"> > Easier to deploy — larger pool of resources enables greater VM consolidation > Easier to manage — common architecture makes managing virtual pools easier > Easier to move — extended migration delivers great flexibility for load balancing and disaster recovery



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