

Java™ Technology on AMD Opteron™ Processors

Freeing developers and customers to do more with Java™ technology



AMD: Committed to Delivering on the Promise of Java™

Java™ technology offers abundant possibilities for application developers today – from mission-critical enterprise software to the newest applications for mobile devices. If you can dream it, you can probably develop it with Java technology. AMD is helping developers use Java to its fullest potential, by enhancing the AMD Opteron™ processor architecture to optimally support Java application development and deployment.

AMD Opteron™ Processors: Powerful Support for Java Development and Deployment

You always have a choice of hardware platforms when you develop with Java technology. And when you choose an AMD Opteron processor-based platform, you enjoy the benefits of a stable x64 platform that supports high-performance Java applications, yet has very low power requirements.

The Power of Advanced Multi-Core Processing

AMD Opteron processors offer exceptional multi-core processing performance and scalability, providing an outstanding environment for Java applications. The latest generation offers significant core and cache enhancements, including dedicated L2 cache per core and a shared L3 cache to help improve multi-threaded application performance. Java technology already leverages these capabilities, with built-in support for concurrent programming that makes multi-threading inherently easier.

High Performance with Low Power Requirements

AMD has added cores to boost the performance of the newest generation of AMD Opteron processors – while still maintaining the same power and cooling envelopes of prior generations of AMD Opteron processors. This helps improve performance-per-watt and opens the door to improved application performance across the broadest spectrum.

AMD and Java: The Flexibility of a Fully Supported Development Environment

Java technology is one of the strongest, most flexible development platforms in computing,

and AMD Opteron processors support this flexibility in several important ways.

Support for All Major Operating Systems and Hardware

With Java technology, you're free to choose the operating systems and hardware platforms on which you develop and deploy applications. Years of AMD engineering collaboration with technology partners including Sun Microsystems and Microsoft® have led to the optimization of operating systems for application development on AMD Opteron processor-based systems.

AMD Opteron processors are supported on major operating systems, including Sun Solaris™, Microsoft® Windows®, RedHat Linux®, Novell/Suse Linux, and others. They also power x64/x86 computer systems from Acer, Dell, HP, IBM, Sun, and many other manufacturers. And with the Java Virtual Machine (JVM™), applications you develop on AMD Opteron processors will run across all x86 processor platforms.

Easy Migration to x64 Architecture

AMD Opteron processors are architected to enable easy migration to x64 platforms from other hardware platforms. AMD64 technology and AMD's common core strategy are consistent across one-, two-, four-, and eight-socket systems and with earlier generations of AMD Opteron processors.

A Full Set of Freely Available Tools

To fine-tune applications developed on AMD Opteron processor platforms, AMD offers a full set of tools for Java development and deployment, including the CodeSleuth open source plug-in to Eclipse for profiling Java applications. CodeSleuth enables detailed profiling of software applications, to help you see exactly what the CPU is doing while processing your application.

Highlights

- Powerful, stable processor platform for Java™ technology development and deployment on x64 systems
- Low power and cooling requirements, with no impact on performance
- Supports all major operating systems and multiple hardware platforms
- Supports easy migration from other hardware platforms to x64 platforms
- Full toolset including Java-specific application profiling capabilities
- Ongoing processing architecture advancements that benefit Java applications
- Close collaboration with Java Virtual Machine (JVM™) vendors to optimize performance and help ensure forward compatibility with x64 systems



Processing Architecture Advancements: Constantly Adding Value

AMD is constantly working to develop improvements to the AMD Opteron™ processor architecture and add value to Java development environments. The following are among the latest microprocessor advances AMD is working on to benefit Java technology:

Lightweight Profiling (LWP)

LWP is a software specification designed to allow technologies like Java to more easily benefit from multi-core processing. It enables the JVM to make dynamic decisions based on continuous feedback from the processors, resulting in greater efficiency and improved performance.

Advanced Synchronization Facility (ASF)

ASF is designed to improve software concurrency performance by accelerating data synchronization. It also enables hardware read barriers—a new instruction that enhances performance by helping with discarding objects from memory when they are no longer needed.

AMD and JVM Vendors: Working Together to Improve JVM Platforms

For more than three years, the AMD Java Labs group has been working closely with JVM vendors including Sun, BEA (Oracle), and IBM to help ensure that the virtual machine will always automatically take advantage of all the latest AMD Opteron processor advancements. Our collaborative efforts with these companies have resulted in improved processor instructions that enable accelerated managed runtime environments, improved garbage collection, and other enhancements in the underlying JVM.

The AMD Opteron™ Processor: Building on a Proven Platform

Leading companies around the world trust AMD Opteron processor-based platforms for their most demanding enterprise computing

needs. And AMD has increased its advantages with quad-core technologies and advanced innovations that further enhance energy efficiency.

Quad-Core AMD Opteron processors are designed to leverage the native x86 instruction set that enterprises trust. AMD's enhancements provide significant benefits, including industry-leading performance-per-watt and x86 virtualization, translating to low total cost of ownership. And the ability to upgrade existing Dual-Core AMD Opteron processors to Quad-Core AMD Opteron processors within the same power and thermal envelope enables more powerful servers within existing data center footprints.

AMD's Direct Connect Architecture links the processor cores on a single wafer to each other, the memory, and the I/O subsystem via HyperTransport™ technology links. In addition, the memory controller is built directly onto the processor die. Quad-Core AMD Opteron processors can provide much higher levels of performance in the same power and thermal envelopes as Dual-Core AMD Opteron processors, providing easy upgradeability from dual to quad-core so you can leverage existing IT equipment.

Java Technology: The Software Behind Applications Everywhere

Used by software engineers everywhere, Java technology is one of the most widely employed software platforms for application development in the world. Java technology truly is everywhere – the six million developers who use Java constitute one of the world's largest communities of software developers. Developed by Sun Microsystems, Java technology is a platform-independent programming environment that enables developers to write software on the platform of their choice and then run the software on

practically any other platform. With its unique blend of mobility and security, it's ideal for developing and deploying mobile and wireless solutions. And because it uses two of the most widely accepted computing languages—Java and XML—it provides an ideal execution environment for Web Services. Finally, it offers a single, unifying programming model that connects all the elements of a business infrastructure from end to end.

Get the Details

To learn more about Java technology on AMD Opteron™ processors, visit: developer.amd.com/java

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