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Boosting Performance of Oracle* Database

“ We wanted to squeeze as much performance out of Oracle9i* Database as we possibly could, and that's why we chose the Intel® compiler. ”

Mark MacDonald
Windows Technology Group
Oracle

Corporate enterprises rely on their database of business information to improve their efficiencies and productivity; to better understand their business, customers, and partners; and to find new opportunities for business growth and change.

Intel and Oracle have worked together for years to produce powerful products for enterprise computing. Oracle's database, tools, and applications, combined with Intel® architecture, give customers the power, scalability, availability, and reliability they need for the most demanding e-Business solutions.

Intel® Compiler ensures smooth going

The Intel® C++ Compiler is an important part of making software run at top speeds on the Intel® Pentium® 4, Intel® Xeon™, and Intel® Itanium® 2 processor-based systems.

The Intel C++ Compiler can deliver dramatic application performance improvements through the use of advanced compiler optimizations, such as support for Streaming SIMD Extensions 2 (SSE2) and Intel® NetBurst® microarchitecture. Using features such as the unique Interprocedural Optimization (IPO), Profile-Guided Optimization (PGO), and function ordering can lead to even more impressive application performance. In fact, Oracle was particularly impressed by the PGO optimizations achieved through the Intel C++ Compiler. “We got a big win with the Intel Compiler,” noted Vineet Buch of Oracle's Server Performance team. “The PGO optimizations enabled us to achieve large performance gains on [Intel] Xeon and Itanium 2 processor-based systems running on both Windows* and Linux.*”

THE APPLICATION

Lower-cost solutions for Windows* and Linux*

California-based Oracle Corporation is the world's largest enterprise software company, providing enterprise solutions to major companies worldwide. Oracle* Database is a scalable and full-featured database, known for its cross-platform support of all popular operating system environments. Oracle's award-winning products and support enable customers to better use and apply the technology as a competitive advantage in their own businesses. Oracle's product line includes Oracle Database, Oracle Application Server, Oracle E-Business Suite, and Oracle Collaboration Suite. For the cost-effective Intel architecture platform, Oracle offers its products on Windows- and Linux-based systems.

Oracle's customers expect unbreakable software that won't “go down” and is secure against break-ins. They also want integrated business information available any time, anywhere.

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Vineet Buch
Server Performance Group
Oracle

THE CHALLENGE

Oracle9i* Database Release 2 optimized for Intel architecture



One of Oracle's goals for Oracle9i* Database Release 2 was to support the most up-to-date business platforms powered by high-performance Intel processors. Oracle9i Database is written in the C programming language and is portable between platforms.

The challenge for Oracle was getting the best possible performance for Oracle9i Database on several platforms: Pentium 4, Intel Xeon, and Itanium 2 processor-based systems running both Windows and Linux operating systems.

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Mark MacDonald
Windows Technology Group
Oracle

THE ANSWER

Intel Compilers optimize database code

Using the Intel C++ Compiler for Linux and the Intel C++ Compiler for Windows ensured that Oracle9i Database software delivered the best performance possible on Intel processor-based platforms. The Intel compilers' tight alignment with the features of Intel processors provided the basis for optimizing application performance. In addition, the Intel C++ Compilers gave Oracle developers early access to features of the latest Intel processor architectures so that, as new code was developed, it compiled easily and ran well throughout the development process.

Benchmarks of Oracle9i Database running on both Windows and Linux on each Intel processor-based system indicated improved performance across the board. The Intel C++ Compiler for Windows compiled modules that made up a hybrid build of the Oracle9i Database 32-bit application. The results showed significant improvement when Profile Guided Optimization and

function ordering features were used. Even when all optimizations were not applied on all of the modules, the Intel C++ Compiler for Linux gave Oracle developers even greater improvement on 32-bit architecture. When it ran on the Itanium 2 microarchitecture, a major improvement was achieved, relative to previous builds of the application software using another compiler. As stated by Mark MacDonald from the Windows team at Oracle, “We wanted to squeeze as much performance out of Oracle9i Database as we possibly could, and that's why we chose the Intel compiler. Based on the performance gains we saw on the 32-bit compile, we built Oracle's 64-bit product for Itanium 2-based systems on Windows exclusively with the Intel compiler.”

The Intel C++ Compiler for Windows executed seamlessly with other Oracle9i Database code compiled by Microsoft Visual C++* .NET, as well as within the Microsoft Visual Studio* .NET environment.

THE ADVANTAGE

Intel Compilers make the difference

Using Intel compilers for Oracle9i Database on both Linux and Windows meant Oracle development teams benefited from each other's successes. Oracle's Peter Knaggs notes, “We piggybacked bug fixes from both sides. Having the Intel compiler working on different build platforms helped get the overall application more stable.”

Knaggs also pointed out that because of the Intel compiler, other Oracle teams easily solved post-release issues. “It's convenient to just download and install it from Intel and have the right things come up.”

The Intel C++ Compiler delivered increased performance and ease-of-use for each of the Oracle products to which it was applied. Peter Knaggs said, “The Intel compiler has been through heavy testing and debugging and was very easy to use.”

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Peter Knaggs
Linux Program Office
Oracle

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