

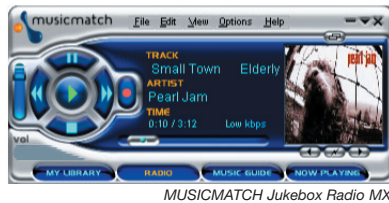


Intel® Software Development Products for Intel Platforms and Technologies

Making MP3s “Rip” Faster

“ After optimizing our code, (with the Intel compiler) MP3 encoding speeds dramatically increased, and MUSICMATCH Jukebox was able to rip MP3 files from audio CDs at a blistering 35x speed for the first time. ”

Jim McLaughlin
Director Hardware Alliances,
MUSICMATCH, Inc.



MUSICMATCH Jukebox Radio MX

Overview

MUSICMATCH,* Inc. used the Intel® VTune™ Performance Analyzer and the Intel C++ Compiler to increase performance of the company's flagship product, MUSICMATCH Jukebox*, on Intel® Pentium® 4 processor-based systems. Specifically, MUSICMATCH used Intel's C++ Compiler to reduce the time required to convert MP3 files from audio CDs and WAV files. The end result was a 37% speed improvement in this module over the existing version of MUSICMATCH Jukebox. Their engineers also used the VTune Performance Analyzer to dramatically shorten the optimization effort in other parts of the MUSICMATCH Jukebox code.

Intel Software Development Tools make it happen

The Intel C++ Compiler is an important part of making software run at top speeds on the Intel Pentium 4 processor. Through the use of advanced compiler optimizations, such as support for Streaming SIMD Extensions 2 (SSE2) and the Intel® NetBurst™ microarchitecture, the Intel C++ Compiler can deliver dramatic application performance improvements. Using features like the unique Interprocedural Optimization and Profile-Guided Optimization can lead to even more impressive application performance.

The Intel VTune Performance Analyzer collects, analyzes, and displays software performance data from the system-wide view down to a specific function, module, or instruction in your application source. The VTune analyzer incorporates a number of features that make performance tuning easier and more efficient than ever. The advantage of these optimization techniques comes from the combination of innovative Intel processor and software technology that delivers performance and value.

THE APPLICATION

The mission of San Diego-based MUSICMATCH (www.musicmatch.com) is to be the leading provider of personalized music software and services and to enrich people's lives through music. Since its founding in 1997, MUSICMATCH has been working towards this goal by perfecting its MUSICMATCH Jukebox software. The product has won more industry awards and reviews than any other digital music jukebox program and was “PC Magazine” Editor's Choice three years in a row.

MUSICMATCH's personal music system enables music lovers to play, rip, burn, and organize all their music files in one easy-to-use program. In addition, fans can enhance their listening experience by discovering new music and artist information through MUSICMATCH radio and the music guide. Together, MUSICMATCH Jukebox and Radio MX provide music fans with the only integrated subscription service and software solution for on- and offline music services.

THE CHALLENGE

MUSICMATCH needed speed

MUSICMATCH faced two application challenges. Converting MP3 files from music CDs (WAV files) is a compute-intensive process. MUSICMATCH was looking to improve the speed of the process. The MUSICMATCH Jukebox ripper needed to out-perform earlier versions of the product by more than just the additional speed of the Intel Pentium 4 processor.



MUSICMATCH Jukebox CD Ripper

The second challenge for MUSICMATCH was to identify performance bottlenecks in other segments of the Jukebox application code so that the engineers could streamline the code.

THE ANSWER

Intel software tools made the difference

The Intel C++ Compiler was used on the MP3 conversion code to optimize it for the Intel Pentium 4 processor-specific instructions, generating a 37% performance increase. The Intel C++ Compiler integrated seamlessly with other code modules that were optimized with other compilers.

The Intel VTune Performance Analyzer helped the engineers find several DLL files containing software routines that could be rewritten, saving them the task of debugging the code by hand. One MUSICMATCH engineer was able to learn how to use the VTune analyzer, and identify a performance bottleneck in one specific kernel in less than a day. "This would have taken him several days had he not used VTune Performance Analyzer," says Randy Camp, vice president of software research and development at MUSICMATCH.

MUSICMATCH engineers report that they make regular use of the Intel Premier Support services for software patches and firmware

updates. The support site documents known issues and solutions in detail and highly technical engineers respond quickly to customer problems.

THE ADVANTAGE

Time savings and a better product

MUSICMATCH released a new version of the MUSICMATCH Jukebox with its Radio MX feature in June 2001. According to Jupiter Media Metrics*, MUSICMATCH Jukebox grew in the marketplace by 16% in the month of December 2001 alone—this is significantly ahead of similar products on the market.

The Intel C++ Compiler optimized and improved the MUSICMATCH Jukebox's MP3 encoder speed so much that MUSICMATCH saved its fastest speeds for the Plus version of the product, which is user-paid. The seamless integration with other compilers used for some software modules made this a straightforward process.

The Intel VTune Performance Analyzer saved MUSICMATCH's engineers debugging time and thus gave the company faster time-to-market for the new version of the MUSICMATCH Jukebox product. "The Intel (VTune and C++ Compiler) tools were an important aspect of optimizing the product, both the free jukebox product as well as the paid product," said Christopher Allen, MUSICMATCH senior vice president of product marketing.

“The Intel VTune Performance Analyzer took a multi-day task and turned it into a sub-day task.”

Randy Camp
Vice President, Software R&D
MUSICMATCH Inc.

Every day over 50,000 customers download the try-and-buy Basic Jukebox and 1,500 to 2,000 buy every day. The company invented the first digital music jukebox in 1997 and now offers one of the most highly acclaimed digital music programs, MUSICMATCH Jukebox, that is enjoyed by more than 12 million music fans worldwide. Intel tools helped make it a little better.

Intel provides both the tools and support to enhance the performance, functionality and efficiency of software applications.

Compatible with leading Windows and Linux development environments, Intel Software Development Products are the fastest and easiest way to maximize the latest features of Intel processors. Designed for use in the full development cycle, Intel Software Products include Intel software libraries, Intel Compilers (C++, Fortran for Windows and Linux), Intel® VTune™ Performance Analyzer and Intel® Threading Tools (KAP/Pro Toolset, Assure Thread Analyzer).

The Intel Premier Customer Support Web site provides expert technical support, product updates and related downloads for all Intel software products.

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